

**DIVISION 1**

**RULES FOR THE ADMINISTRATION OF THE OREGON SAFE EMPLOYMENT ACT**

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### DIVISION 3

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### DIVISION 4

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<b>437-004-0780</b>	Storage and Handling of Liquefied Petroleum Gases	<b>437-004-3460</b>	Industrial Vehicles
<b>437-004-0790</b>	Use of Liquefied Petroleum Gas or Natural Gas in Fields and Orchards	<b>437-004-3480</b>	Bridges, Roads and Ramps
<b>437-004-0800</b>	Storage and Handling of Anhydrous Ammonia	<b>437-004-3550</b>	Servicing Multi Piece and Single Piece Rim Wheels
<b>437-004-0950</b>	Hazardous Waste Operations and Emergency Response (HAZWOPER)	<b>437-004-3600</b>	Roll-Over Protective Structures (ROPS) for Tractors in Agriculture
<b>437-004-1005</b>	General Requirements for Protective Equipment	<b>437-004-3650</b>	Roll-Over Protective Structures — Industrial Vehicles
<b>437-004-1020</b>	Personal Fall Protection	<b>437-004-3660</b>	Vehicle-Mounted Elevating and Rotating Work Platforms
<b>437-004-1030</b>	Work Clothing	<b>437-004-6000</b>	Adoption by Reference of Federal Standard
<b>437-004-1035</b>	Eye and Face Protection	<b>437-004-9000</b>	Oregon Rules for Air Contaminants
<b>437-004-1041</b>	Respiratory Protection	<b>437-004-9010</b>	Fumigated Areas
<b>437-004-1050</b>	Head Protection	<b>437-004-9050</b>	Asbestos
<b>437-004-1060</b>	Hand, Foot, and Extremity Protection	<b>437-004-9090</b>	13 Carcinogens
<b>437-004-1070</b>	Working Underway on Water	<b>437-004-9600</b>	Lead
<b>437-004-1075</b>	Working Over or In Water	<b>437-004-9620</b>	Cadmium
<b>437-004-1105</b>	Sanitation	<b>437-004-9626</b>	Chromium (VI)
<b>437-004-1110</b>	Field Sanitation for Hand Labor Work	<b>437-004-9640</b>	Benzene
<b>437-004-1120</b>	Agricultural Labor Housing and Related Facilities	<b>437-004-9650</b>	Bloodborne Pathogens
<b>437-004-1140</b>	Lighting	<b>437-004-9710</b>	Acrylonitrile
<b>437-004-1150</b>	Safety Colors for Marking Physical Hazards	<b>437-004-9720</b>	Thiram
<b>437-004-1180</b>	Accident Prevention Signs	<b>437-004-9740</b>	Ethylene Oxide
<b>437-004-1250</b>	Confined and Hazardous Spaces	<b>437-004-9760</b>	Formaldehyde
<b>437-004-1260</b>	Manure Lagoons, Storage Ponds, Vats, Pits and Separators	<b>437-004-9780</b>	Methylenedianiline
<b>437-004-1275</b>	The Control of Hazardous Energy (Lockout/Tagout)	<b>437-004-9800</b>	Hazard Communication Standard for Agricultural Employers
<b>437-004-1305</b>	Medical Services and First Aid	<b>437-004-9830</b>	Retention of Department of Transportation (DOT) Markings, Placards and Labels
<b>437-004-1430</b>	Employee Equipment and Training	<b>437-004-9850</b>	Pipe Labeling
<b>437-004-1440</b>	Required Postings	<b>437-004-9860</b>	Hazardous Chemicals in Laboratories
<b>437-004-1450</b>	Extinguishers		
<b>437-004-1460</b>	Fire Prevention Plan		
<b>437-004-1470</b>	Training		
<b>437-004-1505</b>	Air Receivers and Pressure Systems		
<b>437-004-1525</b>	Boilers and Steam Systems		
<b>437-004-1610</b>	General Requirements	<b>437-005-0001</b>	Adoption by Reference
<b>437-004-1630</b>	Conveyors	<b>437-005-0002</b>	Adoption by Reference
<b>437-004-1670</b>	Automotive Hoists	<b>437-005-0003</b>	Adoption by Reference
<b>437-004-1680</b>	Storage of Hazardous Chemicals		
<b>437-004-1700</b>	Forklifts and Other Powered Industrial Trucks		
<b>437-004-1750</b>	Helicopters		
<b>437-004-1805</b>	Rope, Chain, Rigging, and Hoists		
<b>437-004-1825</b>	Tackle and Hoisting Equipment	<b>437-007-0001</b>	Authority of Rules
<b>437-004-1910</b>	General Equipment Guarding	<b>437-007-0002</b>	Purpose of Rules
<b>437-004-1940</b>	Farm Field Equipment	<b>437-007-0003</b>	Scope of Rules
<b>437-004-1970</b>	Farmstead Equipment	<b>437-007-0004</b>	Applicability of Rules
<b>437-004-2000</b>	Powered Saws	<b>437-007-0010</b>	Worker Protection Standard
<b>437-004-2100</b>	Grinders	<b>437-007-0025</b>	Definitions
<b>437-004-2220</b>	General Requirements — Small Tools	<b>437-007-0100</b>	Safety and Health Program
<b>437-004-2230</b>	Guarding and Operation of Portable Powered Tools	<b>437-007-0105</b>	Management Commitment
<b>437-004-2240</b>	Power Lawnmowers	<b>437-007-0110</b>	Supervisory Responsibilities
<b>437-004-2260</b>	Other Portable Tools and Equipment	<b>437-007-0125</b>	Accident Investigation
<b>437-004-2310</b>	General Requirements	<b>437-007-0130</b>	Employee Involvement
<b>437-004-2350</b>	Oxygen-Fuel Gas Welding and Cutting	<b>437-007-0135</b>	Hazard Identification and Control
		<b>437-007-0140</b>	Training

### DIVISION 5

#### MARITIME ACTIVITIES

### DIVISION 7

#### FOREST ACTIVITIES

**Chapter 437 Dept. of Consumer and Business Services, Oregon Occupational Safety and Health Division**

<b>437-007-0145</b>	Annual Program Evaluation	<b>437-007-0735</b>	Chippers
<b>437-007-0200</b>	Site Planning and Implementation	<b>437-007-0740</b>	Machine Exhaust Systems
<b>437-007-0205</b>	Hazard Identification	<b>437-007-0745</b>	Windows and Windshields on Machines
<b>437-007-0210</b>	Checking System	<b>437-007-0750</b>	Drum Brakes
<b>437-007-0215</b>	Working Alone	<b>437-007-0755</b>	Machine Travel Brakes
<b>437-007-0220</b>	Medical Services and First Aid	<b>437-007-0760</b>	Outriggers
<b>437-007-0225</b>	Working Near Unstable Objects and Danger Trees	<b>437-007-0765</b>	Hauling or Moving Machines
<b>437-007-0230</b>	Power Line Safeguards	<b>437-007-0770</b>	Protective Structure for Operators, General Requirements
<b>437-007-0235</b>	Working Conditions	<b>437-007-0775</b>	Protective Structure For Operators, Machines Manufactured On Or After July 1, 2004
<b>437-007-0240</b>	Night Logging	<b>437-007-0780</b>	Protective Structures for Operators, Machines Used On Or After July 1, 2014
<b>437-007-0245</b>	Field Sanitation For Reforestation Activities	<b>437-007-0800</b>	General Requirements
<b>437-007-0300</b>	General Requirements	<b>437-007-0805</b>	Mechanical Falling
<b>437-007-0305</b>	Head Protection	<b>437-007-0810</b>	Manual Falling
<b>437-007-0310</b>	High-Visibility Color	<b>437-007-0815</b>	Wedges
<b>437-007-0315</b>	Eye and Face Protection	<b>437-007-0820</b>	Bucking Trees/Logs
<b>437-007-0320</b>	Hand Protection	<b>437-007-0825</b>	Tree Jacking
<b>437-007-0325</b>	Leg Protection	<b>437-007-0830</b>	Tree Pulling
<b>437-007-0330</b>	Foot Protection	<b>437-007-0900</b>	General Landing Work Practices
<b>437-007-0335</b>	Hearing Protection	<b>437-007-0905</b>	Landings
<b>437-007-0340</b>	Personal Floatation Devices	<b>437-007-0910</b>	Landing Logs
<b>437-007-0345</b>	Respiratory Protection	<b>437-007-0915</b>	Log Decks
<b>437-007-0350</b>	Respiratory Protection When Machines Are Operated	<b>437-007-0920</b>	General Cable Yarding and Ground Skidding Work Practice
<b>437-007-0400</b>	Hand and Portable Power-Driven Tools	<b>437-007-0925</b>	Cable Yarding Work Practices
<b>437-007-0405</b>	Chain Saws	<b>437-007-0927</b>	Working Near Standing Tree Anchors, and Tail/Intermediate Support Trees
<b>437-007-0410</b>	Fire Extinguishers	<b>437-007-0930</b>	Grapple Yarding
<b>437-007-0415</b>	Explosives and Blasting Agents	<b>437-007-0935</b>	Operation of Ground Skidding Machines and Vehicles
<b>437-007-0500</b>	Roads	<b>437-007-0940</b>	Signaling and Communications
<b>437-007-0505</b>	Bridges	<b>437-007-0945</b>	Electrical Signal Systems
<b>437-007-0510</b>	Flagging	<b>437-007-0950</b>	Voice Communication on Combined Signal/Voice Transmitters
<b>437-007-0515</b>	Signs	<b>437-007-1000</b>	General Requirements
<b>437-007-0520</b>	Vehicle General Requirements	<b>437-007-1005</b>	Loading
<b>437-007-0525</b>	Vehicle Warning Devices	<b>437-007-1010</b>	Securing Loads for Transport
<b>437-007-0530</b>	Vehicle Windshields, Windows and Mirrors	<b>437-007-1015</b>	Binders and Wrappers
<b>437-007-0535</b>	Vehicle Passenger Compartments	<b>437-007-1020</b>	Log Truck General Requirements
<b>437-007-0540</b>	Vehicle Brakes	<b>437-007-1025</b>	Log Truck Safety Chains or Cables
<b>437-007-0545</b>	Vehicle Exhaust Systems	<b>437-007-1030</b>	Log Truck and Trailer Hitches (Couplings)
<b>437-007-0550</b>	Vehicle Guards and Controls	<b>437-007-1035</b>	Log Truck and Trailer Brakes
<b>437-007-0555</b>	Vehicle Safety Chains	<b>437-007-1040</b>	Log Truck Trailer Reaches and Drawbars
<b>437-007-0560</b>	Vehicle Seat Belts	<b>437-007-1045</b>	Log Truck Trailers
<b>437-007-0565</b>	Vehicle Inspection, Maintenance and Repair	<b>437-007-1050</b>	Log Truck and Trailer Bunks and Stakes
<b>437-007-0570</b>	Vehicle Operation	<b>437-007-1055</b>	Log Truck and Trailer Bunk Chains and Cables
<b>437-007-0575</b>	Transportation of Personnel	<b>437-007-1060</b>	Additional Requirements for Log Trucks Equipped With Self-Loaders
<b>437-007-0580</b>	Flammable and Combustible Liquids	<b>437-007-1100</b>	General Work Practices
<b>437-007-0600</b>	Inspection and General Requirements for Rigging	<b>437-007-1105</b>	General Requirements for Log and Wood Fiber Unloading, Handling and Storage Areas
<b>437-007-0605</b>	Out-of-Service Requirements for Wire Rope	<b>437-007-1110</b>	Wrappers Removal General
<b>437-007-0610</b>	Line Cutting and Splicing	<b>437-007-1115</b>	Barriers For Securing Log Loads
<b>437-007-0615</b>	Pressed Eyes and End Fittings	<b>437-007-1120</b>	Removing Wrappers From Barrier Secured Loads
<b>437-007-0620</b>	Cable Clamps	<b>437-007-1125</b>	Removing Wrappers From Machine Secured Loads
<b>437-007-0625</b>	Mollies	<b>437-007-1130</b>	Removing Center Wrappers From Unsecured Loads
<b>437-007-0630</b>	Connectors	<b>437-007-1135</b>	Unloading Logs
<b>437-007-0635</b>	Shackles	<b>437-007-1140</b>	Split Loads
<b>437-007-0640</b>	Metal Spar Guyline Safety Straps	<b>437-007-1145</b>	Loading or Unloading Trailers
<b>437-007-0645</b>	Chokers and Straps	<b>437-007-1150</b>	Trailer Hoists
<b>437-007-0650</b>	Guylines — General Requirements	<b>437-007-1155</b>	Dry Land Log and Fiber Handling and Processing
<b>437-007-0655</b>	Guylines — Tail Tree Guying	<b>437-007-1160</b>	Water Dumps, Log Ponds and Booms
<b>437-007-0660</b>	Intermediate Support Trees	<b>437-007-1165</b>	Boats
<b>437-007-0665</b>	Anchoring	<b>437-007-1200</b>	Helicopter Operation.
<b>437-007-0670</b>	Spiking and Releasing Spiked Guylines or Skylines	<b>437-007-1205</b>	Aircraft Refueling/Maintenance Area
<b>437-007-0675</b>	Selecting, Preparing and Rigging Trees	<b>437-007-1300</b>	Scope of Rules
<b>437-007-0680</b>	Blocks and Hanging Blocks.	<b>437-007-1303</b>	Application of Rules
<b>437-007-0690</b>	Metal Towers		
<b>437-007-0700</b>	General Work Practices		
<b>437-007-0705</b>	General Machine Operator Requirements		
<b>437-007-0710</b>	General Machine Requirements		
<b>437-007-0715</b>	Attaching and Spooling Line (Wire or Synthetic Rope)		
<b>437-007-0720</b>	Fairleads		
<b>437-007-0725</b>	Securing Machines		
<b>437-007-0730</b>	Loading Machines		

<b>437-007-1305</b>	General Requirements
<b>437-007-1310</b>	Personnel Assignments
<b>437-007-1315</b>	Single Personnel Assignments
<b>437-007-1320</b>	Personal Protective Equipment
<b>437-007-1325</b>	Training
<b>437-007-1330</b>	Equipment, Vehicles and Machines, General Requirements
<b>437-007-1335</b>	Vehicle Operation
<b>437-007-1340</b>	Machine Operation
<b>437-007-1345</b>	Helicopter Operations
<b>437-007-1400</b>	Jerk Wire Whistle System
<b>437-007-1405</b>	Radio Signal Systems
<b>437-007-1500</b>	Tree Climbing General Requirements
<b>437-007-1505</b>	Climbing Equipment General Requirements
<b>437-007-1510</b>	Climbing Procedures General Requirements
<b>437-007-1520</b>	Four Inch Tie-In Systems
<b>437-007-1525</b>	Belayed (Snubbing) Climbing System
<b>437-007-1530</b>	Three Point Climbing System
<b>437-007-1535</b>	Storage and Transportation of Climbing Equipment General Requirements

## **DIVISION 81**

### **AGRICULTURAL OPERATIONS AND FARMING**

<b>437-081-0879</b>	General
<b>437-081-0985</b>	Pneumatic Powered Tools (Safety Line)
<b>437-081-2305</b>	Storage, Handling, Use of Cylinders (Valve Opening Location)

## **DIVISION 1**

### **RULES FOR THE ADMINISTRATION OF THE OREGON SAFE EMPLOYMENT ACT**

#### **437-001-0001**

##### **Model Rules of Procedure**

The Model Rules of Procedure, OAR 137-001-0005 through 137-001-0100, in effect on January 1, 2008, as promulgated by the Attorney General of the State of Oregon under the Administrative Procedures Act, are adopted as the rules of procedure for rulemaking actions of the Oregon Occupational Safety and Health Division.

[ED. NOTE: The full text of the Attorney General's Model Rules of Procedure is available from the office of the Attorney General or the Oregon Occupational Safety and Health Division.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-1991, f. & cert. ef. 2-25-91; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 2-1994, f. & cert. ef. 5-19-94; OSHA 2-1996, f. & cert. ef. 6-13-96; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 11-2000, f. & cert. ef. 12-12-00; OSHA 2-2002, f. & cert. ef. 3-12-02; OSHA 6-2004, f. & cert. ef. 12-30-04; OSHA 1-2006, f. & cert. ef. 2-14-06; OSHA 8-2008, f. & cert. ef. 7-14-08

#### **437-001-0002**

##### **Notice to Interested Persons of Rulemaking**

Except when adopting a temporary rule, in accordance with ORS 183.335(5), the Director will give prior notice of the proposed adoption, amendment or repeal of an administrative rule by:

(1) Publishing notice of the proposed action in the Secretary of State's Oregon Bulletin at least 21 days prior to the effective date of the action.

(2) Notifying interested persons and organizations on the Division's notification lists of proposed rulemaking actions under ORS 183.335. The same information is also posted on the OR-OSHA web site at [www.orosha.org](http://www.orosha.org). The Division will send the notice to those on OR-OSHA's e-mail notification list, and mail paper copies to those on the hard-copy notification list. Both subscription methods are available on the web site listed above or call the Oregon OSHA Resource Center at 503-378-3272.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 9-1991, f. & cert. ef. 4-25-91; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 7-2006, f. & cert. ef. 9-6-06

#### **437-001-0005**

##### **Authority and Applicability of Rules**

(1) These rules are promulgated under the Director's authority contained in ORS 654.025(2) and 656.726(4).

(2) Adoption Procedures: These rules for the Administration of the Oregon Safe Employment Act (OAR 437, division 1) are adopted in accordance with ORS Chapter 183 and the Director's Rules of Practice and Procedure Applicable to Rule Making Functions.

(3) History: Prior "Rules for the Administration of the Oregon Safe Employment Act" (OAR 436, division 46, rules 436-046-0005 through 436-046-0750) were first adopted by WCB Admin. Order 19-1974; filed 6-5-74; effective 7-1-74. Amendments were made by:

WCB Admin. Order 33-1974, f. 9-5-74, ef. 9-26-74.

WCB Admin. Order, Safety 8-1975, f. 8-5-75, ef. 9-1-75.

WCD Admin. Order, Safety 5-1978, f. 6-22-78, ef. 8-15-78.

WCD Admin. Order, Safety 7-1979, f. 8-20-79, ef. 9-1-79.

WCD Admin. Order, Safety 4-1981, f. 5-22-81, ef. 7-1-81.

WCD Admin. Order, Safety 6-1982, f. 6-28-82, ef. 8-1-82.

WCD Admin. Order, Safety 12-1982, f. 6-28-82, ef. 8-1-82.

WCD Admin. Order, Safety 3-1983, f. 1-31-83, ef. 2-1-83.

WCD Admin. Order, Safety 9-1983, f. 11-15-83, ef. 11-15-83.

WCD Admin. Order, Safety 2-1984, f. 3-2-84, ef. 3-15-84.

WCD Admin. Order, Safety 12-1984, f. 9-20-84, ef. 11-1-84.

WCD Admin. Order, Safety 9-1986, f. 10-7-86, ef. 12-1-86.

APD Admin. Order 6-1987, f. 12-23-87, ef. 1-1-88.

APD Admin. Order 5-1988, f. 5-16-88, ef. 5-16-88.

**NOTE:** See Historical Notes on Page 1 for more complete list of amendments.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 33-1974, f. 9-5-74, ef. 9-26-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 7-1979, f. 8-20-79, ef. 9-1-79; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 12-1982, f. 6-28-82, ef. 8-1-82; WCD 3-1983, f. 1-31-83, ef. 2-1-83; WCD 9-1983, f. 11-15-83, ef. 11-15-83; WCD 2-1984, f. 3-2-84, ef. 3-15-84; WCD 12-1984, f. 9-20-84, ef. 11-1-84; WCD 9-1986, f. 10-7-86, ef. 12-1-86; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 5-1988, f. 5-16-88, ef. 5-16-88; APD 7-1988, f. 6-17-88, cert. ef. 7-1-74; OSHA 10-1990(Temp), f. & cert. ef. 5-31-90; OSHA 24-1990, f. & cert. ef. 10-10-90; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 8-2008, f. & cert. ef. 7-14-08

#### **437-001-0010**

##### **Purpose and Scope of Rules**

(1) These rules provide procedures by which the Division shall implement and enforce the Director's authority and responsibilities under the Act.

(2) The Director adopts OAR chapter 437, division 1, to assure, as far as possible, safe and healthful working conditions for every employee in Oregon, to preserve our human resources and to reduce the substantial burden which is created by occupational injury and disease.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-1990(Temp), f. & cert. ef. 5-31-90; OSHA 24-1990, f. & cert. ef. 10-10-90; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

#### **437-001-0015**

##### **Definitions**

The following definitions shall apply to OAR 437, unless the context requires otherwise:

(1) Abatement — Action by an employer to comply with a cited violation of the Oregon Safe Employment Act.

(2) Accepted disabling claims — Claims accepted for disabling occupational injuries or illnesses only. A disabling injury or illness entitles the worker to compensation for disability or fatality. This type of claim excludes temporary total disability suffered during the first three calendar days after the employee leaves work as a result of the injury unless the worker is an inpatient in a hospital.

(3) Accepted disabling claims rate — The ratio of accepted disabling claims to annual average employment, times 100. Claims and employment figures are based upon the best knowledge of the Department at the time the rate is calculated (ADCR = Number of claims times 100 divided by the number of employees).

(4) Act — The Oregon Safe Employment Act (ORS 654.001 to 654.295, 654.750 to 654.780, and 654.991).



(5) Administrator — The Administrator of the Oregon Occupational Safety and Health Division (Oregon OSHA).

(6) Affected employee — An employee who, in the course and scope of employment, may be or may have been exposed to a condition or practice described in a citation, order, application for an extension date, or variance.

(7) Agent of the employer — Any supervisor or person in charge or control of the work or place of employment including, but not limited to, any manager, superintendent, foreperson, or lead worker.

(8) Appeal — A written request for a hearing to contest a citation, notice or order, a proposed assessment of civil penalty, and the period of time fixed for correction of a violation, or any of these, by filing with Oregon OSHA, within 30 days after receipt of the citation, notice or order, a written request for a hearing before the Workers' Compensation Board. Such a request need not be in any particular form, but must specify the alleged violation that is contested and the grounds upon which the employer considers the citation or proposed penalty or correction period unjust or unlawful.

(9) Audiometric zero — The lowest sound pressure level that the average young adult with normal hearing can hear.

(10) Board — The Workers' Compensation Board created by ORS 656.712.

(11) Catastrophe — An accident in which two or more employees are fatally injured, or three or more employees are admitted to a hospital or to an equivalent medical facility.

(12) Citation — A document issued by Oregon OSHA according to ORS 654.071 to cite a violation. A citation may include a notice of penalty and a correction order.

(13) Complaint — A written or oral report from an employee, employee representative or other person that an occupational safety or health violation may exist at a place of employment. A complaint may be classified as one of the following:

(a) Imminent danger.

(b) Serious.

(c) Other than serious.

(14) Compliance officer — A designated Oregon OSHA employee responsible for conducting inspections or investigations; identifying possible violations and hazards; proposing citations, penalties, and correction dates; and to assist employers and employees with information to correct violations and hazards.

(15) Comprehensive consultation — A consultation to cover the entire establishment and entails a physical hazard assessment evaluation and a review of records, written programs, and the employer's illness and injury prevention plan. Comprehensive consultations include a written report by the provider including findings, recommendations, and the guidance necessary to resolve the problems noted in the report.

(16) Comprehensive inspection — A substantially complete inspection of the establishment. An inspection may be comprehensive even though, as a result of the exercise of professional judgment, not all potentially hazardous conditions, operations, and practices within those areas are inspected.

(17) Consultant — A designated Oregon OSHA employee whose responsibility is to provide a full range of occupational safety and health assistance including, but not limited to, providing employers, employees, and other agency staff with information, advice, and recommendations on maintaining safe employment or a place of employment; on correcting violations or hazards; and on applicable occupational safety and health rules, techniques, devices, methods, practices, and development of safety and health programs.

(18) DART (Days Away, Restricted, or Transferred) — The number of lost workday injury and illness cases experienced by 100 full-time workers (DART rate = Number of lost workday cases times 200,000 divided by the number of employee hours worked).

**NOTE:** Lost workday cases include both days away from work and days of restricted time.

(19) Decibel (dB) — Unit of measurement of sound level. For purposes of this rule, decibels refer to the combined average of the readings at 2000, 3000, and 4000 Hz on the audiogram.

(20) Department — The Department of Consumer and Business Services.

(21) Director — The Director of the Department of Consumer and Business Services, or the director's designee.

(22) Division — The Oregon Occupational Safety and Health (Oregon OSHA) Division of the Department of Consumer and Business Services.

(23) Emphasis Program — A special program that targets Oregon OSHA activity to industries that have a high potential for serious injuries or illnesses, according to national or state data.

(24) Employee — Any individual, including a minor, whether lawfully or unlawfully employed, who engages to furnish services for a remuneration, financial or otherwise and who is subject to the direction and control of an employer, and includes:

(a) Salaried, elected and appointed officials of the state, state agencies, counties, cities, school districts, and other public corporations.

(b) Any person provided with workers' compensation coverage as a subject worker under ORS Chapter 656, whether by operation of law or by election.

(25) Employee exposure record — A record of monitoring or measuring that contains qualitative or quantitative information indicative of employee exposures to toxic materials or harmful physical agents. This includes both individual exposure records and general research or statistical studies based on information collected from exposure records.

(26) Employee medical record — A record that contains information concerning the health status of an employee or employees exposed or potentially exposed to toxic materials or harmful physical agents. These records may include, but are not limited to:

(a) The results of medical examinations and tests;

(b) Any opinions or recommendations of a physician or other health professional concerning the health of an employee or employees; and

(c) Any employee medical complaints relating to workplace exposure. Employee medical records include both individual medical records and general research or statistical studies based on information collected from medical records.

(27) Employee representative — A bargaining unit representative, or an individual selected by employees, who serves as their spokesperson.

(28) Employer:

(a) Any person who has one or more employees, or

(b) Any sole proprietor or member of a partnership who elects workers' compensation coverage as a subject worker according to ORS 656.128, or

(c) Any corporation in relation to the exposure of its corporate officers except for corporations without workers' compensation coverage under ORS 656.128 and whose only employee is the sole owner of the corporation, or

(d) Any successor or assignee of an employer. For purposes of this definition and ORS 654.005(5)(c), a business or enterprise is substantially the same entity as the predecessor employer if:

(A) A majority of the current business or enterprise is owned by the former owners or their immediate family members, and

(B) One or more of the following criteria exist for both the current and predecessor business or other enterprise:

(i) Substantially the same type of business or enterprise.

(ii) Similar jobs and working conditions.

(iii) A majority of the machinery, equipment, facility, or methods of operation.

(iv) Similar product or service.

(v) A majority of the same supervisory personnel.

(vi) A majority of the same officers and directors.

**NOTE:** Not every element needs to be present for an employer to be a successor. The cumulative facts will determine the employer's status.

(29) Employer representative — An individual selected by the employer, to serve as spokesperson or, in the absence of a selected spokesperson, the person in charge of the place of employment at the time of the inspection.

(30) Environmental exposure sampling — Sampling of the workplace environment, performed for a variety of reasons including identifying of contaminants and their sources, determining worker exposures, and checking the effectiveness of controls.

(31) **Establishment** — An establishment is a single physical location doing business, offering services, or having industrial operations. For activities where employees do not work at a single physical location, such as construction; transportation; communications, electric, gas, and sanitary services; and similar operations, the establishment is the main or branch office, terminal, station, etc. that either supervise such activities or are the base for personnel to carry out these activities.

(a) **One location/multiple establishments.** Normally, one business location has only one establishment. Under limited conditions, two or more separate businesses that share a single location are separate establishments. An employer may divide one location into two or more establishments only when:

(A) Each of the establishments represents a distinctly separate business;

(B) Each business is engaged in a different economic activity;

(C) Separate reports are routinely prepared for each establishment on the number of employees, their wages and salaries, sales or receipts, and other business information. For example, if an employer operates a construction company at the same location as a lumber yard, each business can be a separate establishment.

(b) **Multiple locations/one establishment.** Only under certain conditions. An employer may combine two or more physical locations into a single establishment only when:

(A) The employer operates the locations as a single business operation under common management;

(B) The locations are all near each other; and

(C) The employer keeps one set of business records for all the locations, such as records on the number of employees, their wages and salaries, sales or receipts, and other kinds of business information. For example, one manufacturing establishment might include the main plant, a warehouse a few blocks away, and an administrative services building across the street.

(c) **Telecommuting from home.** For employees who telecommute from home, the employee's home is not a business establishment, and a separate 300 Log is not required. Employees who telecommute must be linked to one of the business' establishments under 437-001-0700(15)(c).

(32) **Farm operation** — Any operation involved in the growing or harvesting of crops or the raising of livestock or poultry.

(33) **Filed** — A document is considered to have been filed on the date of postmark if mailed, or on the date of receipt, if transmitted by other means to Oregon OSHA, DCBS, or the WCB.

(34) **First aid** — Any one-time treatment and subsequent observation of minor scratches, cuts, burns, splinters, or similar injuries that do not ordinarily require medical care. Such one-time treatment and subsequent observation is considered first aid even though it is provided by a physician or registered professional personnel.

(35) **Fixed place of employment** — The entire facility maintained by an employer at one general location, and operations provided from that facility, regardless of the size or number of departments or buildings in the facility. For the purpose of determining repeat violations, fixed place of employment includes employers or owners engaged in construction activity who will be at a single work-site continuously for more than 24 months. Forest activities are excluded as are construction sites established for a period of 24 months or less.

(36) **Hazard** — A condition, practice, or act that could result in an injury or illness to an employee.

(37) **Health hazard** — Health hazards mean carcinogens, lead, silica, toxic metals and fumes, vapors or gases, toxic or highly corrosive liquids or chemicals, chemical sensitizers, pesticides, fungicides, solvents, biological agents, and harmful physical stress agents.

(38) **Imminent danger** — A condition, practice, or act that exists in any place of employment and could reasonably be expected to cause death or serious physical harm immediately.

(39) **Injury or illness** — An injury or illness is an abnormal condition or disorder. Injuries include cases such as, but not limited to, a cut, fracture, sprain, or amputation. Illnesses include both acute and chronic illnesses, such as, but not limited to, skin disease, respiratory disorder, or poisoning.

**NOTE:** Record injuries and illnesses only if they are new, work-related

cases that meet one or more of the recording criteria.

(40) **Inspection** — An official examination of a place of employment by a compliance officer to determine if an employer is in compliance with the Act.

(a) **Programmed.** Inspections conducted under the provisions of OAR 437-001-0057.

(b) **Unprogrammed.**

(A) **Follow-up inspection** — An inspection to determine if a previously identified violation has been corrected.

(B) **Complaint inspection** — An inspection made in response to a complaint.

(C) **Accident investigation** — A systematic appraisal of an accident sequence to determine causal factors, corrective actions and preventative measures.

(D) **Referral inspection** — An inspection made in response to a referral.

(41) **Letter of corrective action** — A letter stating the corrective action(s) taken by the employer to comply with the violation(s) that were not corrected at the time of the inspection.

(42) **Lost workdays** — The actual number of days after, but not including, the day of injury or illness when the employee would have worked, but could not perform all or any part of their normal assignment during all or any part of the employee's next regular workday or shift because of the occupational injury or illness.

(43) **Medical treatment** — Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even though provided by a physician or registered professional personnel, nor does it include treatment ordinarily considered diagnostic or preventative in nature.

(44) **MOD (Experience Rating Modification Factor)** — Experience rating recognizes the differences among individual insureds with respect to safety and loss prevention. It compares the experience of individual insureds with the average insured in the same classification. The differences are reflected by an experience rating modification, based on individual payroll and loss records, that may result in an increase, decrease, or no change in premium.

(45) **North American Industry Classification System (NAICS)** — A classification system developed by the Executive Office of the President/Office of Management and Budget, for use in classifying establishments by the type of activity in which they are engaged. Each establishment is assigned an industry code for its major activity. The 2002 edition of the NAICS manual is used for coding.

(46) **Order to correct** — A written Oregon OSHA order that directs an employer to abate a violation within a given period of time.

(47) **Owner** — Every person having ownership, control, or custody of any place of employment or of the construction, repair, or maintenance of any place of employment.

(48) **Partial inspection** — An inspection with focus limited to certain potentially hazardous areas, operations, conditions, or practices at the establishment. The inspection may include review of injury and illness records and any required programs relative to the inspection.

(49) **Person** — One or more individuals, legal representatives, partnerships, joint ventures, associations, corporations (whether or not organized for profit), business trusts, or any organized group of persons, and includes the state, state agencies, counties, municipal corporations, school districts, and other public corporations or subdivisions.

(50) **Personal exposure samples** — Measurement of contaminants or physical agents to characterize the environment the breathing or hearing zone of individual workers in order to evaluate their specific work exposures. Personal samplers are placed on the worker to obtain either one continuous sample covering a portion of the workday or consecutive samples covering a stated time period.

(51) **Physician or other licensed health care professional** — A physician or other licensed health care professional is an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows them to independently perform, or be delegated the responsibility to perform, the activities described by this regulation.



**(52) Place of employment:**

(a) Includes every place that is fixed or movable; indoors, outdoors, or underground; and the premises and structures appurtenant thereto.

(b) Includes every place where an employee works or intends to work either temporarily or permanently.

(c) Includes every place where there is any process, operation, or activity related, either directly or indirectly, to an employer's industry, trade, business, or occupation, including a labor camp provided by an employer for their employees or by another person engaged in providing living quarters or shelters for employees.

(d) Does not include any place where the only employment involves nonsubject workers employed in or around a private home.

(e) Does not include any corporate farm where the only employment involves the farm's family members, including parents, spouses, sisters, brothers, daughters, sons, daughters-in-law, sons-in-law, nieces, nephews, or grandchildren.

**(53) Record** — Any recorded information regardless of its physical form or character.

**(54) Recordable occupational injuries or illnesses** — Any occupational injuries or illnesses that result in:

(a) Fatalities, regardless of the time between the injury and death, or the length of the illness;

(b) Lost workday cases, other than fatalities, that prevent the employee from performing their normal assignment during any part of the employee's next regular, or any subsequent workday or shift; or

(c) Nonfatal cases without lost workdays that result in transferring to another job or terminating employment, require medical treatment (other than first aid), or involve loss of consciousness or restriction of work or motion. This category also includes any diagnosed occupational illnesses that are reported to the employer but are not classified as fatalities or lost workday cases.

**(55) Referral** — A notification made to the responsible agency of safety or health violations observed by an Oregon OSHA employee, other federal, state or local government representatives, or the media.

**(56) Rule** — Any agency directive, standard, regulation or statement of general applicability that implements, interprets, or prescribes law or policy, or describes the procedures or practice requirements of the agency and is adopted according to the Administrative Procedure Act. The term includes the amendment or repeal of a prior rule, but does not include, unless a hearing is required by statute, internal management directives, regulations, or statements that do not substantially affect the interests of the public.

**(57) Scheduling list** — An electronic or paper list of places of employment or employers scheduled for inspection.

**(58) Serious physical harm:**

(a) Injuries that could shorten life or significantly reduce physical or mental efficiency by inhibiting, either temporarily or permanently, the normal function of a part of the body. Examples of such injuries are amputations, fractures (both simple and compound) of bones, cuts involving significant bleeding or extensive suturing, disabling burns, concussions, internal injuries, and other cases of comparable severity.

(b) Illnesses that could shorten life or significantly reduce physical or mental efficiency by inhibiting, either temporarily or permanently, the normal function of a part of the body, even though the effects may be cured by halting exposure to the cause or by medical treatment. Examples of such illnesses are cancer, pneumoconiosis, narcosis, or occupational infections (caused by biological agents), and other cases of comparable severity.

**(59) Standard threshold shift (STS)** — A change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in either ear.

**(60) Substantially similar** — As it relates to a repeat violation, a second violation that is closely related in substance or form to a previous violation.

**(61) Suspended penalty** — A penalty that is determined but not assessed.

**(62) Variance** — The written authority given by Oregon OSHA to an employer permitting the use of a specific alternative means or method to comply with the intent of a rule. Specific types of variances are:

(a) Permanent — A variance that remains in effect until modified or revoked according to OAR 437-001-0430;

(b) Temporary — A variance granted for a stated period of time to permit the employer to achieve compliance with a new rule;

(c) Research — A variance granted for a stated period of time to allow industrial or governmental research designed to demonstrate or validate new and improved safety or health techniques or products; and

(d) Interim order — The temporary authority for an employer to use an alternative means or method by which the employer effectively safeguards the safety and health of employees until final action can be taken on the variance request.

**(63) Violation** — The breach of a person's duty to comply with an Oregon occupational safety or health statute, regulation, rule, standard, or order.

**(a) Specific classifications of violations are:**

(A) Serious violation — A violation where there is substantial probability that death or serious physical harm could result from an existing condition, or from one or more practices, means, methods, operations, or processes that have been adopted or are in use in a place of employment unless the employer did not, and could not with the exercise of reasonable diligence, know about the violation;

(B) Other than serious violation — A violation that is other than a serious or minimal violation; and

(C) Minimal violation — A violation that does not have a direct or immediate relationship to the safety or health of employees.

**(b) Specific types of the above classifications are:**

(A) Willful violation — A violation that is committed knowingly by an employer or supervisory employee who, having a free will or choice, intentionally or knowingly disobeys or recklessly disregards the requirements of a statute, regulation, rule, standard, or order.

(B) Unabated violation — A violation that has not been fully corrected by the date ordered.

**(C) Repeat violation:**

(i) An employer's second or subsequent violation involving a substantially similar violation as the earlier violation or violations.

(ii) In these rules, repeat, repeated and repeatedly are used synonymously.

(D) First-instance violation — An employer's first violation of a particular statute, regulation, rule, standard, or order.

(E) Egregious — Those conditions that normally constitute a flagrant violation of the Oregon Safe Employment Act, or Oregon OSHA standards, or regulations such that each instance of the violation is cited separately.

(c) Combined violation — Multiple violations of the same statute, regulation, rule, standard, or order within an establishment that have been combined as one violation to indicate an overall lack of compliance with a safety or health statute, regulation, rule, standard, or order.

(d) Grouped violation — Multiple violations of different statutes, regulations, rules, standards or orders, within an establishment that have been combined as one violation:

(A) To indicate an increase in the severity or probability of the violation, or

(B) Recordkeeping and posting requirements involving the same document, or

(C) The violations are so closely related as to constitute a single hazardous condition.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.326, 654.412 - 654.423, 654.991

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 7-1979, f. 8-20-79, ef. 9-1-79; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 9-1983, f. & ef. 11-15-83; WCD 2-1984, f. 3-2-84, ef. 3-15-84; WCD 12-1984, f. 9-20-84, ef. 11-1-84; WCD 9-1986, f. 10-7-86, ef. 12-1-86; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-1990(Temp), f. & cert. ef. 5-31-90; OSHA 24-1990, F. & cert. ef. 10-10-90; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 2-1996, f. & cert.

ef. 6-13-96; OSHA 5-1998, f. & cert. ef. 10-15-98; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 11-1999(Temp), f. & cert. ef. 10-20-99 thru 4-14-00; OSHA 4-2000, f. 4-14-00, cert. ef. 4-15-00; OSHA 11-2001, f. 9-14-01, cert. ef. 1-1-02; OSHA 7-2002, f. & cert. ef. 11-15-02; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 7-2006, f. & cert. ef. 9-6-06; OSHA 5-2007(Temp), f. & cert. ef. 9-5-07 thru 2-29-08; OSHA 1-2008, f. 2-22-08, cert. ef. 3-1-08; OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09; OSHA 10-2009, f. & cert. ef. 10-5-09; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12; OSHA 2-2015, f. 3-18-15, cert. ef. 1-1-16

#### **437-001-0020**

##### **Authority to Administer**

(1) The Administrator is hereby granted authority to do whatever is reasonably necessary or incidental to accomplish the purposes of the act and these rules.

(2) The Administrator shall administer the Voluntary Compliance Program separately from the enforcement activities. The Voluntary Compliance Program includes but is not limited to, education, consultations, demonstration programs and research.

(3) The Administrator shall name employees or classifications of employees who shall have authority to carry out the voluntary compliance and enforcement provisions of the Oregon Safe Employment Act.

(4) The official acts of the Administrator in administering and enforcing the Oregon Safe Employment Act, and the acts of those designated by the Administrator, shall be considered the official acts of the Director.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0025**

##### **Liberal Construction**

The Act, other rules adopted thereunder, and these rules shall be liberally construed to accomplish the preventative purposes expressed in the Act.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0030**

##### **Use of Gender and Number**

For the purpose of these rules, each gender includes the other gender, the singular includes the plural and the plural includes the singular.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0035**

##### **Occupational Safety and Health Rules**

(1) The Division shall propose occupational safety and health rules for adoption by the Director. Proposed rules shall be:

- (a) Reasonable;
- (b) Mandatory;
- (c) Designed to protect the life, safety and health of employees;

and

(d) At least as effective as occupational safety and health rules adopted by the U.S. Department of Labor.

(2) In proposing rules for adoption, the Division may consider recommendations from national standards-setting organizations, the U.S. Department of Labor, National Institute of Occupational Safety and Health (NIOSH), Centers for Disease Control (CDC), employers, employees, employee representatives and the Division's occupational safety and health experience.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0045**

##### **Adoption, Amendment or Repeal of Rules**

(1) Rules will be adopted, amended or repealed in accordance with ORS Chapter 183 and the Director's rules of practice and procedure applicable to rule-making functions.

(2) Any person may request the adoption, amendment or repeal of a rule.

(3) A request for adoption, amendment or repeal of a rule shall:

(a) Be in writing, addressed to the Administrator, OR-OSHA Division, Labor and Industries Building, Salem, Oregon 97310;

(b) Identify the rule proposed for adoption, amendment or repeal and include reasons for the change.

(4) Upon receipt of the request the Division shall within 30 days, either deny the request or initiate rule-making proceedings.

(5) If the request to adopt, amend or repeal a rule is denied, the Division shall state its reasons for the denial in writing. A copy shall be mailed to the person making the request and all other persons upon whom a copy of the request was served.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0047**

##### **Voluntary Compliance Program, General**

(1) The Division shall provide a coordinated program to encourage voluntary compliance with occupational health and safety laws, rules and codes and to promote more effective workplace health and safety programs.

(2) The program shall be designed to assist employers achieve voluntary compliance and shall be administered to preclude issuance of citations and penalties except when an employer fails to correct serious violations identified.

(3) The program shall include but is not limited to:

- (a) Health and safety consultative services;
- (b) Worker and employer training and education;
- (c) Research projects including: Causes and prevention of industrial accidents and diseases; trends demonstrating the need for licensing, certification, or need or revised rules;

(d) Demonstration projects utilizing new or innovative processes or procedures to assist workers and employers in preventing occupational injury or disease, whatever the cause;

(e) Publication and general distribution of training and accident prevention materials.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0050**

##### **Enforcement Program, General**

The Division shall provide an effective program to enforce statutes, regulations, rules, standards or orders for the protection of life, safety and health of employees. This program shall include, but is not limited to:

- (1) The inspection of places of employment;
- (2) The investigation of industrial accidents, fatalities or catastrophes;

(3) Issuing citations for violations;

(4) Identifying safety and health hazards which may or may not be violations and bringing them to the attention of employers and employees;

(5) Issuing reasonable correction orders;

(6) Assisting employers and employees in safety and health matters;

(7) Assessing and collecting civil monetary penalties for violations;

(8) Holding informal conferences with employers or employees to discuss citations, penalties or correction orders and other safety and health matters without limiting or extending the employer's appeal rights; and

(9) Granting or denying extensions of the times set by correction orders.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

### **437-001-0053**

#### **Preserving Physical Evidence at the Scene of an Accident**

(1) Employers, their representatives, or others shall not disturb the scene of a fatality or catastrophe other than to conduct the rescue of injured persons or mitigate an imminent danger until authorized by the Administrator (or designee), or directed by a recognized law enforcement agency.

(2) In order to preserve physical evidence at the scene of a fatality or catastrophe, the Administrator is authorized to limit the number of employer representatives or employee representatives accompanying the compliance officer during the documentation of the scene. The employer representative and employee representative must be provided an opportunity to document the scene prior to disturbance or removal of physical evidence.

(3) If an employer, their representative or others disturb the scene of a fatality or catastrophe other than to conduct the rescue of injured person(s) or mitigate an imminent danger before authorized by the Administrator or directed by a recognized law enforcement agency, a minimum penalty of \$200 may be assessed.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 7-1999, f. & cert. ef. 7-15-99

### **437-001-0055**

#### **Priority of Inspections**

Inspections will be prioritized to predominantly focus enforcement activities on places of employment reasonably believed to be the most unsafe. Inspections should generally be made according to the following priorities:

(1) Imminent danger — An inspection should be made as soon as possible after the Division becomes aware of the condition, practice, or act that could reasonably be expected to immediately cause death or serious physical harm.

(2) Fatality, catastrophe or accident — An inspection, if appropriate, should be made as soon as possible after the Division becomes aware of a fatality, catastrophe, or accident.

(3) Complaint — An inspection may be initiated when the Division receives a complaint, based on the nature and credibility of the allegations.

(4) Referral — An inspection may be made if safety or health violations were observed and referred by a Division employee; federal, state, or local government representative, or the media, based on the nature and credibility of the allegations.

(5) Programmed Inspections — An inspection may be made by following the provisions in OAR 437-001-0057.

(6) Follow-up — An inspection may be initiated when one or more of the following exists:

(a) The employer requests removal of a red warning notice.

(b) A variance request has been denied.

(c) An extension of time has been denied.

(d) The Division believes the employer may not be in compliance with a previously cited violation, or needs monitoring as they progress towards correction of a violation.

(e) The employer is issued an order to correct for one or more violations that if cited could be considered serious.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.326, 654.412 - 654.423 & 654.991

Hist.: WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 11-1999(Temp), f. & cert. ef. 10-20-99 thru 4-14-00; OSHA 4-2000, f. 4-14-00, cert. ef. 4-15-00; OSHA 10-2009, f. & cert. ef. 10-5-09

### **437-001-0057**

#### **Scheduling Inspections**

The following rules are intended to predominantly focus enforcement activities on the places of employment that the director reasonably believes to be the most unsafe.

(1) The Division will schedule programmed inspections according to a priority system based on written neutral administrative standards.

(2) The Division will identify the most hazardous industries and places of employment through information obtained from the Department of Consumer and Business Services claim and employer files, the Bureau of Labor Statistics Occupational Injury and Illness Survey, the Bureau of Labor Statistics Census of Fatal Occupational Injuries, the Oregon Employment Department, and knowledge of recognized safety and health hazards associated with certain processes. Health hazards include carcinogens, lead, silica, toxic metals and fumes, vapors or gases, toxic or highly corrosive liquids or chemicals, chemical sensitizers, pesticides, fungicides, solvents, harmful physical stress agents, and biological agents.

(3) Scheduling lists will be provided by the Division to its field offices, at least annually.

**Note:** An employer will be exempt from a programmed inspection of a fixed site from seven days prior to the scheduled date of an Oregon OSHA consultation to 60 days after receipt of the written consultation report.

An employer will be exempt from a programmed inspection of a construction, forest activities or Agriculture Labor Housing site from seven days prior to the scheduled date of an Oregon OSHA consultation to 30 days after receipt of the written consultation report.

(4) Scheduling Safety Inspections for Fixed Places of Employment.

(a) The scheduling lists are compiled, using an electronic scheduling system, for safety enforcement managers to schedule inspections at fixed places of employment for each compliance officer. Written neutral administrative standards (the seven criteria listed below) are standardized using a statistical weighting method involving t-scores. These weighted scores are averaged across the seven criteria to create a composite score. This composite score is used to determine the position of each industry (using the 4-digit NAICS code) on the list from most to least hazardous. [Table not included. See Ed. Note.] Lists are divided into 10 tiers. Places of employment are randomly selected for inspection within each tier using the following percentages whenever a list is generated. The percentages will not be affected by the places of employment excluded in (4)(b) unless the number of exclusions makes it impossible to meet the target percentage. When that occurs, all remaining eligible places of employment will be selected. The scheduling lists will be sorted by field office.

(A) 30 percent of places of employment under the NAICS identified as Tier A.

(B) 25 percent of places of employment under the NAICS identified as Tier B.

(C) 20 percent of places of employment under the NAICS identified as Tier C.

(D) 15 percent of places of employment under the NAICS identified as Tier D.

(E) 12.5 percent of places of employment under the NAICS identified as Tier E.

(F) 10 percent of places of employment under the NAICS identified as Tier F.

(G) 7.5 percent of places of employment under the NAICS identified as Tier G.

(H) 5 percent of places of employment under the NAICS identified as Tier H.

(I) 2.5 percent of places of employment under the NAICS identified as Tier I.

(J) No more than 0.05 percent of places of employment under the NAICS not otherwise identified in Tiers A through I.

(b) Places of employment will be exempt from programmed inspections if any of the following conditions apply:

(A) A location has received a comprehensive safety inspection within the previous 36 months.

(B) A location has received Voluntary Protection Program (VPP) status.

(C) A location is in its second year, or later, of the Safety and Health Achievement Recognition Program (SHARP).



(D) A location has graduated from the Safety and Health Achievement Recognition Program (SHARP). Locations are exempt from inspection for 36 months after graduation.

(E) A location has received two consecutive comprehensive safety inspections with no serious, willful, or egregious violations, and with no inspections of any type resulting in serious, willful, or egregious violations since the date of the first of the two consecutive comprehensive inspections.

(F) A location has received certification as meeting the British Standards Institute's OHSAS 18001 standards (Occupational Health and Safety Management Systems). Evidence of certification must be provided before the start of an inspection.

(G) A location has a MOD rate of 0.50 and they provide evidence to that effect before the start of an inspection.

(c) The field office managers will provide each compliance officer a list of inspections that are assigned in descending order from tiers A through J. The compliance officer will make a reasonable effort to inspect each place of employment on that list prior to receiving another list; however, failure to inspect all places of employment on a list will not invalidate subsequent inspections. The compliance officer's list will generally be followed in descending order but may be inspected in any order to use the compliance officer's time efficiently.

(5) Scheduling Safety Inspections for Construction and Forest Activities.

(a) Construction and forest activities scheduling lists will be used by safety enforcement managers and compliance staff to focus enforcement efforts on employers with the most hazardous places of employment. Employers will be selected and placed on one of two lists based on the following criteria:

(A) Construction List — The following written neutral administrative standards will be used to select and rank employers on this list. Construction employers that have one or more accepted disabling claims in the first 12 of the previous 18 months and are ranked in the top 500 construction employers. The employers on this list will be ranked statewide using violation history, weighted claims rate, and weighted claims count as described in subsection (b) of this section. The 500 employers with the most points will be placed on a list.

(B) Forest Activities List — The following written neutral administrative standards will be used to select and rank employers on this list. Forest activities employers that have one or more accepted disabling claims in the first 12 of the previous 18 months and are ranked in the top 50 forest activities employers. The employers on this list will be ranked statewide using violation history, weighted claims rate, and weighted claims count as described in subsection (b) of this section. The 50 employers with the most points will be placed on a list.

(b) Ranking Factors: Construction and forest activities employers are ranked using violation history, weighted claims rate, and weighted claims count. The rankings from each factor are combined to produce a score for each employer, and the employers are ranked based on their score. The top 500 construction employers will be on one list and the top 50 forest activities employers will be on another list:

(A) Violation History: Employers with a violation history will be assigned points for each violation on citations that have become a final order within the previous 36 months. Willful violations are assigned five points, failure to abate violations four points, repeat violations three points, serious violations two points, and other-than-serious violations one point. Average points per citation will be determined with the employer having the most points receiving a ranking of one followed by the employer with the next highest points receiving a ranking of two, etc. Employers not inspected within 36 months are given a ranking of zero, that will put them at the top of this category.

(B) Weighted Claims Count: Selected claims from the first 12 of the previous 18 months are assigned points based on the seriousness of the claim. These points are totaled for each employer. Employers are ranked on the total points with the employer having the most points receiving a rank of one, followed by the second highest weighted claims count receiving a ranking of two, etc.

(C) Weighted Claims Rate: Employers are ranked in this category with the highest weighted claims rate receiving a ranking of one, followed by the second highest weighted claims rate receiving a ranking of two, etc. The weighted claims count described in (B) above is used to determine the claims rate.

**NOTE:** The selected claims and the points assigned to the selected claims will be identified by the agency in a program directive.

(c) The field office manager will provide selected compliance officers the construction and/or forest activities lists. The compliance officers will make a reasonable effort to locate and inspect those employers on the construction and forest activities lists, however failure to inspect all employers on a list will not invalidate subsequent inspections.

(6) Scheduling Health Inspections for Fixed Places of Employment.

(a) The scheduling lists are designed as an electronic scheduling system used by health enforcement managers to schedule inspections at fixed places of employment for each compliance officer. Places of employment will be listed by NAICS and randomly selected within each tier using the following percentages whenever a list is generated. The scheduling lists will be sorted by field office.

(A) 7.5 percent of places of employment under the NAICS identified as Tier A.

(B) 2.5 percent of places of employment under the NAICS identified as Tier B.

(C) Not more than 0.05 percent of places of employment under NAICS not identified in Tiers A and B.

(b) Places of employment will be exempt from programmed inspections if any of the following conditions apply:

(A) A location has received a comprehensive health inspection within the previous 36 months.

(B) A location has received Voluntary Protection Program (VPP) status.

(C) A location is in its second year, or later, of the Safety and Health Achievement Recognition Program (SHARP).

(D) A location has graduated from the Safety and Health Achievement Recognition Program (SHARP). Locations are exempt from inspection for 36 months after graduation.

(E) A location has received two consecutive comprehensive health inspections with no serious, willful, or egregious violations, and with no inspections of any type resulting in serious, willful, or egregious violations since the date of the first of the two consecutive comprehensive inspections.

(F) A location has received certification as meeting the British Standards Institute's OHSAS 18001 standards (Occupational Health and Safety Management Systems). Evidence of certification must be provided before the start of an inspection.

(G) A location has a MOD rate of 0.50 and they provide evidence to that effect before the start of an inspection.

(c) The field office managers will provide each compliance officer a list of inspections that are assigned in descending order from the health scheduling lists. The compliance officer will make a reasonable effort to inspect each place of employment on that list prior to receiving another list; however, failure to inspect all places of employment on a list will not invalidate subsequent inspections. The compliance officer's list will generally be followed in descending order, but may be inspected in any order to use the compliance officer's time efficiently.

(7) Scheduling Health Inspections for Nonfixed Places of Employment — An inspection may be scheduled when information such as recognized health hazards known to be associated with certain processes are reasonably thought to exist at a place of employment.

(8) Random Inspections — The Division will conduct random inspections of places of employment that are scheduled and conducted under written neutral administrative standards. Program directives will be issued and changed when the director believes it necessary to preserve the random nature of the inspections.

(9) Emphasis Inspections — An inspection may be made if the place of employment is included in a national or local safety or health emphasis program. Emphasis programs are established by identifying the most hazardous industries and processes through information

obtained from the Department of Consumer and Business Services claim files, the Bureau of Labor Statistics Occupational Injury and Illness Survey, the Oregon Employment Department, and knowledge of recognized hazards associated with certain processes. Program directives will be issued to establish and describe emphasis programs and the written neutral administrative standards that will be used to schedule the inspections.

(10) Farm Labor Housing Inspections — Farm labor housing is a national and local emphasis program. A list of all known farm labor housing locations will be sent to field offices annually. Locations may be selected and inspected in any order to make efficient use of available resources. Housing locations not on the list may also be inspected. Farm labor housing is not an agricultural operation; therefore, the agriculture exemption for employers of 10 or fewer permanent, year-round employees does not apply to farm labor housing inspections.

(11) The Division will annually make reasonable efforts to notify, in writing, each employer whose place of employment is rated as one of the most unsafe places of employment, that there is increased likelihood of inspection of the employer's place of employment and consultative services are available.

(12) Agricultural employers with 10 or fewer permanent, year-round employees, both full-time and part-time, will be subject to scheduled inspections only if any of the following has occurred:

(a) A valid complaint has been filed according to ORS 654.062, or

(b) Within the preceding two-year period, an accident at the employer's agricultural place of employment resulted in death or a serious disabling injury from a violation of the Oregon Safe Employment Act or rules adopted under the act, or

(c) The employer and principal supervisors of the agricultural establishment have not annually completed at least four hours of instruction on agricultural safety or health rules and procedures. This instruction must be documented.

(A) Instruction includes any instruction conducted or accepted by Oregon OSHA or instruction related to agricultural safety and health that is offered or approved by any public or private college, university, or governmental agency. The employer must maintain documentation of the instruction. The documentation must include the date, provider, subject, and duration of the instruction, and the signature of the person completing the instruction.

**NOTE:** Certified Applicator Training Core A and B offered by the Oregon Department of Agriculture will satisfy a portion of the required training. One hour credit will be allowed annually for this training.

(B) For purposes of these sections, the time period begins to run when the instruction is received, or

(d) Within the preceding four-year period, the agricultural establishment has not had a comprehensive consultation by an individual acting in a public or private consultant capacity. For purposes of this section, the time period begins to run when the consultation is received, or

(e) If the consultation was done and the agricultural employer has failed to correct violations noted in the consultation report within 90 days after receiving the report.

**NOTE:** For purposes of determining the number of employees, members of the agricultural employer's immediate family are excluded. This includes grandparents, parents, children, step-children, foster children, and any blood relative living as a dependent of the core family.

(13) Evaluation of Enforcement Scheduling:

(a) Each year Oregon OSHA will complete a summary evaluation of enforcement scheduling, including (but not limited to) the number of scheduled inspections and the basis for those inspections, the number of attempted scheduled inspections that could not be completed, and the results of those inspections.

(b) At least every three years beginning by July 1, 2012, Oregon OSHA will assess the enforcement scheduling system and other available data to ensure that the scheduling system continues to accomplish its statutory purpose of predominantly focusing Oregon OSHA enforcement resources on those places of employment reasonably believed to be the most unsafe.

**NOTE:** See Safety by NAICS, Safety by Tier/Rank, Health by NAICS, to review safety and health scheduling lists of employers identified by NAICS codes and their placement in appropriate tiers.

[ED. NOTE: Tables and Appendices referenced are available from the agency.]  
Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.326, 654.412 - 654.423 & 654.991  
Hist.: WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 10-1995, f. & cert. ef. 11-29-95; OSHA 2-1996, f. & cert. ef. 6-13-96; OSHA 11-1999(Temp), f. & cert. ef. 10-20-99 thru 4-14-00; OSHA 4-2000, f. 4-14-00, cert. ef. 4-15-00; OSHA 7-2006, f. & cert. ef. 9-6-06; OSHA 10-2009, f. & cert. ef. 10-5-09; OSHA 2-2011, f. 9-29-11, cert. ef. 10-1-11

#### **437-001-0060**

##### **Advance Notice**

(1) No person shall give advance notice of an inspection without authority of the Director, subject to penalties as prescribed in ORS 654.991(2).

(2) If the Director approves a request for advance notice of an inspection:

(a) The notice shall not be given more than 24 hours in advance; and

(b) When advance notice is given to the employer, the employer shall, without delay, notify the employee representative of the proposed inspection, or in the absence of an employee representative, immediately post a notice in a sufficient number of locations in the place of employment to reasonably inform employees of the planned inspection. Any employer who fails to notify the employees, through posting, of the proposed inspection shall be assessed a penalty not to exceed \$1,000 as prescribed in ORS 654.086(1)(f).

(3) It will not be considered advance notice to advise a federal or state agency of a proposed inspection in order to avoid duplicate inspections or to facilitate enforcement.

(4) Any person who gives advance notice of any safety or health inspection without authority from the director or his designee shall be punished, upon conviction, by being assessed a penalty not to exceed \$1,000 or be imprisoned for not more than six months, or both, as prescribed in ORS 654.991(2).

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0065**

##### **Right of Entry**

(1) A Compliance Officer has the right to enter and inspect any place of employment during working hours or at other reasonable times, within reasonable limits, and in a reasonable manner.

(2) Right of Entry. A compliance officer is authorized to document an accident scene reported pursuant to OAR 437-001-0700(21) prior to an opening conference when it is likely that the accident scene cannot be preserved and after a reasonable attempt is made to contact an employer or employer representative.

(3) A Compliance Officer shall present his/her credentials to an employer or employer's representative to establish the Compliance Officer's right of entry.

(4) The Compliance Officer shall not sign any form of liability release or agree to waive any rights of the Department.

(5) The Compliance Officer shall have the right to enter and inspect any place of employment accompanied or assisted by outside engineers or specialists who have signed confidentiality agreements, agreeing to protect the inspected parties' trade secrets.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 7-2002, f. & cert. ef. 11-15-02

#### **437-001-0070**

##### **Inspection Warrants**

If an OSS/OHS is denied entry, the APD may institute action to obtain an inspection warrant, as provided for in ORS 654.202 to 654.216.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0075****Opening Conference**

(1) The Compliance Officer shall, if possible, conduct a joint opening conference with the employer or a representative, and a representative of the employees, if any, and shall:

(a) Present credentials as a means of identification;

(b) Explain the purpose, nature and intended scope of the inspection;

(c) Request the records which need to be examined;

(d) Obtain the name of the employer representative, if any, and give that person the opportunity to accompany the Compliance Officer on the inspection;

(e) Obtain the name of the employee representative, if any, and give that person the opportunity to accompany the Compliance Officer on the inspection;

(f) Explain that employee participation may be accomplished through random interviews;

(g) Determine if there are trade secrets to be protected;

(h) Inform the employer that sampling may be done and photographs may be taken;

(i) Explain that past and present efforts will be evaluated to determine good faith penalty adjustments.

(j) Determine what personal protective equipment is required in the place of employment and arrange to have and use such equipment; and

(k) Explain that a closing conference will be held with both the employer or a representative, and a representative of the employees, if any.

(2) Where the Compliance Officer decides it is not practical to hold a joint conference, separate conferences shall be held for the employer or a representative, and a representative of the employees, if any. Notes shall be taken by the Compliance Officer during the separate conferences; these will be available upon request.

(3) Where separate conferences are necessary, the Compliance Officer shall determine if their conduct will delay observation or evaluation of workplace safety or health hazards. In such cases, the conferences shall be brief and, if appropriate, reconvened after the Compliance Officer's inspection of the place of employment.

(4) Where the holding of an opening conference will prevent timely evaluation of the workplace, it may be abbreviated to a simple introduction and identification of the Compliance Officer. The remainder of the opening conference will be covered as soon as possible.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0080****Inspection Without Employer or Employer Representative**

(1) An Compliance Officer may make an inspection without an opening or closing conference if the employer or employer representative is absent or declines to participate.

(2) If the employer, employer representative or employee representative is absent from the place of employment, following the inspection the Compliance Officer shall make at least one attempt on each of two different days to advise the employer, employer representative or employee representative concerning the inspection.

(3) No inspection will be made if neither the employer, employer representative, nor employees are present at the place of employment, except when executing an inspection warrant as provided in ORS 654.216(2) or when posting a Red Warning Notice as provided for in ORS 654.082.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1974, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD

6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0085****Employee Representation on Inspection Team**

(1) An employee representative has the right to accompany an Compliance Officer during an inspection of the place of employment.

(2) If there is no employee representative during an inspection, the Compliance Officer shall interview, if practicable, a reasonable number of employees about safety and health in the place of employment.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0090****Inspection Procedures**

During an inspection an Compliance Officer is authorized to:

(1) Inspect without unreasonably disrupting operations in a place of employment all required records, conditions, structures, materials and methods for compliance with statutes, regulations, rules, standards and orders, and identify and document hazards;

(2) Photograph or video tape unsafe acts, practices, procedures or physical hazards;

(3) Take environmental and personal exposure samples;

(4) Allow a different employer representative or employee representative to accompany the Compliance Officer during separate phases of the inspection if this will facilitate the inspection;

(5) Resolve all disputes as to who is the representative authorized by the employees to accompany the Compliance Officer on the inspection.

(6) Deny the right to participate to any person whose conduct interferes with a fair and orderly inspection;

(7) Inform the employer representative and employee representative of any apparent violations, and hazards;

(8) Collect, including but not limited to, information for the purpose of classifying any apparent violations as minimal, other than serious, or serious and collect data for the purpose of calculating penalty assessment;

(9) Interview privately a reasonable number of employees about safety and health in the place of employment;

(10) Receive information in confidence from an employee or employee representative; and

(11) Stop the inspection if a situation involving imminent danger is observed, request the employer or the employer representative to advise affected employee and correct the imminent danger, and post a Red Warning Notice according to OAR 436-046-0096, if the employer or the employer representative refuses to protect the employees from the imminent danger.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

**437-001-0096****Red Warning Notice**

(1) The Red Warning Notice shall be authorized by either the Director, Administrator, Manager of Enforcement, or Field Office Supervisors. For purposes of this rule, a Camp Closure Notice is a Red Warning Notice.

(2) When action is necessary to preclude or eliminate exposure of employees to a condition which, if such exposure occurred or continued, would constitute a violation of any statute or of any lawful regulation, rule, standard or order, affecting employee safety or health at a place of employment, a Compliance Officer shall obtain permission to post a Red Warning Notice. The notice shall be posted in plain view of any person likely to use the place of employment, machine, device, apparatus or equipment that constitutes the hazard.



(3) Any place of employment, machine, device, apparatus or equipment on which a Red Warning Notice has been posted shall not be operated or used by any person until:

(a) The condition has been made safe and healthful; and

(b) The Red Warning Notice has been removed by the Division; however

(c) Nothing in this section prohibits an employer from using any place of employment, or operating any machine, device, apparatus or equipment, exclusively for the purpose of remedying the violation, pursuant to the instructions on the Red Warning Notice.

(4) No person shall deface or destroy a Red Warning Notice, or remove it without authorization from the Division.

(5) The Red Warning Notice will be removed after:

(a) Notification from the employer that the condition has been corrected; and

(b) A follow-up inspection or other information confirms that the condition has been corrected.

(6) Any person who violates or directs another to violate OAR 437-001-0096(3) or (4) shall be assessed a civil penalty of not less than \$100 and not more than \$5000 for each such violation.

(7) Any employer who violates or directs an employee to violate OAR 437-001-0096(3), and the violation is determined to be a willful violation, may be assessed a civil penalty of not less than \$5,000 and not more than \$70,000.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 6-2003, f. & cert. ef. 11-26-03

### **437-001-0099**

#### **Closing Conference**

(1) The OSS/OHS shall, if practicable, conduct a joint closing conference with the employer or a representative, and a representative of the employees, if any, and shall advise these representatives:

(a) Of any violation(s) as a result of the inspection and of any hazards which at this time may not be a violation;

(b) Of the right to present any pertinent information regarding the violation(s);

(c) That a citation shall be issued for all other than serious or serious violations even if the violations were corrected at the time of the inspection;

(d) That penalties may be imposed for other than serious violations and shall be imposed for serious violations;

(e) That a reasonable time for correction of each alleged violation shall be proposed;

(f) That further correspondence separate from the citation regarding the inspection will be received detailing the nonviolation hazards observed during the inspection;

(g) Of all posting requirements contained in OAR 437-001-0275 and 437-001-0280;

(h) That if the employer fails to correct any violation by the date indicated on the citation, additional penalties may be imposed for each day the violation(s) remains uncorrected (see OAR 437-001-0235);

(i) Of employee protection against discrimination (see OAR 437-001-0295);

(j) Of appeal rights contained in ORS 654.078 and OAR 438-085-0006 to 438-085-0870;

(k) Of rights to an informal conference (see OAR 437-001-0255);

(l) Of extension procedures (see OAR 437-001-0240);

(m) Of consultative services available through the Department and workers' compensation insurance carriers (see OAR 437-001-0450 through 437-001-0465);

(n) Of variance procedures (see OAR 437-001-0400 through 437-001-0435);

(o) Of the possibility of follow-up inspections;

(p) That if any safety or health condition was encountered which was beyond the expertise of the Compliance Officer, that con-

dition will be considered a referral and may be addressed by another representative of the OR-OSHA Division;

(q) Of the availability of return visits by the Compliance Officer to assist the employer in obtaining compliance.

(2) Where the Compliance Officer decides it is not practical to hold a joint conference, separate conferences shall be held for the employer or a representative, and a representative of the employees, if any. Notes shall be taken by the Compliance Officer during the separate conferences; these will be available upon request.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

### **437-001-0135**

#### **Evaluation of Probability to Establish Penalties**

(1) The probability of an accident which could result in an injury or illness from a violation shall be determined by the Compliance Officer and shall be expressed as a probability rating.

(2) The factors to be considered in determining a probability rating may include, as applicable:

(a) The number of employees exposed;

(b) The frequency and duration of exposure;

(c) The proximity of employees to the point of danger;

(d) Factors, which require work under stress;

(e) Lack of proper training and supervision or improper workplace design; or

(f) Other factors which may significantly affect the degree of probability of an accident occurring.

(3) The probability rating is:

(a) Low — If the factors considered indicate it would be unlikely that an accident could occur;

(b) Medium — If the factors considered indicate it would be likely that an accident could occur; or

(c) High — If the factors considered indicate it would be very likely that an accident could occur.

(4) The probability rating may be adjusted on the basis of any other relevant facts which would affect the likelihood of injury or illness.

Stat. Auth: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 16-1990(Temp), f. & cert. ef. 7-26-90; OSHA 25-1990(Temp), f. & cert. ef. 10-31-90

### **437-001-0140**

#### **Evaluation of Severity to Establish Penalties**

(1) A severity rating for each violation shall be determined by the Compliance Officer on the basis of the degree of injury or illness which is reasonably predictable. If more than one injury or illness is reasonably predictable, the Compliance Officer will determine the severity based upon the most severe injury or illness. Severity ratings will be selected from the following schedule:

(a) Other than Serious — Conditions that could cause injury or illness to employees but would not include serious physical harm;

(b) Serious Physical Harm; or

(c) Death.

(2) The severity rating may be adjusted on the basis of any other relevant facts which would affect the severity of the possible injury or illness.

Stat. Auth: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 16-1990(Temp), f. & cert. ef. 7-26-90; OSHA 18-1990(Temp), f. & cert. ef. 8-15-90; OSHA 25-1990(Temp), f. & cert. ef. 10-31-90; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

**437-001-0145**

**Penalty for Other than Serious or Serious Violation**

(1) A penalty must be assessed for any serious violation and may be assessed for any other than serious violation as established by the intersection of the probability rating and severity rating on the Penalty Schedule (Table 1). In a case where probability and severity are not appropriate considerations, a penalty may be assessed by considering the facts of the violation. [Table not included. See ED. NOTE.]

(2) Penalty adjustments will be made based on an employer's size for all violations except failure to correct. Additional adjustments for an employer's compliance history, injury and illness history, demonstrated good faith efforts and corrective action taken at the time of the inspection will be determined by the Compliance Officer and assessed as follows:

(a) Size adjustments – based on state wide peak employment. [Table not included. See ED. NOTE.]

(b) History adjustments will be based on injuries and illnesses (and trends) during the previous three years, including available information from both Workers' Compensation data and Bureau of Labor Statistics. This assessment will also include a review of the employer's violation history within the past 3 years. Adjustments will be made as follows:

(A) 10% reduction if the compliance officer determines that the information demonstrates a positive history overall.

(B) No reduction if the compliance officer determines that history is what would be expected of a typical employer.

(C) 10% increase if the compliance officer determines that the information demonstrates a negative history overall.

(c) Good faith adjustments will be determined by, but not limited to, review of certain criteria as follows:

(A) Evidence of an overall safety and health program.

(B) Effective communication of safety and health policies.

(C) Promotion of safety and health prior to the inspection.

(D) Employees are clearly involved in the safety and health program.

(E) Management's commitment at all levels is apparent.

(F) Worksite hazard analysis is conducted.

(G) Employees and managers alike are held accountable for safety and health.

Adjustments will be made as follows:

(H) 20% reduction in penalties if the compliance officer determines that the information demonstrates a better than average effort to comply with the law and rules.

(I) No adjustment if the compliance officer determines that the information demonstrates an employer's good faith effort is at the norm.

(J) May increase penalties by 20% if the compliance officer determines that the information demonstrates a poorer than normal effort to comply with the law and rules.

(d) A 10% reduction will be provided for immediate corrections of violations or other unsafe conditions identified during the inspection provided that such corrective action is substantial and not temporary or superficial.

(3) Penalty adjustments, except for size, will not be applied to repeat violations, willful violations or to any violation which the compliance officer determines contributed to an injury, illness or death of an employee. Adjustments will not reduce the penalty to less than the mandatory minimum penalty which has been established by rule or statute or increase them beyond the maximum penalty established by statute.

(4) The adjusted penalty for a serious violation will not be less than \$100.

(5) Penalties for combined violations will be calculated by taking the number of violations into account when assessing probability. Severity will be determined by identifying the most severe reasonably predictable injury or illness that could occur.

(6) The penalty for grouped violations of different rules is calculated by determining the probability and severity for the entire group.

(7) The Administrator may assess a penalty of up to \$7,000 for any violation after considering the facts.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 12-1982, f. 9-20-84, ef. 11-1-84; WCD 6-1987, f. 12-23-87, ef. 1-1-88; APD 5-1988, f. 5-16-88, ef. 5-16-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 7-1995, f. & cert. ef. 7-5-95; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0155**

**Determination of Penalty — Failure to Correct**

(1) A citation shall be issued for an employer's nonabatement of a violation.

(2) Penalties of not more than \$7,000 per day for failure to correct a violation:

(a) May be assessed for each work day, or part of a day, that the violation results in continued exposure after the ordered correction date;

(b) Shall be determined by considering the probability and severity of the original violation, the efforts of the employer to correct the violation, and factors which delayed the employer in correcting the violation; and

(c) If failure to correct the violation results from the employer's lack of diligence, the penalty shall not less than \$50 for other than serious violations, and not less than \$250 for serious violations, for each day or part of a day, during which the violation remains uncorrected.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

**437-001-0160**

**Penalty Criteria — Repeat Violation**

Oregon OSHA will identify repeat violations as follows:

(1) An employer's second or subsequent violation involving a substantially similar violation, cited within the previous three years, will be cited as a repeat violation as described below.

(2) When citing an identical standard for a violation of a previously cited statute, regulation, rule, standard or order it will be presumed to be a repeat violation. That presumption can be disproven only if the circumstances clearly demonstrate that the violation is not substantially similar to a previously cited violation.

Example: Previously a citation was issued for a violation of 1910.212(a)(1) for not guarding in-going nip points. A recent inspection of the same establishment revealed a citation of 1910.212(a)(1) for not guarding against flying chips and sparks. Although the same standard was cited, the hazardous conditions are clearly not substantially similar and a repeat violation would not be appropriate.

(3) When citing a different standard, in some circumstances, substantially similar conditions can be demonstrated. In such cases, if the violations found are substantially similar a repeat violation would be appropriate even though the standards are different.

Example #1: Previously a citation was issued for a failure to install appropriate scaffold guardrails under the Division 3 Construction standards. A recent inspection of the same employer found a violation for a failure to install appropriate scaffold guardrails, but this time the operation involved activities covered by the Division 2 General Industry standard. Although two different standards are cited, the violations are substantially similar and would therefore be treated as a repeat.

Example #2: Previously a citation was issued for failure to have a respirator program in a Division 2 General Industry situation where exposure to asbestos would require one. A recent inspection of the same employer found a violation for not requiring employees to wear respirators while performing lead related tasks in the Lead, Division 3 Construction standard that requires respiratory protection. Although two different standards are cited, the violations are substantially similar and would therefore be treated as a repeat.

(4) Where a previously cited violation is under appeal and not yet final:

(a) The second violation will be cited as a repeat violation; and

(b) Such citation will state that the earlier violation is under appeal and the repeat classification of the current violation will be rescinded if the earlier violation does not become final.

(5) At fixed places of employment, “high serious” and “death” rated violations will be issued as repeat violations at all of an employer’s places of employment in the state. Repeat violations for all other violation types will be limited to the cited place of employment.

(6) At nonfixed places of employment, repeat violations will be based on earlier violations occurring anywhere within the state. Where the Administrator, or designee, determines in his or her discretion that the span of control and nature of activity for a portion of the state is more readily comparable to fixed location activity, repeat violations will be handled in a manner consistent with fixed places of employment.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; APD 7-1989(Temp), f. & ef. 5-1-89; APD 10-1989, f. & cert. ef. 7-7-89; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

#### **437-001-0165**

##### **Determination of Penalty — Repeat Violation**

(1) The penalty for a repeat violation will be calculated by multiplying the penalty for the current violation by the following factors: [Table not included. See ED. NOTE.]

(2) The total penalty for a repeat violation will not be less than \$200, nor more than the statutory maximum of \$70,000.

(3) For a repeated other than serious violation that otherwise would have no initial penalty, a penalty of \$200 will be assessed for the first repeated violation, \$500 if the violation has been cited twice before, and \$1,000 for a third repeat.

[ED. NOTE: Tables referenced are available from the agency.]  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCB 19-1974, f. 6-5-74, ef. 9-1-76; WCB 33-1974, f. 9-5-74, ef. 9-26-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; APD 7-1989(Temp), f. & cert. ef. 5-1-89; APD 10-1989, f. & cert. ef. 7-7-89; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

#### **437-001-0170**

##### **Determination of Penalty — Failure to Report an Occupational Fatality, Catastrophe, or Accident**

If an employer fails to report an occupational fatality, catastrophe, or accident as provided in OAR 437-001-0700(21), a penalty of not less than \$250, nor more than \$7,000, shall be assessed.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 7-2002, f. & cert. ef. 11-15-02

#### **437-001-0171**

##### **Determination of Penalty — Failure to Register a Farm Labor Camp/Facility**

If an operator, employer or contractor fails to register a Farm Labor Camp or facility with Oregon OSHA as required in Division 4/J, 437-004-1120(5)(b), a penalty of not less than \$250 nor more than \$7,000, shall be assessed.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
 Stats. Implemented: ORS 315.164, 658.750, 658.755, 658.780, 658.785, 658.805, 658.810 & 658.825  
 Hist.: OSHA 9-1995, f. & cert. ef. 11-29-95; OSHA 6-2003, f. & cert. ef. 11-26-03

#### **437-001-0175**

##### **Determination of Penalty — Willful or Egregious Violation**

For a willful violation, the Administrator, after considering the facts of the violation, may assess a penalty of not less than \$5,000, or more than \$70,000. The base penalty will normally be multiplied by 25. For egregious violations, the Administrator may assess a separate penalty for each instance of a violation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCB 8-1985, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

#### **437-001-0176**

##### **Determination of Penalty — Failure to Notify Employees of Advance Notice**

The Administrator, after considering the related facts, may assess a penalty not to exceed \$1,000 for each violation of the employer’s failure to give notification by posting to employees of advanced notice.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0180**

##### **Determination of Penalty — Relating to Red Warning Notice**

The Administrator, after considering the related facts, shall assess a penalty of not less than \$100 and not more than \$5,000 for each violation of the restrictions imposed by a Red Warning Notice (see OAR 437-001-0096(3) or (4)).

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74

#### **437-001-0201**

##### **Determination of Penalty — Relating to Field Sanitation**

The Administrator shall assess a civil penalty of not less than \$250 and not more than \$2,500 to employers of workers who are engaged in field activities for the growing and harvesting of food crops intended for human consumption, who substantially fail to comply with OAR 437-004-0110 in division 4, Agriculture.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: WCD 9-1986, f. 10-7-86, ef. 12-1-86; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0203**

##### **Determination of Penalty — Relating to Violations Which Have No Probability and Severity.**

(1) Safety and Health Protection on the Job Poster. If the employer has not displayed the poster, a minimum penalty of \$100 may be assessed.

(2) Annual Summary — If an employer fails to post the summary portion of the OSHA 300 Form no later than February 1 of the year following the year covered by the records and keep it posted until April 30 in accordance with 437-001-0700(17)(d)(A), a minimum penalty of \$200 may be assessed.

(3) Citation — If an employer fails to post the citation after receipt, a minimum penalty of \$200 may be assessed.

(4) OSHA 300 and DCBS 801 Forms — If the employer does not maintain the Log and Summary of Occupational Injuries and Illnesses, OSHA 300 Form, and the Supplementary Record, DCBS Form 801 or equivalent, a minimum penalty of \$100 may be assessed for each OSHA form not maintained.

(5) Access to Records — If the employer fails upon request to provide records for inspection and copying by any authorized representative of OR-OSHA or by any employee, former employee, or authorized representative of employees, a minimum penalty of \$100 may be assessed for each form not made available.

(6) Flush Toilets/Warm Water Hand Washing Facilities — If an employer fails to provide flush toilets or warm water hand washing facilities on a construction site according to OAR 437-003-0020 in 437, division 3, Construction, a penalty of not less than \$200, nor more than \$2,500, shall be assessed.

[ED. NOTE: Forms referenced are available from the agency.]  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.086  
 Hist.: APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 10-1995, f. & cert. ef. 11-29-95; OSHA 11-2001, f. 9-14-01, cert. ef. 1-1-02; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 9-2008, f. 9-19-08, cert. ef. 1-1-09



**437-001-0205****Citation and Notice of Penalty**

(1) If the Division concludes from the review of an inspection report that a rule or order was violated, a citation will be issued to the employer which shall:

(a) State the name of the employer, place of employment, and date of inspection. If the violation occurred on other than the inspection date, the date of the violation will be included;

(b) Describe factually the nature and location of the violation;

(c) State the type of violation, if other than general;

(d) Identify the rule or order violated;

(e) Fix a time for the correction of each violation not corrected at the time of inspection;

(f) State the penalty for each violation;

(g) Identify which, if any, penalties are suspended;

(h) State the total dollar amount of assessed penalties;

(i) Inform the employer of the right to appeal the citation, the civil penalty or the period of time fixed for correction of the violation to the Board;

(j) Inform affected employees of their right to appeal the time fixed for correction of the violation; and

(k) Notify the employer that the citation becomes a final order if an appeal is not filed within 30 days of receipt of the citation by the employer.

(2) Citations and notices of penalties will be served on employers by certified mail, in person, or any method acceptable to the employer.

(3) Each employee representative shall be sent a copy of all citations and notices of penalties issued.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-2007, f. 12-3-07, cert. ef. 1-1-08; OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09

**437-001-0215****Employer Response to Citation and Notice of Penalty**

(1) After receipt of a citation, the employer shall:

(a) Promptly post the citation for employees information for 3 days or until the violation is corrected, whichever occurs last;

(b) Assure that any amendments or withdrawals to a citation are posted with the original citation for 3 days or until the violation is corrected, whichever occurs last;

(c) Correct each violation by the date ordered; and

(d) If no appeal is filed, remit any penalty by the 31st calendar day following receipt of the citation.

(2) The above requirements shall not limit an employer's appeal rights.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-2007, f. 12-3-07, cert. ef. 1-1-08

**437-001-0220****Payment of Penalties**

(1) All civil penalties become due and owing after the citation becomes a final order.

(2) If payment is not received within 20 days after the order becomes final, it may be docketed as a judgment as provided by ORS 654.086(3).

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-2007, f. 12-3-07, cert. ef. 1-1-08

**437-001-0225****Penalty for Falsification**

(1) An employer who knowingly makes any false statement, representation or certification regarding the correction of a violation

shall be assessed a civil penalty of not less than \$100 and not more than \$2,500.

(2) An employer who knowingly makes any false statement, representation or certification regarding the correction of a violation, and that violation is found to have caused or materially contributed to the death of any employee, shall be penalized according to the provisions of ORS 654.991(3). In such cases, the Administrator shall contact the appropriate local district attorney for assistance and possible prosecution.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0230****Correction of Violation**

(1) The employer must correct any violation the employer has been ordered to correct except when:

(a) The abatement date of an other than serious violation has been appealed;

(b) An extension has been granted in accordance with OAR 437-001-0240.

(2) If the violation is corrected at the time of inspection, the correction shall be noted in the Compliance Officer's inspection report. However, such correction shall not provide immunity from the issuance of a citation for the violation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0231****Abatement Verification**

(1) When an employer receives a citation for a violation of the Oregon Safe Employment Act, the employer must notify the appropriate OR-OSHA field office of the corrective action taken to comply with each cited violation by Letter of Corrective Action. Such notification must occur within 10 calendar days after the last abatement date on the citation.

(2) When the compliance officer notes that violations are complied with at the time of the inspection, abatement verification for those violations is not required.

(3) The employer's verification that abatement is complete must include, for each cited violation, the date and method of abatement and a statement that affected employees and their representatives have been informed of the abatement.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0235****Failure to Correct Violation**

If a subsequent inspection reveals that a violation was not corrected, or was only partially corrected, by its correction date, a notice shall be issued to the employer which:

(1) Gives the date and number of the citation which first alleged the violation;

(2) Identifies the uncorrected violation and the date by which it was ordered to be corrected;

(3) Advises the employer of the non-abatement days accumulated to the date of notice;

(4) Advises the employer that daily penalties shall continue to accumulate until the violation is corrected; and

(5) Notifies the employer to advise the indicated field office immediately upon correction of the violation.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0240**

**Extension of Correction Date — Application**

(1) An employer may apply for an extension of the date for correcting a violation.

(2) An application for extension of correction date shall be in writing to the OR-OSHA Division, 350 Winter St. NE, Salem, Oregon 97310, or received by any office of the Department.

(3) The application for extension must include:

- (a) The name and address of the employer;
- (b) The location of the place of employment;
- (c) The citation number;

(d) The item number of the violation for which the extension is sought;

(e) The reason for the request;

(f) Any interim steps being taken to safeguard employees against the cited hazard during the requested extended correction period;

(g) The date by which the employer proposes to complete the correction; and

(h) A statement that a copy of the request for extension has been posted as required by OAR 437-001-0275(2) or for at least 10 days, whichever is longer, and, if appropriate, served on the authorized representative of affected employees, and certification of the date upon which such posting or service was made.

(i) Any employee who feels a posted request for an extension is unjust may contact the Administrator for a review of the matter.

(4) The application shall be postmarked or received by the Department no later than the correction date of the violation for which the extension is requested. For good cause, the Administrator may approve exceptions to this rule.

Stat. Auth.: ORS 654.025(2), 656.726(4))

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-2007, f. 12-3-07, cert. ef. 1-1-08

**437-001-0245**

**Extension of Correction Date — Decision**

(1) A request for extension of the correction date shall be granted or denied on the basis of information in the application, information from employees and any other relevant information.

(2) If the request for extension is granted, a notice of extension of correction date shall be sent to the employer. The notice shall:

(a) Include notice of the right of affected employees or their representative to appeal the extension; and

(b) Be posted for employee's information until the violation is corrected.

(3) If the request for extension is denied, the Administrator shall, with reasonable promptness, inform the employer in writing of the reasons for such denial, and of the employees' and employer's rights to appeal the Administrator's decision.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0250**

**Extension of Correction Date — Revocation**

The Administrator may, for good cause, revoke an extension of correction date.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0251**

**Extension of Correction Date — Hearing on the Application**

Affected employees or the employee representative shall be given the opportunity to request a hearing on an application for an extension of the correction date:

(1) Requests for hearings shall be made in the following manner:

(a) The request shall be made within ten (10) days of posting the application;

(b) A request shall be made to the Administrator and shall contain:

(A) A concise statement of facts showing how the employee(s) would be affected by the extension of correction date;

(B) A statement opposing the extension of the correction date and a concise summary of the evidence supporting the opposition; and

(C) Any views or arguments on any issue of fact or law presented.

(2) Notice of hearing shall be given by the Administrator to affected persons and shall contain:

(a) Time, place and nature of hearing;

(b) Legal authority under which the hearing will be held; and

(c) The issues to be discussed.

(3) The hearing shall be conducted by the Administrator in a manner which will allow all affected persons to submit information on the application.

(4) At any hearing conducted to determine the merits of an extension request, the person requesting the extension of compliance time shall have the burden of proof regarding the request.

(5) The Administrator shall evaluate all information submitted at the hearing and make a determination on the merits of the application.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 3-1983, f. 1-31-83, ef. 2-1-83; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0255**

**Requesting an Appeal and an Informal Conference**

(1) In order to appeal a citation, a written request for appeal must be filed with the Department of Consumer and Business Services and must be directed to the Oregon Occupational Safety and Health Division at 350 Winter St. NE, Room 430, Salem, Oregon 97310, or with any permanently staffed office of the Workers' Compensation Board or Oregon OSHA. The appeal must be filed within 30 days of receiving a citation, notice or order, if the employer intends to contest any proposed assessment of civil penalty, the time fixed for correction of a violation or the violative condition cited. The request must clearly state the item(s) to be contested. An employee appeal of the time fixed for correction of a violation must also be filed within 30 days of the employer's receipt of the citation, notice or order.

(2) An informal conference may be requested by either the employer or employee and used to discuss informally with Oregon OSHA any matter affecting occupational safety and health in the place of employment including, but not limited to:

(a) Clarify statements of observed violations;

(b) Discuss safety and health requirements;

(c) Discuss abatement dates;

(d) Explain the penalty system;

(e) Improve employer/employee understanding of the Oregon Safe Employment Act;

(f) Correct errors;

(g) Narrow issues, or

(h) Negotiate a settlement agreement with an employer to resolve disputed citations that have not become a final order.

(i) Notwithstanding any other rule in this division, proposed civil penalties may be reduced as part of a settlement agreement resolving disputed claims.

(3) A request for an informal conference alone will not be considered as an appeal to the Workers' Compensation Board (although the same document may both request an informal conference and serve notice of an appeal, provided that it includes the required elements). An informal conference concerning a citation will not extend the 30 days allowed for filing an appeal with the Board.

(4) Informal conferences scheduled to negotiate settlement agreements require that the employer notify employees or their representatives of the opportunity to attend.

(5) When both a request for an informal conference and an appeal have been submitted, the appeal request will be forwarded to the Workers' Compensation Board to be scheduled for a formal hearing if issues are not resolved at the informal conference.

Stat. Auth.: ORS 654.025(2), 656.726(4)  
Stats. Implemented: ORS 654.001-654.295  
Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 10-2007, f. 12-3-07, cert. ef. 1-1-08; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0265****Amendment, Reissue or Withdrawal of Citation**

(1) When the Division identifies an error or errors in the citation, the Administrator may, for good cause, amend, reissue or withdraw a citation provided:

(a) Such action will not reduce the occupational safety and health protection of affected employees;

(b) No appeal has been filed with the Board to contest the citation;

(c) The time for filing an appeal has not expired; and

(d) The employee representative, if any, has been notified of the proposed amendment.

(2) The employer receiving an amendment or withdrawal shall post the document as required by OAR 437-001-0275(2).

(3) An amendment or withdrawal of an appealed citation or order shall be made in accordance with the Board's rules (OAR 438) for contested cases. The administrator shall notify the employee representative of any proposed settlement or withdrawal made according to OAR 438.

(4) Any withdrawal, or amendment of an appealed citation that reduces the penalty or extends the correction times of an alleged serious or willful violation shall not be made without written approval of the Director.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 6-2003, f. & cert. ef. 11-26-03

**437-001-0270****Discretion To Prevent a Manifest Injustice**

(1) To prevent a manifest injustice, the Administrator, at the Administrator's own discretion or upon request from the Division or an adversely affected person, may vacate or amend a Division citation, notice or order.

(2) If the Administrator proposes to vacate or amend a Division citation, notice or order, an opportunity to be heard will be given to persons, including affected employees, whose rights may be affected.

(3) All requests for reconsideration based on a manifest injustice shall contain a statement indicating the following:

(a) The request has been posted as required by OAR 437-001-0275(2);

(b) The request has been served on the authorized representative of affected employees, if appropriate;

(c) The date the request was posted or service was made; and

(d) All affected employees have been advised of their right to comment.

(4) No decision shall be made on a manifest injustice request until 10 days after the date of posting or service.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 3-1983, f. 1-31-83, ef. 2-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 7-2006, f. & cert. ef. 9-6-06

**437-001-0275****Posting Requirements**

(1) Where OAR 437, division 1, requires an employer to inform affected employees by posting, copies of the unedited notice or other document shall be posted promptly upon receipt in one or more places where it will readily be observable by affected employees (for

example, a location where employees report each day or at a location from which the employees operate to carry out their activities).

(2) The following documents shall be posted as specified:

(a) The Safety and Health Protection on the Job poster shall be posted permanently;

(b) A copy of any citation received by the employer shall be posted for three days or until the violation(s) is corrected, whichever occurs last;

(c) A copy of any amendment or withdrawal of a citation shall be posted with the original citation for three days or until the violation(s) is corrected, whichever occurs last;

(d) A copy of any notice of extension of correction date shall be posted until the violation(s) is corrected;

(e) A copy of any settlement shall be posted for ten days or until all violations have been corrected, whichever occurs last;

(f) A copy of any Notice of Hearing issued by the Hearings Division shall be posted until the hearing date;

(g) A copy of the variance application shall be posted until a final variance order is issued and posted;

(h) A copy of any variance order shall be posted for 20 days;

(i) A copy of any interim order relating to a variance shall be posted as long as it is in effect;

(j) A copy of any request for extension of correction date shall be posted until the Administrator informs the employer the extension has been granted or denied;

(k) A copy of a request for reconsideration of a citation, notice or order under the manifest injustice provision of OAR 437-001-0270 shall be posted along with the citation until the request has been granted or denied; and

(l) A copy of any feasibility determination relating to engineering controls shall be posted for 20 days for review by employees.

(m) A Field Sanitation Notice (available from the Department of Consumer and Business Services, OR-OSHA Division) shall be posted permanently by affected employers engaged in the production of food crops intended for human consumption. (See OAR chapter 437, division 4, Agriculture, OAR 437-004-0110(8)).

(n) An informational notice of the farm worker camp registration provided by the Department.

(3) If the employer fails to comply with the requirements of OAR 437-001-0275(2), the Administrator may assess a civil penalty of not more than \$1,000 for each violation.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 315.164, 654.086, 658.750, 658.755, 658.780, 658.785, 658.805, 658.810 & 658.825  
Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; WCD 3-1983, f. 1-31-83, ef. 2-1-82; WCD 9-19986, f. 10-7-86, ef. 12-1-86; APD 5-1988, f. & ef. 5-16-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 9-1995, f. & cert. ef. 11-29-95; OSHA 10-1995, f. & cert. ef. 11-29-95; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0280****Posting on Selected Multi-Employer Jobsites**

At a multi-employer jobsite, the owner or the owner's designated prime contractor may be directed to post a notice in a conspicuous manner in a sufficient number of locations throughout the jobsite to reasonably inform the Compliance Officer and the affected employees of the following:

(1) The name and usual jobsite location of each employer and employer representative, on each work shift, who is designated to accompany the Compliance Officer during a safety or health inspection of the jobsite; and

(2) The employee's right to report a hazard to the employer's designated representative.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001-654.295  
Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74



**437-001-0285****Form and Content of a Complaint**

Any person may complain to the Administrator of possible violations of any statute or of any lawful regulation, rule, standard or order affecting employee safety or health at a place of employment. A complaint, whether oral or written, should specify:

- (1) The name of the employer;
- (2) The location of the place of employment;
- (3) Where the condition or practice occurs in the place of employment;
- (4) The nature and frequency of the hazard;
- (5) The number of employees affected by the condition or practice;
- (6) The way in which the complaint is affected by the condition or practice; and
- (7) Whether the complainant desires the complainant's name and address to be kept confidential.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0290****Division Action on Complaints**

(1) At the complainant's request, in writing, their identity shall be kept in confidence. Any employee of the Department who fails to maintain that confidence is subject to disciplinary action.

(2) Complaint inspections shall be scheduled as provided for in OAR 437-001-0055(3).

(3) Any person making a complaint to the Division shall receive written notice of the Division's action if the complainant's address is provided.

(4) Any complainant who feels that the complaint was not adequately investigated by the Division may contact the Administrator for a review of the matter.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0295****Discrimination Complaint**

(1) An employee or prospective employee may file a complaint as provided in ORS 654.062(5) if the employee believes discrimination has occurred because:

(a) The employee opposed a practice forbidden by, or engaged in a practice provided for, in the Oregon Safe Employment Act; or

(b) The employee refused in good faith to be subjected to imminent danger provided the employer refused to correct the hazard or it was not possible to notify the employer of the danger and the employee has notified the OR-OSHA Division or other appropriate agency, of the hazard, unless excused on the basis of insufficient time or opportunity as stated in OAR 839-003-0025, Bureau of Labor and Industries rules.

(2) The complaint shall be filed with the Commissioner of the Bureau of Labor and Industries, 800 NE Oregon Street, Portland, Oregon 97232, within 90 days after the employee had reasonable cause to believe discrimination occurred. The complaint may also be filed in any Circuit Court of the State of Oregon.

(3) The complaint may also be filed with the U.S. Department of Labor, 3056 Federal Office Building, Seattle, Washington 98174 as stated in 29 CFR 1977.15.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 7-2002, f. & cert. ef. 11-15-02; OSHA 8-2007 f. & cert. ef. 12-3-07

**437-001-0400****Application for a Variance**

(1) Any employer may apply for a variance from any rule which specifically affects working conditions. This application may be submitted:

- (a) On a form provided by Oregon OSHA; or
- (b) In any written form that includes all information required by OAR 437-001-0400(2) and (3).

(2) An application for a variance must contain:

- (a) The name and address of the employer;
- (b) The address and location of the place of employment;
- (c) The rule, identified by number, from which the variance is sought;
- (d) The type of variance desired (see OAR 437-001-0015);
- (e) The means by which employees will be protected from the hazard until final action is taken on the variance request;
- (f) A description of the means proposed to be used to provide employment which is as safe and healthful as that obtained by compliance with the rule;

(g) Certification that all affected employees have been informed of the application and of their right to comment on it by;

(A) Giving a copy of the variance application to the authorized employee representative;

(B) Posting a statement giving a summary of the application and specifying where a copy may be examined, at the place or places where notices to employees are normally posted (or in lieu of such summary, the posting of the application itself); and

(C) By other appropriate means.

(h) A description of how employees have been informed of the application and of their right to comment on it to the Administrator, Oregon OSHA, 350 Winter St. NE, Salem, Oregon, before it becomes final.

(i) A statement of whether the employer has previously filed application for a similar variance with any state or federal agency.

(3) If the employer is applying for a research variance, the application must contain the following additional information:

(a) The purpose and contribution of the intended research;

(b) A discussion of the research methods;

(c) The research schedule, including the projected completion date;

(d) A description of the hazards to which employees may be exposed and the steps to be taken to protect the employees safety and health;

(e) Biographical information to indicate the competence of the research staff;

(f) Assurances that the project will be funded adequately; and

(g) Assurances that Oregon OSHA will be given a copy of the research report prepared under the variance. However, no trade secret, patented or patentable material or data need be submitted by the employer.

(4) If the employer is applying for a temporary variance, the application must contain the following additional information:

(a) A statement of facts why the applicant is unable to comply with the rule by the effective date which is supported by representations from qualified persons having firsthand knowledge of the facts and include data on:

(A) Unavailability of professional or technical personnel; or

(B) Unavailability of materials and equipment needed; or

(C) Inability to complete the construction or alteration of facilities by the effective date.

(b) An effective program including a timetable for complying with the rule; and

(c) The specific steps taken to protect employees against the hazard.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0405****Interim Order Relating to a Variance**

(1) An employer applying for a variance may request an interim order to be effective until final action is taken on the variance application. The request for an interim order:

- (a) May be included in the variance application;

(b) Must include all information required by OAR 437-001-0400(2); and

(c) Must state the reasons why the interim order should be granted.

(2) The Administrator, or designee, will decide whether to issue an interim order on the basis of information provided in the application.

(3) If an interim order is granted, it will be sent to the employer. The employer must inform affected employees by posting a copy of the interim order for as long as the order is in effect.

(4) If an interim order is granted, the action will be published in the manner required by OAR 437-001-0410(1).

(5) If the interim order is denied, the employer will be given prompt written notice of, and the reasons for, the denial.

(6) An interim order or a written denial must include notice of the employer's and employees' appeal rights as contained in ORS 654.056 and OAR 438-085-0006 through 438-085-0870.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

### **437-001-0410**

#### **Administrative Action on Variance Application**

(1) After a variance request is determined to be complete and procedurally adequate, as provided in OAR 437-001-0400, Oregon OSHA will publish the request for one day in at least one daily newspaper with general circulation throughout Oregon. The notice will include:

(a) The name of the applicant;

(b) The rule, also identified by number, from which the variance is sought;

(c) A brief description of the variance request;

(d) Notice of opportunity for public comment and hearing;

(e) Information on how interested persons may learn of Oregon OSHA's decision on the variance application; and

(f) The address of the Oregon OSHA office from which further information may be obtained.

(2) Oregon OSHA may conduct an on-site review of the equipment or processes involved in the requested variance.

(3) A variance, if granted, will have no retroactive effect. It will not be the basis for amending or withdrawing a citation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 33-1974, f. 9-5-74, ef. 9-26-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

### **437-001-0411**

#### **Hearings for Variance Applications**

Affected employers or employees will be given the opportunity to request a hearing on an application.

(1) Request for hearings must be made in the following manner:

(a) The request must be made within 30 days of publication of the application;

(b) A request must be made to Oregon OSHA and must contain:

(A) A concise statement of facts showing how the employer or employee would be affected by the relief applied for;

(B) A statement opposing any or all portions of the application, and a concise summary of the evidence supporting each item opposed; and

(C) Any views or arguments on any issue of fact or law presented.

(2) A notice of hearing will be given to affected persons that contains:

(a) Time, place and nature of hearing;

(b) Legal authority under which the hearing will be held; and

(c) The issues to be discussed.

(3) The hearing will be conducted in a manner that will allow all affected persons to submit information on the application.

(4) All information submitted will be evaluated at the hearing and a determination made on the merits of the application.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCD 67-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

### **437-001-0415**

#### **Criteria for Variance Approval**

(1) An application for a permanent variance will be granted only if the applicant demonstrates, and Oregon OSHA determines, including consideration of employee or public comments, that the conditions, practices, operations or processes proposed by the applicant will provide employment that is as safe and healthful as that obtained by compliance with the rule.

(2) An application for a temporary variance will be granted only if the applicant demonstrates, and Oregon OSHA determines, including consideration of employee or public comments, that the applicant is unable to comply with a new rule by its effective date, that the applicant has an effective program for complying with the rule by the agreed upon timetable and that all available steps are being taken in the interim to safeguard employees against the hazard covered by the rule.

(3) An application for a research variance will be granted only if the applicant demonstrates, and Oregon OSHA determines, including consideration of employee or public comments, that the conditions, practices, operations or processes used adequately safeguard employees against the hazards covered by the rule, while demonstrating or validating new or improved safety or health techniques or products.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCD (Safety) 5-1978, f. 6-22-78, cert. ef. 8-15-78; WCD (Safety) 4-1981, f. 5-22-81, cert. ef. 7-1-81; WCD (Safety) 6-1982, f. 6-28-82, cert. ef. 8-1-82; APD 7-1988, f. 6-17-88, cert. ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

### **437-001-0420**

#### **Decision on Variance Request**

(1) If a variance is granted, an order of variance will be issued. The order will include:

(a) The name of the employer to whom the variance is granted;

(b) The place of employment where the variance is applicable;

(c) The type of variance granted;

(d) The specific rule to which the variance applies;

(e) The alternative methods or safeguards to be used by the employer while the variance is in effect;

(f) Notice that the employer may be cited for any violation of the conditions established by the variance;

(g) Information of employees' right to appeal the variance decision; and

(h) Information that if no appeal is filed within 30 days of receipt of the order, the variance approval becomes final and subject to review only as specified in OAR 437-001-0430.

(2) If a variance is denied, a notice of denial will be issued. The notice will include:

(a) The reasons for the denial;

(b) Employer and employee appeal rights;

(c) Information that if no appeal is filed within 30 days of receipt of the notice, the variance denial becomes a final decision without affecting the employer's right to submit another application; and

(d) Information advising the employer that a compliance inspection may be made within 30 days.

(3) A copy of any variance order or denial must be posted for 20 days.

(4) A variance that has been denied, or that has expired, may be followed by a compliance inspection within 30 days.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.326, 654.412 - 654.423 & 654.991

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 10-2009, f. & cert. ef. 10-5-09; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0425****Employer's Duty to Meet Variance Terms**

(1) A variance is not effective until the employer has complied with its terms and requirements.

(2) An employer may be cited for violating the terms of a variance. (See ORS 654.022)

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0430****Modification or Revocation of a Variance**

(1) A variance may be modified or revoked after it has been in effect 6 months or longer upon:

(a) Receiving a request from the employer, an affected employee or an employee representative containing:

(A) The name and address of the applicant;

(B) A description of the relief which is sought;

(C) A statement setting forth with particularity the grounds for relief;

(D) If the applicant is an employer, a certification that the applicant has informed affected employees of the application by:

(i) Giving a copy to their authorized representative;

(ii) Posting at the place or places where notices to employees are normally posted, a statement giving a summary of the application and specifying where a copy of the full application may be examined (or, in lieu of the summary, posting the application itself); and

(iii) Other appropriate means.

(E) If the applicant is an affected employee, they must provide a copy of the application to the employer; and

(F) Any request for a hearing, as provided for in these rules.

(b) Notification and confirmation that the alternative methods or safeguards required by the variance are not fully complied with; or

(c) An Oregon OSHA review.

(2) Oregon OSHA will post the proposed modifications or revocations on the Oregon OSHA web site at [www.orosha.org](http://www.orosha.org) for 30 days. The posting will include:

(a) The name of applicant;

(b) The rule, also identified by number, from which the variance had been granted;

(c) A brief description of the variance and why relief is sought;

(d) Notice of opportunity for public comment and hearing and that a request for hearing will be made within 20 days of publication;

(e) Information on how interested persons may learn of Oregon OSHA's decision on the variance; and

(f) The address of the Oregon OSHA office from which further information may be obtained.

(3) Oregon OSHA may conduct an on-site review of the equipment or processes involved in the proposed, revoked or modified variance.

(4) The employer and affected employees will be advised in writing of modification or revocation of the variance. The modification or revocation order will include:

(a) The name and address of the employer;

(b) The address and location of the place of employment involved;

(c) The rule, identified by number, from which the variance was granted;

(d) The type of variance issued;

(e) The reasons for modification or revocation of the variance; and

(f) The employer's and affected employees appeal rights.

(5) Any request for a hearing will be made within 30 days of publication and must include a short and plain statement of:

(a) How the proposed modification or revocation would affect the requesting party; and

(b) What the requesting party would seek to show on the subjects or issues involved.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1975, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0435****Effect of a Variance Granted by the U.S. Secretary of Labor**

(1) If an employer requesting a variance from an Oregon rule submits proof that a variance from an equivalent federal rule has been granted by the U.S. Secretary of Labor, the federal variance will be accepted in lieu of the information required by OAR 437-001-0400, Application for a Variance.

(2) If an employer is cited for violating an Oregon rule equivalent to a federal rule for which a variance has been granted by the U.S. Secretary of Labor, and all conditions of that variance are being met, the Administrator will consider the federal variance as a possible defense against the citation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0450****Voluntary Compliance Consultative Services**

(1) The Administrator shall provide consultative services to assist employers in preventing occupational injury and disease, whatever the cause.

(2) Consultative services may include providing technical information, but shall not intrude into the business of engineering firms or professional consultants.

(3) When federal funds are utilized to conduct consultative services, the provisions contained in 29 CFR 1908, Consultation Agreement, shall apply.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCB 8-1974, f. 8-5-75, ef. 9-1-75; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. n7-1-74; OSHA 1-1991(Temp), f. & cert. ef. 1-28-91; OSHA 5-1991, f. & cert. ef. 3-18-91

**437-001-0455****Application for Consultative Services**

Employers may make a verbal or written request for consultative services. A request must:

(1) Be made by an employer to a representative of the Division;

(2) Identify the employer and the location where the consultation is desired; and

(3) Define the specific problem or hazard, or other reason for the request.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74

**437-001-0460****Consultation**

When a consultant responds to a request for a consultative service, the employer shall be advised:

(1) Of the purpose of the visit;

(2) Of the Administrative Rules and Standard Operating Procedures pertaining to consultative services; and

(3) That the consultation need not be limited to the specific problems or hazards contained in the request for consultative service, but may also include, at the request of the employer, assistance in developing a plan to correct hazardous conditions, and other services including but not limited to:

(a) Health and safety program assessments;

(b) Training on specific health and safety issues; and

(c) Other assistance designed to promote more effective workplace health and safety programs.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD



7-1988, f. 6-17-88, ef. n7-1-74; OSHA 1-1991(Temp), f. & cert. ef. 1-28-91; OSHA 5-1991, f. & cert. ef. 3-18-91

**437-001-0700****Recordkeeping and Reporting**

(1) Purpose. This rule requires employers to record work-related fatalities, injuries and illnesses.

**Note:** Recording a work-related injury, illness, or fatality does not assign fault to anybody, does not prove the violation of an OSHA rule, nor establish the employee's eligibility for workers' compensation or other benefits.

(2) Scope. This standard covers all employers covered by the Oregon Safe Employment Act, except for the exemptions below.

(3) Exemptions.

(a) If your company never had more than ten (10) employees during the last calendar year, including temporary employees, you do not need to keep Oregon OSHA injury and illness records unless the Director informs you in writing that you must keep records. The exemption for size is based on the number of employees in the entire company within the state of Oregon.

(b) If your company had more than ten (10) employees at any time during the last calendar year, you must keep Oregon OSHA injury and illness records unless your business is in a specific low hazard retail, service, finance, insurance or real estate industry in Table 1. If so, you do not need to keep Oregon OSHA injury and illness records unless the government asks you to keep the records under 437-001-0700(22).

(c) If one or more of your company's establishments are classified in a nonexempt industry, you must keep Oregon OSHA injury and illness records for all of such establishments unless your company is exempted because of size under 437-001-0700(3)(a). If a company has several business establishments engaged in different classes of business activities, some of the company's establishments may be required to keep records, while others may be exempt.

(4) Alternate or Duplicate Records. If you create records to comply with another government agency's injury and illness record-keeping requirements, those records meet Oregon OSHA's record-keeping requirements if Oregon OSHA accepts the other agency's records under a memorandum of understanding with that agency, or if the other agency's records contain the same information as this standard requires you to record. Contact Oregon OSHA for help in determining if your records meet Oregon OSHA's requirements.

(5) Recording Criteria and Forms.

(a) Each employer required to keep records of fatalities, injuries, and illnesses must record each fatality, injury and illness that:

(A) Is work-related; and

(B) Is a new case; and

(C) Meets one or more of the general recording criteria of OAR 437-001-0700(8) or the application to specific cases of OAR 437-001-0700(9) through (12). The decision tree for recording work-related injuries and illnesses below shows the steps involved in making this determination.

(6) Work-Related. You must consider an injury or illness to be work-related if an event or exposure in the work environment either caused or contributed to the resulting condition or significantly aggravated a pre-existing injury or illness. You presume work-relatedness for injuries and illnesses resulting from events or exposures occurring in the work environment, unless an exception in Table 3 specifically applies.

(a) Oregon OSHA defines the work environment as the establishment and other locations where one or more employees work or are present as a condition of their employment.

(b) If it is not obvious where the precipitating event occurred you must evaluate the employee's work duties and environment to decide whether events or exposures in the work environment either caused or contributed to the condition or significantly aggravated a pre-existing condition.

(c) A pre-existing injury or illness is significantly aggravated when an event or exposure in the work environment results in (A) through (D) below. Oregon OSHA considers an injury or illness to be a pre-existing if it resulted solely from a non-work-related event or exposure that occurred outside the work environment.

(A) Death, provided that the pre-existing injury or illness would likely not have resulted in death but for the occupational event or exposure.

(B) Loss of consciousness, provided that the pre-existing injury or illness would likely not have resulted in loss of consciousness but for the occupational event or exposure.

(C) One or more days away from work, or days of restricted work, or days of job transfer that otherwise would not have occurred but for the occupational event or exposure.

(D) Medical treatment in a case where no medical treatment was needed for the injury or illness before the workplace event or exposure, or a change in medical treatment was necessitated by the workplace event or exposure.

(d) An injury or illness occurring in the work environment that falls under one of the following exceptions found in Table 3 is not work-related, and is not recordable.

(e) Travel. Injuries or illnesses occurring during travel are work-related if the employee was engaged in work activities in the interest of the employer and it is not one of the exceptions in Table 4.

(f) Work at home. Injuries and illnesses that occur while an employee works at home, including work in a home office, is work-related if the injury or illness relates directly to the work rather than to the general home environment or setting.

(g) Former employees. If you are notified that a former employee has had a work related injury or illness when they were your employee, record the date of the incident on the appropriate OSHA 300 log for the date of the injury. If the date is not known, use the last day of employment.

(7) New Cases. An injury or illness is a "new case" if:

(a) The employee has no previous recorded injury or illness of the same type that affects the same part of the body, or

(b) The employee previously had a recorded injury or illness of the same type that affected the same part of the body but recovered completely (all signs and symptoms disappeared) from the previous injury or illness and an event or exposure in the work environment caused the signs or symptoms to reappear.

(A) For occupational illnesses where the signs or symptoms may recur or continue in the absence of a workplace exposure, record the case only once when it is diagnosed. Examples include occupational cancer, asbestosis, byssinosis and silicosis.

(B) You are not required to seek the advice of a physician or other licensed health care professional. If you do seek such advice, you must follow their recommendation about whether the case is a new case or a recurrence.

(8) General Recording Criteria. A work-related injury or illness is recordable if it results in any of the following: death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, or loss of consciousness. You must record a case if it involves a significant injury or illness diagnosed by a physician or other licensed health care professional, even if it does not result in death, days away from work, restricted work or job transfer, medical treatment beyond first aid, or loss of consciousness.

**NOTE:** Oregon OSHA believes that most significant injuries and illnesses will result in one of the events listed below. However, there are some significant injuries, such as a punctured eardrum or a fractured toe or rib, for which neither medical treatment nor work restrictions may be recommended. In addition, there are some significant progressive diseases, such as byssinosis, silicosis, and some types of cancer, for which medical treatment or work restrictions may not be recommended at the time of diagnosis but are likely to be recommended as the disease progresses. Cancer, chronic irreversible diseases, fractured or cracked bones, and punctured eardrums are generally considered significant injuries and illnesses, and must be recorded at the initial diagnosis even if medical treatment or work restrictions are not recommended, or are postponed, in a particular case.

(a) Death. You must record an injury or illness that results in death by entering a check mark on the OSHA 300 Log in the space for cases resulting in death.

**Note:** You must also report any work-related fatality to Oregon OSHA within 8 hours. See OAR 437-001-0704.

(b) Days Away from Work. When an injury or illness involves one or more days away from work, you must record the injury or illness on the OSHA 300 Log with a check mark in the space for cases involving days away and an entry of the number of calendar days away from work in the number of days column. If the employee is

out for an extended period of time, you must enter an estimate of the days that the employee will be away, and update the day count when the actual number of days is known.

(A) Begin counting days away on the day after the injury occurred or the illness began.

(B) End the count of days away from work on the date the physician or other licensed health care professional recommends that the employee return to work. This applies regardless of whether the employee returns earlier or later than recommended. If there is no recommendation from the physician or licensed health care professional, enter the actual number of days the employee is off work.

(C) You must count the number of calendar days the employee was unable to work as a result of the injury or illness, regardless of whether or not the employee was scheduled to work on those day(s). Include weekend days, holidays, vacation days or other days off in the total number of days recorded if the employee would not have been able to work on those days because of a work-related injury or illness.

(D) You may stop tracking of the number of calendar days away from work once the total reaches 180 days away from work and/or days of job transfer or restriction. Entering 180 in the total days away column is adequate.

(E) If the employee leaves your company for a reason unrelated to the injury or illness, such as retirement, a plant closing, or to take another job, you may stop counting days away from work or days of restriction/job transfer. If the employee leaves your company because of the injury or illness, you must estimate the total number of days away or days of restriction/job transfer and enter the day count on the 300 Log.

(F) You must enter the number of calendar days away for the injury or illness on the OSHA 300 Log that you prepare for the year in which the incident occurred. If the time off extends into a new year, estimate the number of days for that year and add that amount to the days from the year of occurrence. Do not split the days between years and enter amounts on the logs for two different years. Use this number to calculate the total for the annual summary, and then update the initial log entry later when the day count is known or reaches the 180-day cap.

(c) Restricted Work or Job Transfer. When an injury or illness involves restricted work or job transfer but does not involve death or days away from work, you must record the injury or illness on the OSHA 300 Log by placing a check mark in the space for job transfer or restriction and an entry of the number of restricted or transferred days in the restricted workdays column. Restricted work occurs when, as the result of a work-related injury or illness:

(A) You keep the employee from performing one or more of the routine functions of their job, or from working the full day that they would otherwise work; or

(B) A physician or other licensed health care professional recommends that the employee not perform one or more of the routine functions of their job, or not work the full workday that they would otherwise work.

**NOTE:** For recordkeeping purposes, an employee's routine functions are those work activities the employee regularly performs at least once per week.

(C) A recommended work restriction is recordable only if it affects one or more of the employee's routine job functions. To determine whether this is the case, you must evaluate the restriction in light of the routine functions of the injured or ill employee's job.

(D) A partial day of work is recorded as a day of job transfer or restriction for recordkeeping purposes, except for the day on which the injury occurred or the illness began.

(E) Record job transfer and restricted work cases in the same box on the OSHA 300 Log.

(F) Count days of job transfer or restriction in the same way you count days away from work. The only difference is that, if you permanently assign the injured or ill employee to a job modified or permanently changed to eliminate the routine functions the employee was restricted from performing, you may stop the day count when the modification or change is permanent. You must count at least 1-day of restricted work or job transfer for such cases.

(d) Medical Treatment. If a work-related injury or illness results in medical treatment beyond first aid, you must record it on the OSHA 300 Log. If the employee received medical treatment but remained at work without transfer or restriction and the injury or illness did not involve death, one or more days away from work, one or more days of restricted work, or one or more days of job transfer, you enter a check mark in the box for other recordable cases.

**NOTE:** You must record the case even if the injured or ill employee does not follow the physician or other licensed health care professional's recommendation.

(A) "Medical treatment" is the management and care of a patient to combat disease or disorder. For this rule, medical treatment does not include:

(i) Visits to a physician or other licensed health care professional solely for observation or counseling;

(ii) The conduct of diagnostic procedures, such as x-rays and blood tests, including the administration of prescription medications solely for diagnostic purposes (e.g., eye drops to dilate pupils); or

(iii) "First aid" as in (B) below.

(B) First aid is any of the conditions listed in Table 6. This is a complete list of all first aid treatments for this standard. These treatments are considered first aid regardless of the professional status of the person providing the treatment.

(e) Loss of Consciousness. You must record a work-related injury or illness if the worker becomes unconscious, regardless of the length of time they remain unconscious.

(f) Other Injuries and Illnesses. Work-related cases involving cancer, chronic irreversible disease, a fractured or cracked bone, or a punctured eardrum must always be recorded under the general criteria at the time of occurrence.

(9) Needlestick and Sharps Injury Recording Criteria.

(a) When an injury is diagnosed later as an infectious blood-borne disease, you must update the classification on the 300 log to reflect the new status or classification.

(b) You must record all work-related needlestick injuries and cuts from sharp objects contaminated with another person's blood or other potentially infectious material (as defined by OAR 437-002-1910.1030). You must enter the case on the OSHA 300 Log as an injury. To protect the employee's privacy, do not enter the employee's name on the OSHA 300 Log (see the requirements for privacy cases in OAR 437-001-0700(14)).

**NOTE:** If you have an exposure incident that is not a needlestick, you must still record it if it results in death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, loss of consciousness, or diagnosis of a significant injury or illness, such as HIV, hepatitis B, or hepatitis C.

(10) Medical Removal Recording Criteria. If another Oregon OSHA standard requires the medical removal of an employee, you must record the case on the OSHA 300 Log.

(a) You must enter each medical removal case on the OSHA 300 Log as either a case involving days away from work or a case involving restricted work activity, depending on how you decide to comply with the medical removal requirement. If the medical removal is the result of a chemical exposure, you must enter the case on the OSHA 300 Log by checking the "poisoning" column.

(b) If the case involves voluntary medical removal before reaching the medical removal levels required by an Oregon OSHA standard, do not record the case on the OSHA 300 Log.

(11) Occupational Hearing Loss Recording Criteria.

(a) Hearing loss must be recorded on the OSHA 300 Log by checking the hearing loss column when:

(A) An annual audiogram reveals a Standard Threshold Shift (STS) in either or both ears; and

(B) The hearing level in the same ear is 25 dB above audiometric zero.

**NOTE:** For the ease of the reader the definitions for STS and audiometric zero are provided here.

Standard Threshold Shift (STS) – A change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more in either ear.

Audiometric Zero – The lowest sound pressure level that the average, young adult with normal hearing can hear.

(b) In determining whether an STS has occurred, you may correct for the age of the employee. Use the appropriate table in Appendix A to determine the age adjustment. If the STS is 10 dB or

more after the age correction, it still meets the criteria for recordability.

(c) If you retest the employee's hearing within 30 days of the first test, and the retest does not confirm the recordable STS, you are not required to record the hearing loss case on the OSHA 300 Log. If the retest confirms the recordable STS, you must record the hearing loss case within 7 calendar days of the retest. If subsequent audiometric testing performed under the testing requirements of the noise standard (OAR 437-002-1910.95) indicates that an STS is not persistent, you may erase, delete, or line-out the recorded entry.

(d) If a physician or other licensed health care professional determines that the hearing loss is not work-related or has not been significantly aggravated by occupational noise exposure, the case is not work-related. Do not record it on the OSHA 300 Log.

(12) Tuberculosis Reporting Criteria. If any of your employees has an occupational exposure to anyone with a known case of active tuberculosis (TB), and that employee subsequently develops a tuberculosis infection, as evidenced by a positive skin test or diagnosis by a physician or other licensed health care professional, you must record the case on the OSHA 300 Log by checking the "respiratory condition" column.

(a) Do not record a pre-employment positive skin test because the exposure was not in your workplace.

(b) Line out or erase a recorded case if you prove that:

(A) The worker lives in a household with a person diagnosed with active TB;

(B) The Public Health Department identifies the worker as a contact of an individual with a case of active TB unrelated to the workplace; or

(C) A medical investigation shows that the employee's infection was caused by exposure to TB away from work, or proves that the case was not related to the workplace TB exposure.

(13) Removed.

(14) Forms.

(a) You must use OSHA 300, 300A, and DCBS Form 801 or equivalent forms, for recordable injuries and illnesses. The OSHA 300 form is the Log of Work-Related Injuries and Illnesses, the 300A is the Summary of Work-Related Injuries and Illnesses, and the DCBS Form 801 or equivalent is the Worker's and Employer's Report of Occupational Injury or Disease. The OSHA 300 and 300A Summary forms must be kept on a calendar year basis.

(A) Even if you are exempt from recordkeeping, you must have at each establishment, a copy of DCBS Form 801 or equivalent for each occupational injury or illness that may result in a compensable claim.

(B) You must enter information about your business at the top of the OSHA 300 Log, enter a one or two line description for each recordable injury or illness, and summarize this information on the OSHA 300A Summary form at the end of the year.

(C) You must complete a DCBS Form 801 or equivalent form, for each recordable injury or illness entered on the OSHA 300 Log.

(D) You must enter each recordable injury or illness on the OSHA 300 Log and DCBS Form 801 or equivalent within 7 calendar days of receiving information that a recordable injury or illness has occurred.

(E) An equivalent form is one that has the same information, is as readable and understandable, and is completed using the same instructions as the OSHA form it replaces. Many employers use an insurance form instead of the DCBS Form 801, or supplement an insurance form by adding any additional information required by OSHA.

(F) You may use a computer to keep your records if it can produce equivalent forms when needed.

(G) Privacy Concern Cases. If you have a "privacy concern case," do not enter the employee's name on the OSHA 300 Log. Instead, enter "privacy case" in the space normally used for the employee's name. This will protect the privacy of the injured or ill employee when another employee, a former employee, or an authorized employee representative has access to the OSHA 300 Log. You must keep a separate, confidential list of the case numbers and employee names for your privacy concern cases so you can update

the cases and provide the information to the government if asked to do so.

(H) The following injuries or illnesses are privacy concern cases:

(i) An injury or illness to an intimate body part or the reproductive system;

(ii) An injury or illness resulting from a sexual assault;

(iii) Mental illnesses;

(iv) HIV infection, hepatitis, or tuberculosis;

(v) Needlestick injuries and cuts from sharp objects contaminated with another person's blood or other potentially infectious material; and

(vi) Other illnesses, if the employee voluntarily requests that his or her name not be entered on the log.

**NOTE:** This is a complete list of all injuries and illnesses that are privacy concern cases.

(I) If you reasonably believe that information describing the privacy concern case may be personally identifiable even though the employee's name is omitted, use discretion in describing the injury or illness on both the OSHA 300 and DCBS 801 Forms. You must enter enough information to identify the cause of the incident and the general severity of the injury or illness, but you do not need to include details of an intimate or private nature. For example, describe a sexual assault case as "injury from assault," or an injury to a reproductive organ could be described as "lower abdominal injury."

(J) If you voluntarily disclose the forms to persons other than government representatives, employees, former employees or authorized representatives, you must remove or hide the employees' names and other personally identifying information, except for the following cases:

(i) To an auditor or consultant hired by the employer to evaluate the safety and health program;

(ii) To the extent necessary for processing a claim for workers' compensation or other insurance benefits; or

(iii) To a public health authority or law enforcement agency for uses and disclosures for which consent, an authorization, or opportunity to agree or object is not required under Department of Health and Human Services Standards for Privacy of Individually Identifiable Health Information, 45 CFR.164.512.

(b) In addition, health care employers as defined in ORS 654.412 must record assaults against employees on the Health Care Assault Log. See OAR 437-001-0706.

(15) Multiple Business Establishments. You must keep a separate OSHA 300 Log for each establishment that you expect to operate for 1-year or longer.

(a) You may keep one OSHA 300 Log that covers all of your short-term establishments. You may also include the short-term establishments' recordable injuries and illnesses on an OSHA 300 Log that covers short-term establishments for individual company divisions or geographic regions.

(b) You may keep the records for an establishment at your headquarters or other central location if you can:

(A) Transmit information about the injuries and illnesses from the establishment to the central location within 7 calendar days of receiving information that a recordable injury or illness has occurred; and

(B) Produce and send the records from the central location to the establishment within the time frames required by OAR 437-001-0700(20) and OAR 437-001-0700(21) when you are required to provide records to a government representative, employees, former employees or employee representatives.

(c) You must link each employee with one of your establishments, for recordkeeping purposes. You must record the injury and illness on the OSHA 300 Log of the injured or ill employee's establishment, or on an OSHA 300 Log that covers that employee's short-term establishment.

(d) If the injury or illness occurs at one of your establishments, you must record the injury or illness on the OSHA 300 Log of the establishment where the injury or illness occurred. If the employee is injured or becomes ill and is not at one of your establishments, you must record the case on the OSHA 300 Log at the establishment where the employee normally works.



(16) Covered Employees. You must record on the OSHA 300 Log the recordable injuries and illnesses of all employees on your payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers. You also must record the recordable injuries and illnesses that occur to employees who are not on your payroll if you supervise these employees on a day-to-day basis. If your business is organized as a sole proprietorship or partnership, the owner or partners are not considered employees for recordkeeping purposes.

(a) Record the injuries and illnesses to workers from temporary help agencies or employee leasing services only if you supervise these employees on a day-to-day basis.

(b) If a contractor's employee is under the day-to-day supervision of the contractor, the contractor is responsible for recording the injury or illness. If you supervise the contractor employee's work on a day-to-day basis, you must record the injury or illness.

(c) You and the temporary help service, employee leasing service, personnel supply service, or contractor should coordinate your efforts to make sure that each injury and illness is recorded only once: either on your OSHA 300 Log (if you provide day-to-day supervision) or on the other employer's OSHA 300 Log (if that company provides day-to-day supervision).

(17) Annual Summary and Posting Requirements. At the end of each calendar year, you must:

(a) Review the OSHA 300 Log to verify that the entries are complete and accurate, and correct any deficiencies identified.

(b) Use the OSHA 300A Summary form to create an annual summary of injuries and illnesses recorded on the OSHA 300 Log:

(A) Total the columns on the OSHA 300 Log (if you had no recordable cases, enter zeros for each column total); and

(B) Enter the calendar year covered, the company's name, establishment name, establishment address, annual average number of employees covered by the OSHA 300 Log, and the total hours worked by all employees covered by the OSHA 300 Log.

(C) If you are using an equivalent form other than the OSHA 300A Summary form, the summary you use must also include the employee access and employer penalty statements found on the OSHA 300A Summary form.

(c) Sign or have a representative sign the 300A Summary to certify that the OSHA 300 Log is correct to the best of the signer's knowledge. If the summary is signed by a person other than a company executive, a company executive must also review the OSHA 300 Log in order to be generally familiar with its contents. A company executive is:

(A) An owner of the company when the company is a sole proprietorship or partnership;

(B) An officer of the corporation;

(C) The highest ranking company official working at the establishment; or

(D) The immediate supervisor of the highest ranking company official working at the establishment.

(d) Post a copy of the 300A Summary form in each establishment in a conspicuous place or places where notices to employees are customarily posted. Ensure that the posted annual summary is not altered, defaced or covered by other material.

(e) Post the 300A Summary no later than February 1 of the year following the year covered by the records and keep it posted until April 30.

(f) When you maintain records for all of your establishments at your headquarters or other central location, each 300A Summary form must be specific to each separate establishment.

(18) Paperwork Retention and Updating.

(a) You must save the OSHA 300 Log, the privacy case list (if any), the 300A Summary form, and the DCBS Form 801 or equivalent forms for 5 years following the end of the calendar year that they cover.

(b) During the storage period, you must update your stored OSHA 300 Logs to include newly discovered recordable injuries or illnesses and to show any changes that have occurred in the classification of previously recorded injuries and illnesses. If the descrip-

tion or outcome of a case changes, you must remove or line out the original entry and enter the new information.

NOTE: For more information on retention of medical and exposure records, see OAR 437-002-1910.1020.

(19) Change of Business Ownership. If your business changes ownership, you must record and report work-related injuries and illnesses only for the time you owned the establishment. You must transfer the records to the new owner. The new owner must save all records of the establishment kept by the prior owner, but need not update or correct the records of the prior owner.

(20) Prohibition against discrimination. Oregon Revised Statute 654.062(5) prohibits discrimination against an employee for reporting a work-related fatality, injury or illness. It also protects the employee who files a safety and health complaint, asks for access to this rule, records, or otherwise exercises any rights afforded by law or rule.

(21) Employee Involvement. You must involve your employees and their representatives in the recordkeeping system.

(a) You must establish a reasonable procedure for employees to report work-related injuries and illnesses promptly and accurately. A procedure is not reasonable if it would deter or discourage a reasonable employee from accurately reporting a workplace injury or illness.

(b) You must inform each employee of your procedure for reporting work related injuries and illnesses and tell each employee how they are to report an injury or illness to you.

(c) You must inform employees that they have the right to report work-related injuries and illnesses; and that employers are prohibited from discharging or in any manner discriminating against employees for reporting work-related injuries and illnesses.

(d) You must leave the names on the 300 Log. However, to protect the privacy of injured and ill employees, do not record the employee's name on the OSHA 300 Log for certain "privacy concern cases."

(e) You must provide limited access to your injury and illness records for your employees and their representatives.

(A) Your employees, former employees, their personal representatives, and their authorized collective bargaining representatives have the right to access the OSHA injury and illness records, in accordance with (B) through (E) below.

Note: A personal representative is anybody designated in writing by the employee or former employee, as well as the legal representative of a deceased or legally incapacitated employee.

(B) When an employee, former employee, personal representative, or authorized employee representative asks for copies of your current or stored OSHA 300 Log(s) for an establishment the employee or former employee has worked in, you must give the requester a copy of the relevant OSHA 300 Log(s) by the end of the next business day.

(C) When an employee, former employee, or personal representative asks for a copy of the DCBS Form 801 or equivalent describing an injury or illness to that employee or former employee, you must give the requester a copy of the DCBS Form 801 or equivalent containing that information by the end of the next business day.

(D) When an authorized employee representative asks for copies of the DCBS Form 801 or equivalent for an establishment where the agent represents employees under a collective bargaining agreement, you must give copies of those forms to the authorized employee representative within 7 calendar days. You are only required to give the authorized employee representative information from the releasable part of the DCBS Form 801 indicated in the "Worker" section. You must remove all other information from the copy of the DCBS Form 801 or equivalent form that you give to the authorized employee representative.

(E) You may not charge for these copies the first time. However, if one of the designated persons asks for additional copies, you may assess a reasonable charge for retrieving and copying the records.

(22) Providing Records to Government Representatives. When an authorized government representative asks for the records you keep in compliance with this standard, you must provide copies of

the records within 4 business hours. Authorized government representatives are:

(a) A representative of the Oregon Department of Consumer and Business Services.

(b) A representative of the Secretary of Labor conducting an inspection or investigation under the Act.

(c) A representative of the Secretary of Health and Human Services (including the National Institute for Occupational Safety and Health - NIOSH) conducting an investigation under Section 20(b) of the Act.

(23) Requests from the Bureau of Labor Statistics or DCBS. If you receive a Survey of Occupational Injuries and Illnesses Form from the Bureau of Labor Statistics (BLS), or a BLS designee, or a request for data from the Oregon Department of Consumer and Business Services, you must promptly complete the form and return it following the instructions on the survey form.

(24) Electronic submission of injury and illness records to OSHA.

(a) If your establishment had 250 or more employees at any time during the previous calendar year, and you are required to maintain an OSHA 300 log, then you must electronically submit information from the three recordkeeping forms that you keep under this part (OSHA Form 300A Summary of Work-Related Injuries and Illnesses, OSHA Form 300 Log of Work-Related Injuries and Illnesses, and DCBS Form 801 Injury and Illness Incident Report) to OSHA or OSHA's designee. You must submit the information once a year, no later than the date listed in paragraph (24) (g) of the year after the calendar year covered by the forms.

(b) If your establishment had 20 or more employees but fewer than 250 employees at any time during the previous calendar year, and your establishment is classified in an industry listed in Table 8, then you must electronically submit information from OSHA Form 300A Summary of Work-Related Injuries and Illnesses to OSHA or OSHA's designee. You must submit the information once a year, no later than the date listed in paragraph (24)(g) of the year after the calendar year covered by the form.

(c) If you are required to submit information under paragraph (24)(a) or (24)(b), submit all of the information from the form except the following:

(A) Log of Work-Related Injuries and Illnesses (OSHA Form 300): Employee name (column B).

(B) Injury and Illness Incident Report (DCBS Form 801): Employee name, employee address, name of physician or other health care professional, facility name and address if treatment was given away from the worksite.

**Note:** Each individual employed in the establishment at any time during the calendar year counts as one employee, including full-time, part-time, seasonal, and temporary workers.

(d) If you are required to submit information under paragraph (24)(a) or (24)(b), then you must submit the information once a year, by the date listed in paragraph (24)(g) of the year after the calendar year covered by the form or forms. If you are submitting information because OSHA notified you to submit information as part of an individual data collection under paragraph (24)(g), then you must submit the information as often as specified in the notification.

(e) You must submit the information electronically. Federal OSHA will provide a secure website for the electronic submission of information.

(f) If your enterprise or corporate office had ownership of or control over one or more establishments required to submit information under paragraph (24)(a) or (24)(b), then the enterprise or corporate office may collect and electronically submit the information for the establishment(s).

(g) Reporting Dates.

(A) In 2017 and 2018, establishments required to submit under paragraph (24) must submit the required information according to Table 7 below.

(B) Beginning in 2019, establishments that are required to submit under paragraph (24)(a) or (24)(b) of this section will have to submit all of the required information by March 2 of the year after the calendar year covered by the form or forms (for example, by March 2, 2019, for the forms covering 2018).

[ED. NOTE: Forms, Graphics & Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 7-1979, f. 8-20-79, ef. 9-1-79; WCD 4-1981, f. 5-22-81, ef. 7-1-81; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 11-2001, f. 9-14-01, cert. ef. 1-1-02; OSHA 2-2002, f. & cert. ef. 3-12-02; OSHA 7-2002, f. & cert. ef. 11-15-02; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 7-2006, f. & cert. ef. 9-6-06; OSHA 11-2007, f. 12-21-07, cert. ef. 1-1-08; OSHA 8-2008, f. & cert. ef. 7-14-08; OSHA 2-2015, f. 3-18-15, cert. ef. 1-1-16; OSHA 6-2016, f. 11-10-16, cert. ef. 5-1-17

#### **437-001-0704**

##### **Reporting Fatalities and Injuries to Oregon OSHA**

(1) Purpose. This rule requires employers to report certain work-related fatalities, injuries and illnesses.

**NOTE:** Reporting a work-related injury, illness, or fatality does not assign fault to anybody, does not prove the violation of an OSHA rule, and does not establish the employee's eligibility for workers' compensation or other benefits.

(2) Scope. This standard covers all employers covered by the Oregon Safe Employment Act.

(3) You must report fatalities and catastrophes to Oregon OSHA only in person or by telephone within 8 hours of occurrence or employer knowledge (reported to you or any of your agents) of a fatality or catastrophe:

(a) Fatalities. You must report all work-related fatalities. You must report all fatalities caused by a heart attack at work. Report a fatality only if death occurs within 30 days of the incident.

**NOTE:** Work-related fatalities include those caused by a motor vehicle accident that happens during the employee's work shift.

(b) Catastrophe. A catastrophe is an incident in which two or more employees are fatally injured, or three or more employees are admitted to a hospital or an equivalent medical facility (for example, a clinic) as a result of the same incident.

(4) You must report in-patient hospitalizations, loss of an eye, and either amputations or avulsions that result in bone loss, to Oregon OSHA within 24 hours after occurrence of the work related incident or employer knowledge (reported to you or any of your agents) of the event. When an amputation, avulsion or loss of an eye involves in-patient hospitalization, you need only to make a single report.

(a) In-Patient Hospitalization. In-patient hospitalization is the formal admission to the in-patient service of a hospital or clinic for care or medical treatment (includes first-aid). Hospitalization for observation only is not reportable, nor is emergency room treatment. In-patient hospitalization for any reason after emergency room treatment is reportable. You must report all incidents that result in in-patient hospitalization, including heart attacks and motor vehicle accidents. Report in-patient hospitalizations only if they occur within 24 hours of the incident that caused the hospitalization.

(b) Loss of an eye. Report the loss of an eye only if it occurs within 24 hours of the incident that caused the loss.

(c) Amputations and avulsions.

(A) An amputation is the traumatic loss of a limb or other external body part, including a fingertip. Amputations include loss of a body part due to a traumatic incident, a gunshot wound, and medical amputations due to irreparable traumatic injuries.

(B) An avulsion is the tearing away or forcible separation of any body part by trauma.

(C) Report an amputation or avulsion only if it includes bone and/or cartilage loss.

(D) Report an amputation or avulsion only if it occurs within 24 hours of the incident that caused the amputation or avulsion.

**NOTE:** There are additional reporting requirements for injuries relating to Mechanical Power Presses, 1910.217(g). Oregon OSHA Office locations and telephone numbers are: [Table not included. See ED. NOTE.]

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2015, f. 3-18-15, cert. ef. 1-1-16

#### **437-001-0706**

##### **Recordkeeping for Health Care Assaults**

**NOTE:** For further information, instructions, and resources, visit Oregon OSHA's healthcare workplace violence assault log web page at: [www.cbs.state.or.us/osha/subjects/health\\_care\\_assault\\_log.html](http://www.cbs.state.or.us/osha/subjects/health_care_assault_log.html).

(1) Purpose. This rule implements the amendments to the Oregon State Employment Act, ORS 654.412 through 654.423, providing specific provisions for the recordkeeping and reporting requirements of health care assaults, and additional recordkeeping requirements as authorized under ORS 654.025(2) and 656.726(4)(a).

**NOTE:** For the ease of the reader, ORS 654.412 through 654.423 is reprinted as Appendix B to OAR 437-001-0706.

(2) Scope and Definitions. This rule applies to health care employers and home health care services provided by health care employers. Health care employers only include hospitals and ambulatory surgical centers, which are defined in ORS 442.015: "Hospital" means a facility with an organized medical staff, with permanent facilities that include inpatient beds and with medical services, including physician services and continuous nursing services under the supervision of registered nurses, to provide diagnosis and medical or surgical treatment primarily for but not limited to acutely ill patients and accident victims, to provide treatment for the mentally ill or to provide treatment in special inpatient care facilities. "Ambulatory surgical center" means a facility that performs outpatient surgery not routinely or customarily performed in a physician's or dentist's office, and is able to meet health facility licensure requirements.

(3) Health care assault recordkeeping. In addition to existing general recordkeeping requirements in OAR 437-001-0700, Recordkeeping and Reporting, health care employers must use the Health Care Assault Log, or equivalent, to record assaults.

See ORS 654.412 through 654.423 for details required to be recorded. Appendix A of 437-001-0706 provides instructions for completing the form.

**NOTE:** If the incident results in an overnight hospitalization, a catastrophe, or fatality, it must be immediately reported to Oregon OSHA. Record recordable injuries, illnesses, fatalities on the OSHA 300 Log. See OAR 437-001-0700.

(4) Other recordkeeping information. The following sections of OAR 437-001-0700 apply to health care assault recordkeeping and reporting:

Section (6) Work-relatedness

Section (14)(b) Forms

Section (15) Multiple Business Establishments

Section (16) Covered Employees

Section (19) Change of Business Ownership

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4).

Stats. Implemented: ORS 654.412 - 654.423

Hist.: OSHA 11-2007, f. 12-21-07, cert. ef. 1-1-08; OSHA 8-2008, f. & cert. ef. 7-14-08; OSHA 2-2011, f. 9-29-11, cert. ef. 10-1-11

#### **437-001-0740**

##### **Falsification or Failure to Keep and Post Records or Make Reports**

Oregon OSHA will cite employers who fail to keep the records, post the summaries or make the reports required by OAR 437-001-0700 (except 437-001-0700(21) which is addressed in 437-001-0170) or 437-001-0706. Citations will be 'other than serious' and carry a penalty of at least \$100 but not more than \$1000 for each violation.

**NOTE:** ORS 654.991(3) provides that anybody who knowingly makes a false statement, representation or certification in any application, record, report, plan or other document filed or required by ORS 654.001 to 654.295, will, on conviction, be fined not more than \$10,000 or be imprisoned for not more than 6 months, or both. Also, ORS 654.086(1)(e) provides for civil penalties for falsification of a document.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; WCD 5-1978, f. 6-22-78, ef. 8-15-78; WCD 6-1982, f. 6-28-82, ef. 8-1-82; APD 6-1987, f. 12-23-87, ef. 1-1-88; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 11-2001, f. 9-14-01, cert. ef. 1-1-02; OSHA 7-2002, f. & cert. ef. 11-15-02; OSHA 11-2007, f. 12-21-07, cert. ef. 1-1-08

#### **437-001-0742**

##### **Recordkeeping Variances and Exceptions**

In order to achieve a uniform national system for the recordkeeping and reporting of occupational injuries and illnesses, the State of Oregon and the U.S. Department of Labor have agreed that as applied to employers, defined in subsections 3(5) of the **Occupational Safety and Health Act of 1970** (Public Law 91-596, 81 STAT 1950), the state will not grant any variances or exceptions to the recordkeeping and reporting regulations of this part without prior approval of the U.S. Bureau of Labor Statistics.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.120(2) & 654.120(5)

Hist.: WCB 19-1974, f. 6-5-74, ef. 7-1-74; APD 7-1988, f. 6-17-88, ef. 7-1-74; OSHA 11-2001, f. 9-14-01, cert. ef. 1-1-02

#### **437-001-0760**

##### **Rules for All Workplaces**

(1) Employers' Responsibilities.

(a) The employer must see that workers are properly instructed and supervised in the safe operation of any machinery, tools, equipment, process, or practice that they are authorized to use or apply. This rule does not require a supervisor on every part of an operation nor prohibit workers from working alone.

(b) The employer must take all reasonable means to require employees:

(A) To work and act in a safe and healthful manner;

(B) To conduct their work in compliance with all applicable safety and health rules;

(C) To use all means and methods, including but not limited to, ladders, scaffolds, guardrails, machine guards, safety belts and lifelines, that are necessary to safely accomplish all work where employees are exposed to a hazard; and

(D) Not to remove, displace, damage, destroy or carry off any safety device, guard, notice or warning provided for use in any employment or place of employment while such use is required by applicable safety and health rules.

(c) Every employer is responsible for providing the health hazard control measures necessary to protect the employees' health from harmful or hazardous conditions and for maintaining such control measures in good working order and in use.

(d) Every employer must inform the employees regarding the known health hazards to which they are exposed, the measures which have been taken for the prevention and control of such hazards, and the proper methods for utilizing such control measures.

(e) Every agent of the employer is responsible for:

(A) The safe performance of the work under the agent's supervision or control;

(B) The safe conduct of all employees under the agent's supervision or control;

(C) The safety of all employees working under the agent's supervision or control.

(2) Employees' Responsibilities.

(a) Employees must conduct their work in compliance with the safety rules contained in this code.

(b) All injuries must be reported immediately to the person in charge or other responsible representative of the employer.

(c) It is the duty of all workers to make full use of safeguards provided for their protection. It is the worker's responsibility to abide by and perform the following requirements:

(A) A worker must not operate a machine unless guard or method of guarding is in good condition, working order, in place, and operative.

(B) A worker must stop the machine or moving parts and properly tagout or lockout the starting control before oiling, adjusting, or repairing, except when such machine is provided with means of oiling or adjusting that will prevent possibility of hazardous contact with moving parts.

(C) A worker must not remove guards or render methods of guarding inoperative except for the purpose of adjustment, oiling, repair, or the setting up a new job.

(D) Workers must report to their supervisor any guard or method of guarding that is not properly adjusted or not accomplishing its intended function.

(E) Workers must not use their hands or any portion of their bodies to reach between moving parts or to remove jams, hangups, etc. (Use hook, stick, tong, jig or other accessory.)



(F) Workers must not work under objects being supported that could accidentally fall (such as loads supported by jacks, the raised body of a dump truck, etc.) until such objects are properly blocked or shored.

(G) Workers must not use defective tools or equipment. No tool or piece of equipment should be used for any purpose for which it is not suited, and none should be abused by straining beyond its safe working load.

(d) Workers must not remove, deface, or destroy any warning, danger sign, or barricade, or interfere with any other form of accident prevention device or practice provided which they are using, or which is being used by any other worker.

(e) Workers must not work underneath or over others exposed to a hazard thereby without first notifying them and seeing that proper safeguards or precautions have been taken.

(f) Workers must not work in unprotected, exposed, hazardous areas under floor openings.

(g) Long or unwieldy articles must not be carried or moved unless adequate means of guarding or guiding are provided to prevent injury.

(h) Hazardous conditions or practices observed at any time must be reported as soon as practicable to the person in charge or some other responsible representative of the employer.

(i) Workers observed working in a manner which might cause immediate injury to either themselves or other workers must be warned of the danger.

(j) Before leaving a job, workers must correct, or arrange to give warning of, any condition which might result in injury to others unfamiliar with existing conditions.

**(3) Investigations of Injuries.**

(a) Each employer must investigate or cause to be investigated every lost time injury that workers suffer in connection with their employment, to determine the means that should be taken to prevent recurrence. The employer must promptly install any safeguard or take any corrective measure indicated or found advisable.

(b) At the request of authorized Department representatives, it is the duty of employers, their superintendents, supervisors and employees to furnish all pertinent evidence and names of known witnesses to an accident and to give general assistance in producing complete information which might be used in preventing a recurrence of such accident.

At the request of the Department, persons having direct authority must preserve and mark for identification, materials, tools or equipment necessary to the proper investigation of an accident.

(4) Intoxicating Liquor and Drugs. The use of intoxicating liquor on the job is strictly prohibited. Anyone whose ability to work safely is impaired by alcohol, drugs, or medication must not be allowed on the job while in that condition.

(5) Horseplay. There must be no horseplay, scuffling, practical jokes, or any other activity of a similar nature.

(6) Extraordinary Hazards. When conditions arise that cause unusual or extraordinary hazards to workers, additional means and precautions shall be taken to protect workers or to control hazardous exposure. If the operation cannot be made reasonably safe, regular work must be discontinued while such abnormal conditions exist, or until adequate safety of workers is ensured.

**(7) Inspections.**

(a) All places of employment must be inspected by a qualified person or persons as often as the type of operation or the character of the equipment requires. Defective equipment or unsafe conditions found by these inspections must be replaced or repaired or remedied promptly.

(b) Wherever required in this safety code, a written and dated report, signed by the person or persons making the inspection, must be kept.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 1-1967, f. 1-12-67, ef. 1-15-67; WCB 3-1997, f. 10-6-75, cert. ef. 11-1-75; WCD 11-1976, f. & ef. 5-5-76; WCB 15-1976, f. 7-6-76, cert. ef. 8-1-76; WCD 10-1982, f. & ef. 7-30-82; OSHA 6-1994, f. & cert. ef. 9-30-94, Renumbered from 437-040-0020, 437-040-0025, 437-040-0030, 437-040-0035, 437-040-0040, 437-040-0050, 437-040-0055 & 437-137-0010(1) & (2); OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09; OHSA 2-2012, f. 5-11-12, cert. ef. 7-1-12

**437-001-0765**

**Safety Committees and Safety Meetings.**

This rule requires employers to establish and administer a safety committee, or hold safety meetings, to communicate and evaluate safety and health issues. Purpose: The purpose of safety committees and safety meetings is to bring workers and management together in a non-adversarial, cooperative effort to promote safety and health. Safety committees and safety meetings will assist you in making continuous improvement to your safety and health programs. Scope: This rule applies to public or private employers in Oregon subject to Oregon OSHA jurisdiction, except as listed below.

You do not have to comply with this rule if you are:

The sole owner and only employee of a corporation;

A member of a board or commission and do not participate in the day-to-day activities of the company. You are not considered an employee for purposes of this rule.

Engaged in agricultural activities covered by Division 4, Subdivision C.

Engaged in forest activities covered by Division 7, Subdivisions B and C.

Division 2, Subdivision L OAR 437-002-0182(7) requires employers engaged in fire service activities to establish a separate fire service safety committee or opt for safety meetings if they meet the criteria in the following table.

You can choose a committee or meetings.

(1) You must establish and administer an effective safety committee or hold effective safety meetings as defined by these rules:

Table [Table not included. See ED. NOTE.]

**Safety Committees**

(2) If you have 20 or fewer employees you must have at least 2 members. If you have more than 20 employees you must have at least 4 members.

(3) You must have an equal number of employer-selected members and employee-elected or volunteer members. If both parties agree, the committee may have more employee-elected or volunteer members.

**NOTE:** Management can select a supervisor to represent them. Employees can elect a supervisor to represent them.

**(4) Your safety committee members must:**

Have a majority agree on a chairperson.

Serve a minimum of one year, when possible.

Be compensated at their regular rate of pay.

Have training in the principles of accident and incident investigations for use in evaluating those events.

Have training in hazard identification.

Be provided with meeting minutes.

Represent major activities of your business.

(5) Your safety committee must meet on company time as follows:

Quarterly in situations where employees do mostly office work.

Monthly for all other situations (except the months when quarterly work-site inspections are performed).

(6) You must keep written records of each safety committee meeting for three years that include:

Names of attendees.

Meeting date.

All safety and health issues discussed, including tools, equipment, work environment, and work practice hazards.

Recommendations for corrective action and a reasonable date by which management agrees to respond.

Person responsible for follow up on any recommended corrective actions.

All reports, evaluations and recommendations made by the committee.

(7) Your safety committee must establish procedures for conducting workplace safety and health inspections. Persons trained in hazard identification must conduct inspections as follows:

Table [Table not included. See ED. NOTE.]

(8) In addition to the above requirements, your safety committee must:

Work with management to establish, amend or adopt accident investigation procedures that will identify and correct hazards.

Have a system that allows employees an opportunity to report hazards and safety and health related suggestions.

Establish procedures for reviewing inspection reports and for making recommendations to management.

Evaluate all accident and incident investigations and make recommendations for ways to prevent similar events from occurring.

Make safety committee meeting minutes available for all employees to review.

Evaluate management's accountability system for safety and health, and recommend improvements. Examples include use of incentives, discipline, and evaluating success in controlling safety and health hazards.

(9) If you have multiple locations, you may choose to have a centralized safety committee. A centralized safety committee must represent the safety and health concerns of all locations and meet the requirements for safety committees. If you rely on a centralized committee, you must also have a written safety and health policy that:

Represents management commitment to the committee.

Requires and describes effective employee involvement.

Describes how the company will hold employees and managers accountable for safety and health.

Explains specific methods for identifying and correcting safety and health hazards at each location.

Includes an annual written comprehensive review of the committees' activities to determine effectiveness.

**NOTE:** Two or more employers at a single location may combine resources to meet the intent of these rules.

#### **Safety Meetings**

(10) Safety meetings must:

Include all available employees.

Include at least one employer representative authorized to ensure correction of safety and health issues.

Be held on company time and attendees paid at their regular rate of pay.

(11) Hold safety meetings with the following frequency if:

Table [Table not included. See ED. NOTE.]

(12) Safety meetings must include discussions of:

Safety and health issues.

Accident investigations, causes, and the suggested corrective measures.

(13) Employers in construction, utility work and manufacturing must document, make available to all employees, and keep for three years a written record of each meeting that includes the following:

Hazards related to tools, equipment, work environment and unsafe work practices identified and discussed during the meeting.

The date of the meeting.

The names of those attending the meeting.

All other employers do not need to keep these records if all employees attend the safety meeting.

(14) If you are a subcontractor on a multi-employer worksite, to meet the intent of (11) through (13), your employees may attend the prime contractor's safety meetings. You may keep the minutes from these meetings as a part of your records to meet the intent of (13). If you choose this option, you must still meet to discuss accidents involving your employees.

(15) Innovation. After you apply, OR-OSHA may grant approval for safety committees or safety meetings that differ from the rule requirements yet meet the intent of these rules.

(16) Effective Dates. The effective date for compliance with this rule is January 1, 2009. For employers with 10 or fewer employees, other than those in construction, the effective date is September 19, 2009.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.176

Hist.: WCD 10-1982, f. & ef. 7-30-82; OSHA 12-1990(Temp), f. & cert. ef. 6-18-90; OSHA 28-1990, f. 12-18-90, cert. ef. 3-1-91; OSHA 6-1994, f. & cert. ef. 9-30-94, Renumbered from 437-040-0044, 437-040-0045, 437-040-0046, 437-040-0047, 437-040-0048 & 437-040-0049; OSHA 10-1995, f. & cert. ef. 11-29-95; OSHA 8-2001, f. & cert. ef. 7-13-01; OSHA 6-2003, f. & cert. ef. 11-26-03; OSHA 7-2006, f. & cert. ef. 9-6-06; OSHA 9-2008, f. 9-19-08, cert. ef. 1-1-09

#### **437-001-0800**

##### **Application Procedures**

(1) The Division may solicit applications for Occupational Safety and Health Grants to develop innovative, proactive occupational safety and health training, educational programs or materials.

(2) Any labor consortium, employer consortium, educational institution that is affiliated with a labor organization or employer group, or other nonprofit entity, may apply for an Occupational Safety and Health Grant as provided in ORS 654.189 and 654.191, and in accordance with OAR 437-001-0800 through 437-001-0810.

(3) An applicant for a grant shall submit the grant application during the period of time specified in the application procedure. An application shall be in writing on the application forms and procedures provided by the Division and shall contain at a minimum:

(a) The name, address and telephone number of each applicant;

(b) The name address and telephone number of the project director;

(c) The amount of the request;

(d) An impact statement including the type and number of employees or employers targeted; the problem to be addressed, and the impact the project will have on occupational safety and health in Oregon;

(e) A description of the manner in which the grant will be used, including:

(A) Anticipated financial expenditures;

(B) A developmental plan that states goals and how they will be accomplished;

(C) Proposed completion date;

(D) Proposed in-kind services;

(E) Targeted audience; and

(F) Intended measurement of results; and

(f) Any other information included in the application forms and procedures.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-1989, f. & cert. ef. 12-1-89

#### **437-001-0805**

##### **Application Review**

(1) The Division shall review all applications and request any additional information needed to assure applications are relevant and complete.

(2) After an application is determined to be complete and in compliance with the intended goals of the program by the Division, it shall be forwarded to the Safe Employment Education and Training Advisory Committee (SEETAC) for review and possible recommendation for grant approval.

(3) In reviewing grant applications for possible recommendations for approval to the Director, the committee shall consider at least the following elements:

(a) The amount of available funds in the Occupational Safety and Health Grant account;

(b) The impact statement details;

(c) The innovativeness of the grant request;

(d) The feasibility of the developmental plan;

(e) The amount of in-kind services;

(f) The stability of other funding sources; and

(g) The administrative costs and/or responsibilities imposed on the Division in connection with the grant project.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-1989, f. & cert. ef. 12-1-89

#### **437-001-0810**

##### **Grant Awards**

(1) The Division shall notify applicants, in writing, of the approval or disapproval of the grant request.

(2) The applicant shall execute documents required by the Division for evidence of the type and amount of grant given, performance criteria and reporting requirements, and any other terms and conditions agreed to in connection with the awarding of a grant.

(3) Grant recipients shall make available to the Division all records and materials necessary to monitor the grant award.

(4) If the terms and conditions under which the grant was approved are not met, the Division may, upon written notice, take one or more of the following actions:

(a) Immediately revoke approval of the use of Occupational Safety and Health Grant funds; or

(b) Require repayment of all or a portion of any funds advanced; or

(c) Any other appropriate legal action necessary.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-1989, f. & cert. ef. 12-1-89

#### **437-001-0830**

##### **Authority for Rules**

The Director has adopted OAR 437-001-0830 through 437-001-0895 under authority of ORS 656.622(9) and 656.726(3).

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0835****Purpose of Rules**

These rules explain what assistance is available from the Worksite Redesign Program, who is qualified and how to receive assistance. The department may solicit applications for worksite redesign grants and product grants in order to prevent the recurrence of on-the-job injuries and illnesses.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0840****Applicability of Rules**

These rules apply to all requests for Worksite Redesign Program assistance received by the department on or after the effective date of these rules. Worksite Redesign Program assistance shall only be provided in Oregon.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0845****Definitions**

(1) "Applicant" means the employer, employer group, employee group, educational association or educational institution which applies for a grant. An employer group or employee group may be created for the sole purpose of applying for and administering a worksite redesign grant.

(2) "Committee" means the Application Review Committee. Committee members are appointed by the director. The Committee recommends approval or disapproval of worksite redesign grants to the director.

(3) "Employer" means an Oregon employer within the meaning of the Workers' Compensation Law.

(4) "Fund" means the Workers' Benefit Fund.

(5) "Grant Agreement" means the contract between the department and the grantee following department approval of the application for a worksite redesign grant.

(6) "Grant product" means the workplace solution developed from an approved grant agreement to minimize workplace hazards.

(7) "OR-OSHA" means the OREGON OCCUPATIONAL SAFETY AND HEALTH DIVISION.

(8) "Product grant" means the amount of funding awarded an employer for the purchase of a grant product.

(9) "Worksite redesign grant" means a grant for the purpose of performing research and analysis of a workplace problem, and/or development of a solution to a workplace problem in order to prevent or reduce the incidence of on-the-job injuries and illnesses.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0850****Administration of Rules**

(1) All payments under the Worksite Redesign Program are subject to the availability of funds. The director has final authority to approve/disapprove requests for assistance and to determine how the funds will be disbursed.

(2) In addition to approving worksite redesign grants, the director may use the Fund for educational activities to provide information about and encourage application for grants for prevention or reduction of on-the-job injuries and illnesses.

(3) Pursuant to ORS 656.622, decisions by the director regarding Worksite Redesign Program assistance may not be reviewed by any court or other administrative body.

(4) The following conditions apply to all ideas, concepts, know-how, techniques, processes, methods, inventions, discoveries, developments, innovations and improvements conceived or made by a grantee, a grantee's employees or a grantee's contractors resulting from work under a worksite redesign grant:

(a) Public use of a new product design. All inventions and copy-rightable works arising from work conducted under a worksite redesign grant will be dedicated to the public domain without any

limitation on their use by the public. Neither DCBS, nor the grant recipient nor the grantee's contractors will hold trade secrets as a result of work conducted under a worksite redesign grant.

(b) The grantee and its contractors will abandon any and all ideas, concepts, know-how, techniques, processes, methods, inventions, discoveries, developments, innovations and improvements ("inventions") conceived or made by the grantee, the grantee's employees, or the grantee's contractors, whether alone or with others, resulting from work under the grant. The grantee will disclose all such inventions to the department promptly and will provide all assistance reasonably requested by the department to document the abandonment of such Inventions and/or dedication of such Inventions to the public domain. There will be no restriction on the manufacture, use or sale of such inventions by the public.

(c) Published works produced by grantee must bear an acknowledgment of support through the use of the following comparable statement: "This material has been made possible by a grant from the Oregon Department of Consumer and Business Services."

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0855****Assistance Available under the Worksite Redesign Program**

Assistance from the Fund will be in the form of grants. Grants will partially fund research and analysis of workplace problems, and/or development of solutions to workplace problems, and/or purchase of grant products. If readily available solutions to the problems have been identified by the applicant or are known to DCBS, the project will not be approved. However, if during the research phase of a funded project a previously unknown solution is found, the grant agreement may be amended to permit purchase and evaluation of the new-found solution.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-0860****Eligibility for Worksite Redesign Assistance**

(1) As part of the application, the applicant must have documentation of the workplace problem such as accepted compensable claims, incident reports, OSHA 200 log entries, hazard evaluations, or statistical reports of injuries and illnesses for the industry and/or occupation for which the applicant seeks an ergonomic solution.

(2) An applicant must identify an employer as the research site and/or the recipient of the prototype design or grant product. That designated employer and those employers who apply for a product grant must meet the following eligibility conditions:

(a) The employer has and maintains Oregon workers' compensation insurance coverage as required by law;

(b) Business operations are ongoing and have continued for the three-year period prior to the date the applicant submits the application to the department;

(c) The employer demonstrates financial stability and solvency by providing for the three-year period prior to the date the applicant submits the application one of the following: a letter of evaluation by an independent certified public accounting firm; a letter of credit; tax records; audited profit and loss statements and balance sheets; or audited annual reports. For product grants of less than \$10,000, the department may permit an employer to certify financial stability;

(d) The employer has no bankruptcy or receivership action and no judgments for non-payment of wages/debts within the one-year period prior to the date the department receives the application;

(e) At the time the applicant submits the application, the employer has no outstanding OR-OSHA citations at any of the employer's locations or sites with unabated/uncorrected safety or health hazards associated with the equipment or process that is the subject of the application; and

(f) The employer provides information about the employer's early-return-to-work program.



(3) Reasons for ending Worksite Redesign Program eligibility which apply to all applicants as defined in OAR 437-001-0845 include:

(a) Misrepresentation or omission of information by the applicant to obtain assistance;

(b) Failure of the applicant to provide requested information or to cooperate in the Worksite Redesign Program grant review process or in the development or implementation of an approved grant;

(c) The applicant is precluded from receiving Worksite Redesign Program assistance in accordance with OAR 437-001-0890.

(4) Reasons for ending Worksite Redesign Program eligibility which apply to employer applicants, employers designated in the grant application as the research site and/or the recipient of the prototype design and employers who are grant product recipients include:

(a) The employer does not maintain Oregon workers' compensation insurance coverage as required by law;

(b) The employer, after requesting Worksite Redesign Program assistance, becomes subject to bankruptcy or receivership action or incurs judgment for non-payment of wages/debts; or,

(c) The employer, after requesting Worksite Redesign Program assistance, is issued a citation by OR-OSHA resulting from a fatality investigation, accident investigation, a complaint investigation, or a referral from another agency, which is related to or associated with, the subject of the worksite redesign grant. The department will hold in abeyance any requests for Worksite Redesign Program assistance until the OR-OSHA enforcement action is resolved.

(5) An employer who enters into negotiation for sale or merger of business after requesting Worksite Redesign Program assistance must provide the department documentation of their ongoing commitment and ability to undertake and complete the activities as described in its grant application. The department will review the material provided by the employer and will determine the appropriateness and feasibility of proceeding with the grant request process.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0865**

##### **Procedure to Use the Worksite Redesign Program**

(1) An applicant must submit a complete, written application in the form and format prescribed by the director.

(2) The department may provide education and consultation to potential applicants, applicants and grantees.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0870**

##### **Application Review**

(1) Upon receipt of an application, the department may authorize consultation services provided by consultants under contract.

(2) The department will review applications and prepare staff reports for Committee review.

(3) After department review, the worksite redesign grant application and corresponding staff report will be forwarded to the Committee for review.

(4) In reviewing worksite redesign grant applications, the Committee will consider the following elements:

(a) Program eligibility criteria;

(b) Funding limitations established by the director;

(c) The funding priorities established by the department;

(d) The quality review criteria established by the department;

(e) The staff report provided by the department;

(f) Feasibility and appropriateness to recommend approval for an employer who is negotiating sale or merger; and

(g) Appropriateness to recommend approval for a grant which may result in a reduction in the employer's labor force.

(5) Following completion of a worksite redesign grant, the department may solicit applications for a product grant.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0875**

##### **Grant Awards**

(1) The department or its designee will notify applicants, in writing, of the approval or disapproval of the grant request.

(2) The applicant must provide reports and documentation relating to the grant and the terms and conditions agreed to in connection with the grant.

(3) Grant recipients must make available to the department all records and materials necessary to monitor a grant.

(4) Upon approval of the worksite redesign grant application, the department will authorize funding, to include disbursement intervals, in accordance with the conditions agreed upon in the approved grant agreement.

(5) Upon approval of the product grant application, the department will authorize funding for the product.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0880**

##### **Program Evaluation**

(1) The director or designee will conduct studies to evaluate the Worksite Redesign Program's success in precluding on-the-job injuries. Findings of such studies will be presented to the Management/Labor Advisory Committee.

(2) Grantees may be required to conduct studies to evaluate the success of the worksite redesign at their establishment. The studies will be conducted in a manner agreed upon with the department.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0885**

##### **Audits**

(1) Applicants selected for funding are subject to periodic program and fiscal audits.

(2) The grantee must maintain case files, notices, records, reports, receipts and canceled checks or payment verification documenting use of any and all Worksite Redesign Program funds as well as funds the grantee commits to an approved Worksite Redesign Program grant project. These records must be maintained for a period of 6 years after the last grant disbursement.

(3) The department reserves the right to visit the worksite to determine compliance with the Worksite Redesign Program agreement.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0890**

##### **Sanctions**

If the director finds any violation of OAR 437-001-0850, 437-001-0860, 437-001-0875, 437-001-0885, or if the terms and conditions under which the agreement was approved are not met, the director may take one or more of the following actions:

(1) Immediately revoke approval of the use of the Worksite Redesign Program funds;

(2) Require repayment of all or a portion of any funds disbursed;

(3) Prohibit the employer, employer group, employee group, educational association, or educational institution from receiving additional grants for a period of up to 3 years; and

(4) Use any other legal action necessary.

Stat. Auth.: ORS 656.622(9) & 656.622

Stats. Implemented: ORS 656.622

Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

#### **437-001-0895**

##### **Issuance/Service of Sanction Orders**

(1) When a sanction is invoked as provided by OAR 437-001-0890, the Division shall serve an order on the party, with a notice of the rights provided under ORS 654.078.

(2) An order will be served upon the grantee or their registered agent by certified mail or in person.

Stat. Auth.: ORS 656.622(9) & 656.622  
Stats. Implemented: ORS 656.622  
Hist.: OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-1005****Authority and Applicability of Rules**

(1) OAR 437-001-1005 through 437-001-1065 are promulgated under the Director's authority contained in ORS 654.097.

(2) The Director of the Department of Insurance and Finance delegates the Administrator of the Accident Prevention Division the authority to enforce these rules.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1992, f. & cert. ef. 7-31-92

**437-001-1010****Purpose and Scope**

(1) Nothing in these rules is intended to impose a duty upon the insurer or to transfer from the employer to the insurer responsibility set forth in ORS 654.001 to 654.991, or to impose liability other than these rules upon the insurer for failure to identify any unsafe conditions or occupational health and safety hazard.

(2) The purpose of these rules is to promote workplace health and safety by:

(a) Establishing insurer and self-insured employer loss prevention services designed to advise employers on regulations, laws, means and methods for improving health and safety at their places of employment; and

(b) Providing for the evaluation of insurers' and self-insured employers' loss prevention activities by the OR-OSHA Division to ensure compliance with the law and these rules.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-1015****Definitions**

(1) Establishment: A single physical location where business is conducted or where services or industrial operations are performed. Where distinctly separate activities are performed at a single physical location, each activity shall be treated as a separate establishment.

(2) Insured employer: An employer insured with a workers' compensation carrier.

(3) Insurer: The State Accident Insurance Fund (SAIF) Corporation or any insurance company authorized or regulated under ORS Chapter 731 to issue workers' compensation insurance policies in Oregon.

(4) Loss prevention effort: An ongoing effort by the self-insured employer to integrate health and safety into the workplace in such a manner that occupational injuries and illnesses are reduced.

(5) Loss prevention plan: A plan developed by the employer with the assistance of the insurer with the primary emphasis on reduction of workplace injuries and illnesses.

(6) Loss prevention services: Services designed to advise and assist employers in the identification, evaluation, and control of existing and potential causes of accidents and occupational health and safety problems.

(7) Loss prevention services program: A program intended to promote occupational health and safety, and to help eliminate and control work hazards to employees.

(8) Self-insured employer: An employer certified under ORS 656.430 as meeting the qualifications of a self-insured employer set out by ORS 656.407.

(9) Substantial failure to comply: The failure by an insurer or self-insured employer to respond or make available timely on-site services; failure to respond or make available in a timely manner specialized consultative services or:

(a) If an insurer fails to identify and advise of in a timely manner reasonably discoverable serious or life-threatening hazards within the scope of the services requested or provided or:

(b) If a self-insured employer fails to identify and control in a timely manner reasonably discoverable serious of life-threatening hazards within the scope of the services requested or provided.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 21-1988, f. & cert. ef. 12-27-88; Administrative Correction 8-5-97; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09

**437-001-1020****General Requirements**

(1) The insurer or self-insured employer shall, within 60 days after the effective date of these rules, submit to the Administrator the following information:

(a) The name of the insurer or self-insured employer;

(b) The insurer's or self-insured employer's Oregon business address where records are kept; and

(c) The name or title, business address, and telephone number of the representative who will act as liaison with the Division in all matters pertaining to loss prevention services.

(2) After the first 60 days these rules are in effect, each new insurer must comply with OAR 437-001-1020(1) at the time of application for the authority to issue insurance policies in Oregon.

(3) After the first 60 days these rules are in effect, each self-insured employer shall submit the information required in OAR 437-001-1020(1) at the time the employer submits its application to the Compliance Section of the Workers' Compensation Division for self-insurance.

(4) Each insurer or self-insured employer shall notify the Division, in writing, of any change in the information in OAR 437-001-1020(1)(a) through (c) within 30 days of that change.

(5) When requested by the Division, each insurer and self-insured employer shall make available with reasonable promptness copies of loss prevention, loss control and related records.

(6) The duty of compliance with OAR 437-001-1005 through 437-001-1065 is that of the insurer or self-insured employer regardless whether the insurer or self-insured employer contracts for assistance for the required services.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 8-1991, f. 4-25-91, cert. ef. 5-1-91; Administrative Correction 8-5-97; OSHA 7-1999, f. & cert. ef. 7-15-99; OSHA 2-2009, f. 1-27-09, cert. ef. 2-3-09

**437-001-1025****Notification of Services**

(1) When an insurer writes a workers' compensation policy for an employer, and annually thereafter, the insurer shall inform the employer at the employer's Oregon main office of the loss prevention services that are available. The information shall include at least the following:

(a) A description of all loss prevention services that the insurer is required to offer, and other loss prevention services the insurer provides;

(b) A description of the availability of and process for obtaining loss prevention services;

(c) An offer, by the insurer, of an on-site evaluation of the loss prevention service needs of the insured;

(d) An explanation of the employer's responsibility to provide a safe and healthful workplace as required by the Oregon Safe Employment Act (ORS 654.001 to 654.295 and 654.991); and

(e) A statement of the employer's right to make a complaint to the OR-OSHA Division if an insurer fails to respond to a request from one of its insured employers for loss prevention services or otherwise fails to provide services as offered or required.

(2) An insurer shall provide the material described in section (1) of this rule and instructions that the employer distribute this material to each of the employer's fixed places of employment in Oregon.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-1030**

**Requests for Services**

(1) Any request by an insured employer regarding an imminent danger hazard shall be responded to with loss prevention services as soon as possible by the insurer.

(2) Any other requests regarding alleged hazards other than imminent danger shall be responded to with loss prevention services as soon as practicable, but not longer than 30 days following the date of the request.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-1035**

**Loss Prevention Services**

(1) Each insurer shall make occupational health and safety loss prevention services available to all its insured employers and shall provide certain other services as required by this rule.

(2) At a minimum, loss prevention services and personnel providing the services must meet the needs of the particular place of employment, special industry, or process, and shall include at least the following:

(a) Evaluation of the employer's loss prevention needs;

(b) Assistance in evaluating records that may be pertinent to the firm's illness and injury experience;

(c) An explanation to the employer of the Oregon Safe Employment Act and rules that apply to the particular place of employment;

(d) Provision of partial or complete on-site health and safety surveys, which identify all reasonably discoverable occupational safety and health hazards within the scope of the survey scheduled;

(e) Assistance with industrial hygiene and safety evaluations to detect physical and chemical hazards of the workplace, and implementation of engineering or administrative controls;

(f) Assistance with evaluating, obtaining, and maintaining personal protective equipment;

(g) Evaluation of work practices, workplace design, and assistance with job site modifications;

(h) Assistance in evaluating and improving an employer's safety management practices;

(i) Assistance in identifying health and safety training needs and available resources; and

(j) An offer to provide follow-up services.

(3) Loss prevention services shall include a written report with a plan of action.

(4) If, when providing loss prevention services, a condition of imminent danger is observed (see OAR 437-001-0015(34)), the insurer shall advise the employer of the hazard and the need to immediately correct it.

(5) All insurers shall maintain records of all loss prevention services provided at the locations designated by the insurer for Division personnel's review and must be maintained for not less than three years following the date the service was provided.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1999, f. & cert. ef. 7-15-99

**437-001-1040**

**Required Loss Prevention Services**

(1) An insurer shall offer to assist in developing a loss prevention plan with each of its employers with a claims frequency or severity greater than its average employer in the same industry. The plan shall promote self-sufficiency on the part of the employer to reduce injuries and illnesses, and shall include a means to identify and control all reasonably discoverable occupational health and safety hazards.

(2) The assistance shall include the following:

(a) Employer notification of the available services.

(b) Perform a workplace hazard survey.

(c) Review of injury records and documentation of activities designed to lead to the reduction of workplace injuries and illnesses.

(d) Assist the employer in developing a written loss prevention plan that is based upon the results of the hazard survey and review of injury records. The plan must at a minimum address the following loss prevention principles:

(A) Management commitment to health and safety;

(B) An accountability system for employer and employees;

(C) Training practices and follow-up;

(D) A system for hazard assessment and control;

(E) A system for investigating all recordable occupational injuries and illnesses that includes written findings and corrective action;

(F) A system for evaluating, obtaining, and maintaining personal protective equipment;

(G) Evaluation of workplace design, work practices and assistance with job site modifications; and

(H) Employee involvement in the health and safety effort.

(e) Tailor the plan to meet the needs of the employer for reduction of injuries and illnesses while promoting self-sufficiency on the part of the employer.

(3) The insurer's obligation to assist shall end if the employer declines the services offered by the carrier.

(4) The Division may evaluate the insurers' targeted loss prevention services program randomly, however no more frequently than every three years.

**APPENDIX A**

(See OAR 437-001-1040(2)(a))

**Mandatory Loss Prevention Plan Worksheet**

This worksheet is provided to analyze the employer's loss prevention needs, and shall be completed jointly by the insurer and the employer. The information is for use by the employer in developing a comprehensive, written loss prevention plan to assist in lowering the employer's occupational injury and illness rate. The insurer is required to assist the employer in developing a loss prevention plan. A copy of this worksheet, including the results from the hazard assessment survey(s) completed by the insurer, must be provided to the employer.

**NOTE:** Insurers may use alternate worksheets to document the development of employer loss prevention plans, if they have been approved in advance by the Department of Consumer and Business Services.

Please attach any additional information if space provided is inadequate.

**Date**

**Employer**

**Insurer**

**Name of Employer Representative**

**Name of Insurer Representative**

1. Did the employer agree to develop a loss prevention plan? Yes/No? If not, how is this confirmed by the insurer?

2. Is management committed to occupational safety and health? How is this communicated to employees and supervisors?

3. Explain in detail how supervisors and employees are held accountable for occupational safety and health.

4. How are training programs and practices developed? How are training needs determined? What recordkeeping system is used to determine which employees have had training? What follow-up measures will be used to determine if training is effective?

5. Explain the employer's system for hazard assessment and control. Who is in charge of this system? How will the employer document the system's implementation and use?

6. Describe the employer's system for investigating accidents. Who investigates the accidents and analyzes results? How are findings communicated and to whom?

7. What personal protective equipment do employees need? Describe the employer's system for evaluating, obtaining and maintaining all personal equipment. Who keeps what types of records on maintenance of personal protective equipment?

8. Explain and provide specifics on evaluation of the employer's workplace design, layout, and operation from an ergonomic approach. What assistance will the insurer provide to the employer for job site modifications from an ergonomic approach?

9. How is employee involvement in the occupational safety and health effort demonstrated? How is the opportunity for involvement communicated to employees? If meetings are held, how often? What is the scope of the meetings and who attends them? Who takes the minutes of the meetings? How are meeting results communicated?

10. A hazard assessment survey must be conducted. (See ORS 656.451(3): "Such services shall include the conduct of workplace surveys to identify health and safety problems.") What are the specific findings of this survey? How will hazards identified or suspected be addressed in tailoring the plan to meet specific needs of the employer? How will hazards be corrected?

11. After completing this analysis of the employer's loss prevention man-



agement plan, who will be responsible for writing the plan: the insurer, the employer, or both? In what time frame will this plan be written?

12. The insurer must assist the employer in implementing the loss prevention plan. Has the employer requested such assistance? If so, when will the insurer meet again with the employer to assist in this ongoing effort? This form is provided as a service to workers' compensation insurers by the Department of Consumer and Business Services, Oregon Occupational Safety and Health Division (OR-OSHA). Photocopying is permitted.

#### APPENDIX B

##### Instructions for Computing Lost Workday Case Incident Rates (LWDCIR) for an Individual Firm

Incidence rates for an individual establishment or firm may be calculated by employers by using the same formula used to calculate industry-wide incidence rates from the annual Occupational Injury and Illness Survey. An employer may then compare her/his own work injury and illness experience to the overall experience in her/his industry in Oregon or the nation. The formula requires: (a) the number of lost workday cases, and (b) the number of hours actually worked by all employees during the reference period. To produce an overall incidence rate:

(a) Determine the number of lost workday cases by adding the totals for columns 2 and 9 of the Occupational Injuries and Illnesses Log (OSHA No. 200).

(b) Total the number of hours actually worked during the year by all employees from payroll or other time records. The hours worked figure should not include any non-work time even though paid, such as vacations, sick leave, holidays, etc. (If actual hours worked are not available for employees paid on commission, salary, by the mile, etc., hours worked may be estimated on the basis of scheduled hours or 8 hours per workday.) The formula for computing the incidence rate is as follows:

(a) Number of lost workday cases x 200,000 = lost workday employee hours worked.

(b) Case Incidence Rate: This rate represents the number of lost workday cases occurring per 200,000 hours of work exposure or 100 full-time equivalent workers. The same base is used in computing the occupational injury and illness rates for Oregon and for the nation.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 10-1990(Temp), f. & cert. ef. 5-31-90; OSHA 24-1990, f. & cert. ef. 10-10-90; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92; OSHA 7-1999, f. & cert. ef. 7-15-99

#### 437-001-1050

##### Self-Insured and Group Self-Insured Employer Loss Prevention Assistance

(1) A self-insured employer and each self-insured group shall make available to each of its workplace or group locations occupational safety and health loss prevention assistance.

(2) A self-insured employer or group shall acknowledge all requests for services which do not involve alleged hazards from any of its locations within 30 days by schedule a date to begin providing services.

(3) Any request from locations of the self-insured employer or group regarding imminent danger an alleged hazard shall be responded to as soon as possible with loss prevention services.

(4) All other requests regarding alleged hazards other than imminent danger shall be responded to with loss prevention services as soon as practicable, but not longer than 30 days following the date of the request.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 8-1991, f. 4-25-91, cert. ef. 5-1-91

#### 437-001-1055

##### Self-Insured and Group Self-Insured Employer Loss Prevention Programs

Each self-insured employer and each member of a group self-insured program shall establish and implement a written occupational health and safety loss prevention program for each establishment. As a minimum requirement, the program shall:

(1) Provide for a loss prevention effort within the normal functions of the business for prevention or reduction of health and safety injuries and illnesses; and

(2) Inform its managers and workplace locations of the availability and the process for requesting loss prevention assistance.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 8-1991, f. 4-25-91, cert. ef. 5-1-91

#### 437-001-1060

##### Self-Insured and Group Self-Insured Employer Loss Prevention Effort

Each self-insured employer and each member of a group self-insured program shall implement a loss prevention effort for each of its locations, which identifies and controls all reasonably discoverable occupational safety and health hazards and items not in compliance with the federal or the division's occupational safety and health laws, rules and standards. The self-insured group shall assist each member of the group in developing and implementing the loss prevention effort. This loss prevention effort shall include at least the following:

(1) Management commitment to health and safety;

(2) An accountability system for employer and employees;

(3) Training practices and follow-up;

(4) A system for hazard assessment and control;

(5) A system for investigating all recordable occupational injuries and illnesses that includes corrective action and written findings;

(6) A system for evaluating, obtaining, and maintaining personal protective equipment;

(7) On-site routine industrial hygiene and safety evaluations to detect physical and chemical hazards of the workplace, and the implementation of engineering or administrative controls;

(8) Evaluation of workplace design, layout and operation, and assistance with job site modifications utilizing an ergonomic approach;

(9) Employee involvement in the health and safety effort; and

(10) An annual evaluation of the employer's loss prevention activities based on the location's current needs.

(11) The group shall maintain records which document the assistance provided to each member of the group.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 8-1991, f. 4-25-91, cert. ef. 5-1-91

#### 437-001-1065

##### Penalty Provisions for Insurers

(1) For insurers who fail to comply with the law and the requirements of OAR 437-001-1005 through 437-001-1065, the Administrator:

(a) Shall assess a civil penalty in accordance with ORS 654.086(i); and

(b) May send a notice to an insurer, in accordance with ORS 656.447, of the Director's intent to request the Administrator of the Insurance Division to suspend or revoke the insurer's certificate of authority.

(2) For self-insured employers who fail to comply with the law and the requirements of OAR 437-001-1005 through 437-001-1065, the Administrator shall assess a civil penalty in accordance with ORS 654.086(i).

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 21-1988, f. & cert. ef. 12-27-88; OSHA 7-1992, f. 7-31-92, cert. ef. 10-1-92

## DIVISION 2

### GENERAL OCCUPATIONAL SAFETY AND HEALTH RULES

**NOTE:** In Oregon, the ANSI Standard may be viewed at the OR-OSHA Resource Center located at 350 Winter St NE, Salem OR 97310.

#### 437-002-0005

##### Adoption by Reference

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.1, Purpose and scope; published 6/27/74, Federal Register, vol. 39, no. 125, p. 23503.

(2) 29 CFR 1910.2, Definitions; published 6/27/74, Federal Register, vol. 39, no. 125, p. 23503.

(3) 29 CFR 1910.3, Petitions for the issuance, amendment, or repeal of a standard; published 6/27/74, Federal Register, vol. 39, no. 125, p. 23503.

(4) 29 CFR 1910.4, Amendments to this part; published 6/27/74, Federal Register, vol. 39, no. 125, p. 23503.

(5) 29 CFR 1910.5, Applicability of standards; published 6/30/93, FR vol. 58, no. 124, p. 35308.

(6) 29 CFR 1910.6, Incorporation by reference; published 3/25/16, FR vol. 81, no. 58, p. 16085.

(7) 29 CFR 1910.7, Definition and requirements for a Nationally Recognized Testing Laboratory; published 5/11/88, FR vol. 53, no. 91, p. 16838.

(8) 29 CFR 1910.9, Compliance duties owed to each employee; published 12/12/08, Federal Register, vol. 73, no. 240, pp. 75568-75589.

These standards are on file at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.  
Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stat. Implemented: ORS 654.001 - 654.295  
Hist.: APD 17-1988, f. & ef. 11-10-88; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 8-1999, f. & cert. ef. 8-6-99; OSHA 4-2005, f. & cert. ef. 12-14-05; OSHA 4-2007, f. & cert. ef. 8-15-07; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 1-2010, f. & cert. ef. 2-19-10; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 7-2013, f. & cert. ef. 12-12-13; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

#### **437-002-0006**

##### **General Oregon Definitions**

For the purposes of administration of the Oregon Safe Employment Act, the following terms mean:

(1) “Act” means the Oregon Safe Employment Act, ORS Chapter 654.

(2) “Agency” means the Occupational Safety and Health Division, Department of Insurance and Finance.

(3) “Assistant Secretary” means the Administrator of the Occupational Safety and Health Division or designated representative.

(4) “Assistant Secretary of Labor for Occupational Safety and Health” means the Administrator of the Occupational Safety and Health Division or designated representative.

(5) “Office of the Solicitor of Labor” means Legal Counsel for the Occupational Safety and Health Division.

(6) “Occupational Safety and Health Administration” or “OSHA” means the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services.

(7) “Standards” mean any occupational safety and health standard which has been adopted and promulgated by a nationally-recognized standards-producing organization, the federal government, or the State of Oregon and shall have the same meaning as, and include, the term “code(s)” and “rule(s).”

(8) “Administrative Rules” means OAR chapter 437, division 001, Rules for the Administration of the Oregon Safe Employment Act, and ORS Chapter 183.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 17-1988, f. & ef. 11-10-88

#### **437-002-0007**

##### **Testing and Certification**

By adopting these rules, the Department does not establish a testing and certification program separate from the federal OSHA Testing and Certification Program. The Department will accept as valid for compliance with its rules, the Testing and Certifications of Laboratories issued by federal OSHA.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 17-1988, f. & ef. 11-10-88

#### **437-002-0010**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/98, and any subsequent amendments published in the Federal Register as listed below:

(1) 29 CFR 1910.11 Scope and Purpose, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28504.

(2) 29 CFR 1910.12 Construction work, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28504.

**NOTE:** 29 CFR 1910.13 Ship repairing, and 1910.14 Shipbuilding, were removed 6/30/93, Federal Register, vol. 58, no. 124, p. 35308.

(3) 29 CFR 1910.15 Shipyard Employment, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28505; amended 6/30/93, FR vol. 58, no. 124, p. 35308.

(4) 29 CFR 1910.16 Longshoring, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28505; amended 7/5/83, FR vol. 48, pg. 30908; 12/1/98, FR vol. 63, no. 230, p. 66270.

(5) 29 CFR 1910.17 Effective dates, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28505; 3/7/96, FR vol. 61, no. 46, p. 9235.

(6) 29 CFR 1910.18 Changes in established federal standards, published 6/27/74, Federal Register, vol. 39, no. 125, p. 28505.

(7) 29 CFR 1910.19 Special provisions for air contaminants, published 6/30/78, Federal Register, vol. 43, p. 28473; amended 10/3/78, FR vol. 43, p. 45809; 11/14/78, FR vol. 43, p. 53007; 1/26/79, FR vol. 44, p. 5447; 6/19/81, FR vol. 46, p. 25796; 12/13/85, FR vol. 50, p. 51173; 6/20/86, FR vol. 51, p. 22733; 10/17/86, FR vol. 51, p. 37004; 9/11/87, FR vol. 52, p. 34562; 12/4/87, FR vol. 52, p. 46291; 8/10/92, FR vol. 57, no. 154, pp. 35666-35681; 9/14/92, FR vol. 57, no. 178, pp. 42388-42453; 8/10/94, FR vol. 59, no. 153, p. 41057; 11/4/96, FR vol. 61, no. 214, p. 56831; 1/10/97, FR vol. 62, no. 7, p. 1600.

**NOTE:** These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.  
Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 16-1988, f. & ef. 11-10-88; OSHA 1-1993, f. & cert. ef. 1-22-93; OSHA 4-1995, f. & cert. ef. 3-29-95; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 9-1997, f. & cert. ef. 12-31-97; OSHA 6-1999, f. & cert. ef. 5-26-99

#### **437-002-0015**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/96, and any subsequent amendments published in the Federal Register as listed below: 29 CFR 1910.20 Access to Employee Exposure and Medical Records has been redesignated to 29 CFR 1910.1020.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 3-1989, f. & ef. 3-1-89; OSHA 4-1997, f. & cert. ef. 4-2-97

#### **437-002-0020**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.21 Definitions, published 6/27/74, Federal Register, vol. 39, no. 125, pp. 23505-23508.

(2) 29 CFR 1910.22 General Requirements, published 6/27/74, FR vol. 39, no. 125, p. 23508.

(3) 29 CFR 1910.23 Guarding Floor and Wall Openings and Holes, published 2/10/84, FR vol. 49, p. 5321. Amended with Oregon OSHA AO 2-2013, f. 2/15/13, ef. 4/1/13.

(4) 29 CFR 1910.24 Fixed Industrial Stairs, published 2/10/84, FR vol. 49, p. 5321.

(5) 29 CFR 1910.25 Portable Wood Ladders, REPEALED. In Oregon, OAR 437-002-0026 applies.

(6) 29 CFR 1910.26 Portable Metal Ladders, REPEALED. In Oregon, OAR 437-002-0026 applies.

(7) 29 CFR 1910.27 Fixed Ladders, REPEALED. In Oregon, OAR 437-002-0027 applies.

(8) 29 CFR 1910.28 Safety Requirements for Scaffolding, published 4/12/88, FR vol. 53, p. 12121.

(9) 29 CFR 1910.29 Manually Propelled Mobile Ladder Stands and Scaffolds (Towers), published 6/27/74, FR vol. 39, no. 125, pp. 23529-23530.

(10) 29 CFR 1910.30 Other Working Surfaces, published 3/7/96, FR vol. 61, no. 46, p. 9235.

(11) 29 CFR 1910.31 Source of Standards, published 3/7/96, FR vol. 61, no. 46, p. 9235.

(12) 29 CFR 1910.32 Standards Organizations, published 3/7/96, FR vol. 61, no. 46, p. 9235.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 4-1990, f. & cert. ef. 1-23-90; OSHA 4-1997, f. & cert. ef. 4-2-97;

OSHA 10-1999, f. & cert. ef. 9-10-99; OSHA 2-2013, f. 2-15-13, cert. ef. 4-1-13

#### **437-002-0022**

##### **Additional Oregon General Requirements**

###### **(1) Barriers.**

(a) Protective barriers or suitable guards shall be erected when covers over openings are removed or excavations made in places accessible to vehicular or pedestrian traffic. Warning lights or flares shall be displayed if work is being done at night. These protective measures shall be maintained until permanent or adequate covers or barricades are in place or the hazard removed.

(b) A watchperson shall be stationed where temporary conditions do not permit safeguarding of employees through the use of warning signs, lights, protective barriers, or covers.

###### **(2) Plant Arrangement.**

(a) Provisions for safety (such as adequate work and storage space for the full needs of raw, in-process, and finished materials, and for machinery, equipment and operations) shall be included in plant design, layout, and operation.

(b) A vertical clearance of not less than 6-1/2 feet shall be provided over work areas. Where it is otherwise impractical to secure adequate head room, overhead obstructions may be padded or may be indicated by means of contrasting paint, telltales, or similar means, if such means will furnish adequate protection.

(c) Work platforms provided shall be of sufficient width to provide a safe working space.

###### **(3) Aisles, Passageways, Walkways, Inclines.**

(a) Aisles, passageways, and walkways shall be of adequate width for their intended or actual use, and in no event shall they be less than 22 inches wide. Passageways which are elevated more than 4 feet above the ground or floor level shall be provided with standard railings.

(b) Walkways or passageways equipped with standard handrails shall be provided for oilers and other workers who are regularly required to go to elevated or other hazardous locations. Whenever space will permit, they shall be not less than 22 inches wide.

(A) Fixed inclined walkways shall be not less than 22 inches wide, equipped with handrails on each open side, inclined at no greater angle than 24 degrees, and they shall be securely fastened at the top and bottom.

(B) Moveable inclined walkways which extend to floats or floating equipment (except to vessels under Federal jurisdiction) shall be not less than 20 inches wide, and shall be secured at the upper end only with clear space provided for the lower end to adjust automatically with the heights of water.

(d) An adequate anti-slip surface shall be applied to inclined walkways whenever the gradient so warrants. Adequate cleats secured at uniform intervals not to exceed 18 inches, and extending the full width of the walkway when practical, may be used for this purpose.

(e) Inclines extending from floor to floor which are used instead of stairways shall have standard railings in accordance with the requirements for stairways.

(f) Aisles, passageways, walkways, and inclines shall be kept in good repair and shall be free of holes, unevenness, loose boards, protruding nails, or any other unnecessary obstructions or debris.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90; OSHA 6-1994, f. & cert. ef. 9-30-94

#### **437-002-0023**

##### **Covers for Holes**

Covers for holes in floors, roofs, and other walking/working surfaces (to include skylights and skylight screens) must be capable of supporting, without failure, at least twice the weight of employees, equipment, and materials that may be imposed on the cover at any one time.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2013, f. 2-15-13, cert. ef. 4-1-13

#### **437-002-0026**

##### **Portable Ladders**

(1) Definitions. Portable ladder terms mean:

(a) Check. A lengthwise separation of the wood, most of which occurs across the rings of annual growth.

(b) Compression failure. A deformation (buckling) of the fibers due to excessive compression along the grain.

(c) Decay. Disintegration of wood substance due to action of wood-destroying fungi. It is also known as rot and rot.

(d) Extension ladder. A non self-supporting portable ladder of adjustable length. It has two or more sections that adjust to varied lengths.

(e) Extension trestle ladder. An adjustable, self-supporting portable ladder made of a trestle ladder base and a vertical extension section.

(f) Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

(g) Low density wood. Exceptionally light in weight and usually deficient in strength for the species.

(h) Platform ladder. A fixed length, self-supporting portable ladder with a platform at the highest permissible standing level.

(i) Platform. A landing surface for working or standing.

(j) Reinforced Plastic. A plastic made stronger than its base by the addition of high strength fillers, usually fibers, fabrics or mats.

(k) Section.

(A) Bottom or base section. The lowest section of a non self-supporting portable ladder.

(B) Middle or intermediate section. The section(s) between the top (fly) and bottom (base) sections of a non self-supporting portable ladder.

(C) Top or fly section. The uppermost section of a non self-supporting portable ladder.

(I) Sectional ladder. A non-self-supporting, fixed length, portable ladder, with two or more sections of ladder that may combine to work as a single ladder. Its size is the length of the assembled sections.

(m) Shake. A separation along the grain, most of which occurs between the rings of annual growth.

(n) Single Section Ladder. A fixed length, non self-supporting portable ladder made of one section.

(o) Stepladder. A fixed length, self-supporting portable ladder with a hinged back.

(p) Top Cap. The very top part of a stepladder.

(q) Top Step. The first step below the top cap of a stepladder. If the ladder has no top cap, the top step is the first one below the top of the rails.

(r) Trestle ladder. A fixed length, self-supporting portable ladder made of two sections and hinged at the top. It can be climbed by two people at once, one per side.

(s) Wane. Bark, or the lack of wood from any cause, on the corner of a piece.



(t) Wood irregularities. Natural characteristics in or on wood that may lower its durability, strength, or utility.

(u) Working Load Rating. The maximum load authorized by the manufacturer for the ladder.

(2) Application: This standard covers the selection, use and care of portable ladders used in agriculture. It does not cover orchard ladders, special ladders, combination step and extension ladders, aisle way step ladders, and shelf ladders.

(3) Ladder selection:

(a) Portable reinforced plastic (fiberglass) ladders must comply with American National Standard A14.5-1992. Wood ladders must comply with American National Standard A14.1-1994. Metal ladders must comply with American National Standard A14.2-1990.

(b) Unaltered and properly maintained ladders that meet the ANSI standard in effect at the time of their manufacture comply with this standard as do ladders that comply with newer versions of the particular ANSI standard.

(4) Condition of wood ladders: There must be no sharp edges or splinters on wood parts. Visual inspection must show no check, shake, wane, compression failures, decay, or other wood irregularities. Ladders may not be made of low-density wood.

(5) General requirements — all ladders:

(a) Step spacing must be uniform and not more than 12 inches. Steps must be parallel and level when the ladder is in the normal use position.

(b) All joints, attachments and working parts of ladders must be tight and not worn to a point that causes a hazard. Do not use ladders with damaged or bent parts.

(c) Replace frayed or badly worn rope.

(d) Safety feet and other auxiliary equipment must be in good condition.

(e) Inspect ladders and remove from use any with defects. Ladders awaiting repair must be tagged "Dangerous, Do Not Use."

(f) There can be no dents, breaks or bends in the side rails or rungs.

(g) Do not make ladders by fastening cleats across a single rail.

(h) Portable ladders must have nonslip bases.

(6) General requirements — Portable stepladders:

(a) The minimum width between side rails at the top, inside to inside, must be not less than 11 inches. From top to bottom, the side rails must spread at least 1 inch for each foot of length of the stepladder.

(b) The bottoms of the four rails must have insulating nonslip material.

(c) There must be a metal spreader or locking device strong enough to hold the ladder open. The spreader must have no sharp points or edges. For Type III ladders, the pail shelf and spreader can be one unit (a shelf-lock ladder).

(7) Use — All ladders: Use ladders only for purposes approved or recommended by the manufacturer.

(a) Do not load ladders beyond their working load rating.

(b) Do not use ladders in front of doors that open toward the ladder without blocking, locking or guarding the door.

(c) Do not use ladders placed on boxes, barrels, or other unstable bases to obtain additional height.

(d) Do not use ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty parts.

(e) Do not splice sections of short ladders together to make a long one.

(f) When used, metal reinforcers must be on the underside of rails of portable rung ladders.

(g) A ladder for access to a roof must extend at least 3 feet above the top support point, at the eave, gutter, or roofline.

(h) Secure ladders as necessary when used on surfaces that may allow slipping or movement. Use one of the following methods:

(A) Non-slip bases on the ladder feet; or

(B) Steel points or safety shoes on the ladder feet, designed for the type of surface the ladder is on; or

(C) Nail the ladder to the floor, or set it against secured blocks or chocks.

**NOTE:** Non-slip bases are not a substitute for care in safely placing, lashing, or holding a ladder on oily, metal, concrete, or slippery surfaces.

(i) Use portable ladders only on a surface that gives stable, level footing.

(j) The climber must face the ladder and have free use of both hands when climbing up or down.

(k) Do not step or jump between erected ladders.

(l) There must be only one person at a time on a ladder unless its labeling specifically allows use by more than one person.

(m) Do not use ladders as planks or bridges between walking surfaces or in other horizontal applications.

(n) Do not use ladders to gain additional height from elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.

(o) When working on or near electric circuits or energized lines, comply with OAR 437-002-1910.333(c).

(p) Unless the ladder has a single support attachment, the tops of both rails must contact an adequate support surface.

(q) Do not use ladders for any purpose not intended by the manufacturer nor as a brace, skid, guy or anchor point.

(8) Use of specific types of ladders.

(a) Portable stepladders. Do not use stepladders more than 20 feet long.

(A) Do not climb on the back section of the ladder unless it has steps meant for climbing. Do not stand on the top step or top cap of stepladders.

(B) There must be only one person at a time on the ladder.

(C) Do not use stepladders in freestanding positions when not fully opened. Do not use them as supports for working platforms or scaffolding planks.

(b) Portable rung ladders.

(A) Single ladder.

(i) Do not use single ladders more than 30 feet long.

(ii) Place these ladders at an angle shown in Figure 1. [Figure not included. See ED. NOTE.]

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Single ladders are acceptable as fixed ladders only when they comply with 437-002-0027.

(B) Two-section ladder.

(i) Do not use two-section extension ladders more than 60 feet long. All ladders of this type must have two sections, one to fit within the side rails of the other, and arranged so that the upper section will raise and lower.

(ii) Set up and use extension ladders so that the top section or fly is resting on the bottom section or base. Rung locks must be in the proper position.

(iii) Place these ladders at an angle shown in Figure 1.

(iv) The tops must be tied down or secured if there is a possibility of sliding or movement.

(v) On two-section extension ladders the minimum overlap for the two sections in use must be as follows: [Table not included. See ED. NOTE.]

(C) Sectional ladder.

(i) Do not use assembled combinations of sectional ladders longer than lengths allowed in this subdivision.

(ii) Place these ladders at an angle shown in Figure 1.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Do not use three section extension ladders longer than 72 feet.

(D) Trestle and extension trestle ladder. Do not use trestle ladders, or extension sections or base sections of extension trestle ladders more than 20 feet long.

[ED. NOTE: Figures and Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1999, f. & cert. ef. 9-10-99

#### **437-002-0027**

##### **Fixed Ladders**

(1) Definitions. Fixed ladder terms mean:

(a) Cage. A guard sometimes referred to as a basket guard that is an enclosure fastened to the side rails of a fixed ladder or to a structure to encircle the climbing space of the ladder.

(b) Cleats. Ladder crosspieces of rectangular cross-section placed on edge on which a person may step when climbing up or down.

(c) Fastenings. A device to attach a ladder to a structure, building, or equipment.

(d) Fixed ladder. A ladder permanently attached to a structure, building, or equipment.

(e) Grab bars. Individual handholds adjacent to or as an extension above ladders to provide access beyond the limits of the ladder.

(f) Individual-rung ladder. A fixed ladder with each rung individually attached to a structure, building, or equipment.

(g) Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

(h) Ladder safety device. Any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls, that may use life belts, friction brakes, and sliding attachments.

(i) Pitch. The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

(j) Rail ladder. A fixed ladder with side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

(k) Rungs. Ladder crosspieces of circular or oval cross-section on which a person may step when climbing up or down.

(l) Side-step ladder. One from which a person getting off at the top must step sideways to reach the landing.

(m) Steps. The flat crosspieces of a ladder on which a person may step when climbing up or down.

(n) Through ladder. A ladder from which a person getting off at the top must step through side rails to reach the landing.

(o) Well. A permanent complete enclosure around a fixed ladder, that is attached to the walls of the well. Proper clearances for a well will give the climber the same protection as a cage.

(2) Design requirements: Design considerations. All ladders, appurtenances, and fastenings must meet these load requirements:

(a) The minimum design live load must be a single concentrated load of 200 pounds.

(b) Design consideration must include the number and position of additional concentrated live load units of 200 pounds each as determined from anticipated use.

(c) Consider the live loads caused by persons on the ladder to be concentrated at such points as will cause the maximum stress in the structural member being under evaluation.

(d) Use the weight of the ladder and attachments together with the live load when designing rails and fastenings.

(e) All wood parts of fixed ladders must meet the requirements of OAR 437-002-0027(3).

(f) For fixed ladders with wood side rails and wood rungs or cleats, used at an angle between 75° and 90°, and intended for use by no more than one person per section, single ladders in OAR 437-002-0026(8)(b)(A) are acceptable.

(3) Specific features.

(a) Rungs and cleats.

(A) All rungs must have a minimum diameter of 3/4 inch for metal ladders, except as in paragraph OAR 437-002-0027(3)(g) and a minimum diameter of 1-1/8 inches for wood ladders.

(B) The distance between rungs, cleats, and steps must be uniform and not more than 12 inches.

(C) The minimum clear length of rungs or cleats must be 16 inches.

(D) Rungs, cleats, and steps must not have splinters, sharp edges, burrs, or projections.

(E) The rungs of an individual rung ladder must not allow the climber's foot to slide off the end. Figure 2 shows a suggested design. [Figure not included. See ED. NOTE.]

(b) Side rails. Side rails that might be used as a climbing aid must be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.

(c) Fastenings. Fastenings must be an integral part of fixed ladder design.

(d) Splices. All splices must meet design requirements noted in (2)(a) above. All splices and connections must have smooth transition with original members and no sharp or extensive projections.

(e) Electrolytic action. Protect dissimilar metals from electrolytic action when they are joined.

(f) Welding. All welding must be according to the "Code for Welding in Building Construction" (AWS D1.0-1966).

(g) Protection from deterioration. Paint or treat metal ladders and attachments to resist corrosion and rusting when necessary. Ladders with individual metal rungs imbedded in concrete, that serve as access to pits and to other areas under floors, must have rungs with a minimum diameter of 1 inch or paint or treatment to resist corrosion and rusting.

(4) Clearance.

(a) Climbing side. On fixed ladders, the perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder must be 36 inches for a pitch of 76°, and 30 inches for a pitch of 90° (fig. 3), with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope, except as in (4)(c) and (e) below.

(b) Ladders without cages or wells. There must be a clear width of at least 15 inches each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.

(c) Ladders with cages or baskets. Subparagraphs (4)(a) and (b) above do not cover ladders with a cage or basket. They must conform to (5)(a)(E). Subparagraph (4)(a) above does not cover fixed ladders in smooth-walled wells. They must conform to (5)(a)(F).

(d) Clearance in back of ladder. The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder must be not less than 7 inches, except that when there are unavoidable obstructions, there must be minimum clearances shown in Figure 4. [Figure not included. See ED. NOTE.]

(e) Clearance in back of grab bar. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars must be not less than 4 inches. Grab bars must not protrude on the climbing side beyond the rungs of the ladder that they serve.

(f) Step-across distance. The step-across distance from the nearest edge of the ladder to the nearest edge of equipment or structure must be not more than 12 inches, or less than 2 inches (Figure 5). [Figure not included. See ED. NOTE.]

(g) Hatch cover. Counterweighted hatch covers must open a minimum of 60° from the horizontal. The distance from the centerline of rungs or cleats to the edge of the hatch opening on the climbing side must be not less than 24 inches for offset wells or 30 inches for straight wells. There must be no protruding potential hazards within 24 inches of the centerline of rungs or cleats; any such hazards within 30 inches of the centerline of the rungs or cleats must have deflector plates at an angle of 60° from the horizontal as shown in figure 6. The relationship of a fixed ladder to an acceptable counterweighted hatch cover is shown in Figure 7. [Figure not included. See ED. NOTE.]

(5) Special requirements.

(a) Cages, Wells and Ladder Climbing Safety systems.

(A) Cages, wells or ladder climbing safety systems must be on all ladders where the length of climb is more than 24 feet but not more than 50 feet or the top of the ladder is more than 24 feet above the ground or nearest lower landing surface.

**NOTE:** Design specifications for cages and wells are in Figures 8, 9 and 10.

(B) Ladders with a length of climb more than 50 feet must have a cage, well or climbing safety system and must meet one of the following two requirements:

(i) When using a cage or well the ladder must be in sections, horizontally offset, with rest platforms at least every 50 feet.

(ii) When using a ladder climbing safety system the ladder must have rest platforms at least every 150 feet (except chimneys).

(C) Cages must extend at least 42 inches above the top of the landing, unless there is other acceptable protection.

(D) Cages must extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder. The bottom

must flare not less than 4 inches or the portion of the cage opposite the ladder must extend to the base.

(E) Cages must not extend less than 27 nor more than 28 inches from the centerline of the rungs of the ladder. Cages must not be less than 27 inches in width. The inside must be clear of projections. Vertical bars must be at a maximum spacing of 40 degrees around the circumference of the cage; this will give a maximum spacing of approximately 9 inches, center to center.

(F) Ladder wells must have a clear width of at least 15 inches measured each way from the centerline of the ladder. Smooth-walled wells must be a minimum of 27 inches from the centerline of rungs to the well wall on the climbing side of the ladder. Where other obstructions on the climbing side of the ladder exist, there must be a minimum of 30 inches from the centerline of the rungs.

(b) Landing platforms.

(A) Where a person has to step a distance more than 12 inches from the center line of the rung of a ladder to the nearest edge of a structure or equipment, there must be a landing platform. The minimum step-across distance is 2 inches.

(B) All landings must have standard railings and toeboards, that give safe access to the ladder. Platforms must be not less than 24 inches wide and 30 inches long.

(C) One rung of any section of ladder must be at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the spacing from the landing platform to the first rung below the landing must be the same as the rung spacing on the ladder.

(c) Ladder extensions. The side rails of through or side step ladder extensions must extend 3 feet above parapets and landings. For through ladder extensions, omit the rungs from the extension. There must be not less than 18 nor more than 24 inches clearance between rails. For side step or offset fixed ladder sections, at landings, the side rails and rungs must extend to the next regular rung beyond or above the 3-foot minimum (Figure 11). [Figure not included. See ED. NOTE.]

(d) Grab bars. Space grab bars by a continuation of the rung spacing when they are horizontal. Vertical grab bars must have the same spacing as the ladder side rails. Grab bar diameters must be the equivalent of the round rung diameters.

(6) Pitch.

(a) Preferred pitch. The preferred pitch of fixed ladders is between 75° and 90° with the horizontal (Figure 12). [Figure not included. See ED. NOTE.]

(b) Substandard pitch. Fixed ladders are substandard if they are between 60° and 75° with the horizontal. Substandard fixed ladders are allowed only where necessary to meet conditions of installation.

(c) Scope of coverage in this section. This section covers only fixed ladders between 60° and 90° with the horizontal.

(d) Pitch more than 90°. No ladder may be more than 90° with the horizontal.

(7) Maintenance. All ladders must be in safe condition. Inspect ladders at intervals determined by use and exposure.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1999, f. & cert. ef. 9-10-99

### **437-002-0028**

#### **Guardrails and Toeboards**

Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90

### **437-002-0030**

#### **Floors**

The following Oregon-initiated rule relates to 29 CFR 1910.30, **Other Working Surfaces**:

(1) Floors, floor supports, and required appurtenances shall be well maintained and kept in good repair. Defects should be remedied as soon as observed. Unless repaired immediately, hazardous floor

openings and holes shall be fenced off or otherwise suitably guarded, and shall remain fenced off or guarded until properly repaired.

(2) Floors subject to slipping hazards due to conditions or processes of an operation or materials to which they will be exposed shall be of material and/or design which will effectively control slippery conditions.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90; OSHA 6-1994, f. & cert. ef. 9-30-94

### **437-002-0031**

#### **Provisions for Window Cleaners**

(1) Every window so constructed that a worker must stand on the outside sill or ledge to clean the window and having a sill more than ten feet above the ground or adjoining surface, shall have a sill at least six inches wide with a slope not greater than one to six, and shall have a securely fastened at each side of the window, at a height not less than 42 inches or more than 51 inches, a safety anchorage to which may be fastened a window cleaner's safety belt. Such anchorage shall be of a metal having a corrosion resistance of 60 percent as compared to copper. The anchor shall be machined from bar stock or forged and heat-treated, and shall be capable of supporting a pull of 6,000 pounds without fracture applied in the direction which the anchor must withstand in service should a person fall.

(2) Anchor clearance shall be not less than one inch at either side and not less than five inches above or below the anchor.

(3) All anchors and anchor fastenings shall be provided with means to prevent them from turning, backing off or becoming loose.

(4) Anchor fittings having a single threaded section which is merely screwed into reinforcing plates are prohibited.

(5) Following are acceptable methods of installing anchors in various types of construction. Other methods excepting those specifically prohibited, may be permitted, provided that they furnish at least the equivalent strength and safety:

(a) In wood construction, two through bolts of not less than 3/8 inch diameter shall pass through the entire window frame or mullion to secure each anchor, securely fastened by a washer and nut, the ends of bolts upset to prevent the nuts from loosening or being removed. The use of lag screws is specifically prohibited;

(b)(A) In hollow metal frame construction, the anchor shall be attached by two 3/8 inch diameter bolts which shall pass through the face of the frame and through a 3/8 inch thick steel back-up plate, 3/4 inch wide extending from five inches above the upper bolt to two inches below the lower one. Bolts shall be secured by means of nuts and lock washers or equivalent means. If impractical to provide nuts and lock washers, the reinforcing plate may be tapped to receive the 3/8 inch bolts, which must pass completely through the plate and be secured with lock washers. If the threaded bolt is an integral part of the anchor, it shall be at least 1/2 inch in diameter and be secured by a nut and lock washer or equivalent means. All screws or bolts used shall have the threads terminate far enough from the head to prevent weakening due to undercutting;

(B) In either solid or hollow aluminum frames, the reinforcing plate and bolts shall be heavily coated with a bituminous paint, and a plastic gasket shall be placed between the anchor and the aluminum metal as a means of preventing electrolytic action between unlike metals; or another acceptable means which will prevent such action may be used.

(c) In solid metal frame construction, anchors shall be attached by two 3/8 inch diameter bolts passed through the frame and secured by nuts and washers on the inside, ends of bolts upset. When this method cannot be used, it will be permissible to drill and tap the metal frame to a depth of at least 3/8 inch and install the anchor with at least two 3/8 inch screws, which shall have the threads terminate far enough from the head to prevent weakening due to undercutting. If the threaded bolt is an integral part of the anchor, it shall be at least 1/2 inch in diameter and be secured by a nut and lock washer, or equivalent means;

(d) In masonry construction, the anchor shall be either a single bolt at least 1/2 inch in diameter, or two 3/8 inch diameter bolts. Such bolt or bolts shall have a head on the inner end and shall be imbed-



ded not less than eight inches in solid masonry, or extend through the wall or mullion and be secured by a nut and lock washer or equivalent means. The use of masonry anchors consisting of flat metal embedded in mortar joints between brick or concrete blocks or stone is prohibited in new or existing buildings.

(6) Where sills are less than six inches wide, auxiliary or portable sills or other means providing equivalent safety may be permitted.

(7) Window cleaners' anchorages shall be inspected regularly and any defects found shall be remedied before workers are permitted to use them.

(8) For buildings constructed, remodeled or renovated on or after the adoption date of this rule the provisions of ANSI/ASME A39.1-1987 shall apply.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90

#### **437-002-0032**

##### **Ramps and Runways**

(1) Ramps and runways shall be substantially constructed, and shall be maintained in safe condition.

(2) Ramps and runways for vehicles shall have adequate width and evenness for safe operation of equipment and they shall be provided with timber guards of not less than nominal six-inch by six-inch material set on nominal three inch blocks, or the equivalent, placed parallel to and secured to the sides of the ramp or runway.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90

#### **437-002-0033**

##### **Piers and Wharves**

(1) Open sides of piers and wharves, more than four feet above ground or water level, shall be provided with a shear or guard timber (bull rail) of not less than six-inch by six-inch wood material set on nominal three-inch blocking, or material of equal strength and of minimum height securely attached. Except for areas where vessels' mooring lines are handled, the open sides not used for loading or unloading purposes shall be provided with standard handrails in addition to shear timbers.

(2) Ladders or other means of access reaching from low water mark to the dock floor shall be provided for each 400 feet or portion thereof of the water side of all wharves and piers. Where portable ladders are used, a secure method of fastening them shall be provided.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1990, f. & cert. ef. 1-23-90

#### **437-002-0040**

##### **Adoption by Reference**

In addition to and not in lieu of any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/99, and any subsequent amendments published in the Federal Register as listed below:

(1) 29 CFR 1910.35 Definitions, REPEALED. In Oregon, OAR 437-002-0041 applies.

(2) 29 CFR 1910.36 General Requirements, REPEALED. In Oregon, OAR 437-002-0041 applies.

(3) 29 CFR 1910.37 Means of Egress — General, REPEALED. In Oregon, OAR 437-002-0041 applies.

(4) 29 CFR 1910.38 Employee Emergency Plans and Fire Prevention Plans, REPEALED. In Oregon, OAR 437-002-0042 and 437-002-0043 apply.

These rules are on file with Oregon Occupational Safety and Health Division, Department of Consumer and Business Services and the United States Government Printing Office.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 4-1990, f. & cert. ef. 1-23-90; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 8-2000, f. & cert. ef. 10-10-00

#### **437-002-0041**

##### **Exits and Exit Routes**

(1) Application: This subpart does not apply to mobile workplaces, like vehicles or vessels.

(2) Definitions:

(a) Exit. The part of the exit route, that is a way out of the workplace (like a door, stairwell or vestibule).

(b) Exit Route. A continuous, unobstructed path from anywhere in a work area to the exit.

(3) General:

(a) There must be permanent, unobstructed exit routes to get out of work areas safely during emergencies.

(b) There must be two or more exit routes depending on the size and layout of the work area and the number of people involved. A single exit route is acceptable only if all workers can get out through it safely during an emergency. Locate multiple exit routes apart from each other.

(4) Design:

(a) An exit must have enough openings to permit access to, or exit from, occupied areas. An interior opening into an exit must have a self-closing fire door that remains closed. Each fire door, its frame, and its hardware must be listed or approved by a nationally recognized testing laboratory.

**Note to paragraph(a):** 29 CFR 1910.155(c)(3)(iv)(A) defines "listed," 29

CFR 1910.7 defines a "nationally recognized testing laboratory," and 29

CFR 1910.155 (c)(3) defines "approved."

(b) Walls or partitions that separate an exit from other areas must have at least a 1-hour fire resistance rating if the exit connects three stories or less. Materials that separate an exit must have at least a 2-hour fire resistance rating if the exit connects four stories or more.

(c) Exits must open from the inside without keys, tools or special knowledge. Devices that lock only from the outside are acceptable. There must be nothing on an exit door that could hinder its use during an emergency.

**NOTE:** You may lock or block an exit door from the inside in a mental, penal, or correctional institution, if supervisory personnel are continuously on duty and a plan exists to remove occupants during an emergency.

(d) An exit must lead directly outside or to a street, walkway, refuge area, or to an open space with access to the outside.

(e) Exit stairs that continue beyond the floor of exit discharge must have doors, partitions, or other effective means at the floor of exit discharge to assure that the direction of exit travel is clear to employees.

(f) Use only a side-hinged exit door to connect any room to an exit route. The door must swing out if the room can hold more than 50 persons or has highly flammable or explosive materials in it.

(g) Each exit route must be able to handle the maximum-permitted occupant load for each floor served by it. The capacity of a path to the exit must not decrease as people move toward the exit.

(h) The exit route must be at least 6 feet, 8 inches high at all points.

(i) An exit route must be at least 28 inches wide at all points between handrails and wider if needed to handle the occupant load.

(j) Objects that project into the exit route must not reduce the minimum height and width of the exit route.

(k) Repair or replace damaged or altered fire retardant coatings to keep their original retardant effectiveness.

(5) Access:

(a) There must be unobstructed access to exit routes.

(b) Exit routes must not pass through or into lockable rooms or dead ends.

(c) Exit routes must be mostly level or have stairs or ramps.

(6) Outside and refuge areas:

(a) The street, walkway, refuge area, or open space to which an exit leads must be large enough to accommodate all building occupants likely to use that exit.

(b) A refuge area must be:

(A) A space along an exit route protected from the effects of fire either by separation from other spaces within the building or by its location; or

(B) A floor with at least two spaces separated by smoke-resistant partitions, in a building where each floor is protected by an auto-

matic sprinkler system. Automatic sprinkler systems must comply with 29 CFR 1910.159.

(7) Outside Exit Routes:

(a) Outdoor exit routes must meet the requirements for indoor exit routes and these additional requirements:

(A) The exit route must have guardrails to protect unenclosed sides elevated above a lower surface;

(B) There must be a cover if accumulation of snow or ice is likely;

(C) The exit route must be reasonably straight, smooth, solid, substantially level; and

(D) The exit route must have no dead ends longer than 20 feet.

(8) Condition of Exit Routes and Exits:

(a) Exit routes must minimize danger to employees during emergencies.

(b) Exit routes must be free of highly flammable furnishings and decorations.

(c) An exit route must not require employees to travel toward materials that burn very quickly, emit poisonous fumes, or are explosive, unless those materials are effectively shielded from the exit route.

(d) Exit routes must have adequate lighting.

(e) Each exit must be clearly visible and must have a distinctive sign reading "Exit." Install additional directional signs to exits where necessary.

(f) Exit doors must have no signs or decorations that obscure their visibility.

(g) The line-of-sight to an exit sign must be clear.

(h) If workers could mistake a "non-exit" for an exit, mark the non-exit, "Not an Exit" or mark it to indicate its real use.

(i) There must be enough reliable light on or from exit signs to allow them to be effective during emergencies.

(j) All safeguards to protect employees during an emergency (e.g., sprinkler systems, alarm systems, fire doors, exit lighting) must work properly.

(9) Exits During Construction and Repair:

(a) Employees must not occupy an area under construction until an adequate number of exit routes that comply with these rules are available.

(b) Employees must not occupy an area during repair or alteration unless all exits and existing fire protection remain as effective as before the work. Alternate fire protection must provide an equivalent level of safety.

(c) Flammable or explosive materials used during construction or repair must not expose employees to hazards not otherwise present or impede emergency escape.

(10) Alarm System. There must be an operable employee alarm system with a distinctive signal to warn employees of fire or other emergencies, unless employees can see or smell a fire or other hazard so that it would provide adequate warning to them. The employee alarm system must comply with the requirements of 29 CFR 1910.165.

(11) Special Circumstances — Counterweights and Cold Storage Facilities.

(a) There must be an enclosure or guard around counterweights that are near enough to passageways or work areas to cause a hazard. The guard or enclosure need only be sufficient to protect workers from contact with the counterweight when it moves.

(b) The doors on walk-in refrigerators, coolers and freezers must have latches or closer devices that open from the inside without a key or special knowledge or effort.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-2000, f. & cert. ef. 10-10-00; OSHA 12-2001, f. & cert. ef. 10-26-01

#### **437-002-0042**

##### **Emergency Action Plan**

(1) Development of An Emergency Action Plan.

(a) When another Oregon OSHA standard requires an employer to develop an emergency action plan, the plan must comply with this section and cover each part of the workplace.

(b) The plan must be in writing, in the work area and available to employees on request, except that an employer with 10 or fewer employees in a workplace may use a verbal plan.

(2) Minimum Elements of An Emergency Action Plan. An emergency action plan must include:

(a) Procedures for emergency evacuation, including type of evacuation and exit route assignments;

(b) Procedures to account for all employees after evacuation;

(c) Procedures for reporting a fire or other emergency;

(d) Procedures to follow for emergency operation or shut down of critical equipment before evacuation;

(e) Procedures to follow for rescue and medical duties; and

(f) Names or job titles of employees to contact for more information about the duties of employees under the plan.

(3) Employee Alarm System. There must be a properly working employee alarm system. The alarm system must use a distinctive signal for each purpose and comply with 29 CFR 1910.165.

(4) Training. An employer must designate employees to assist in the safe emergency evacuation of other employees. These designated employees must receive training in emergency evacuation procedures.

(5) Employee Review. An employer must review the emergency action plan with each employee covered by it:

(a) When the plan is new or the employee is new to the job;

(b) When the employee's responsibilities under the plan change; and

(c) When the plan changes.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-2000, f. & cert. ef. 10-10-00; OSHA 12-2001, f. & cert. ef. 10-26-01

#### **437-002-0043**

##### **Fire Prevention Plan**

(1) Development of A Fire Prevention Plan.

(a) When another Oregon OSHA standard requires an employer to develop a fire prevention plan, the plan must comply with this section and cover each part of the workplace.

(b) The plan must be in writing, in the work area and available to employees on request; except that an employer with 10 or fewer employees in a workplace may use a verbal plan.

(2) Minimum Elements of A Fire Prevention Plan. A fire prevention plan must include:

(a) A list of all major fire hazards, including proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard;

(b) Procedures to control accumulations of flammable and combustible waste materials;

(c) Procedures for regular maintenance of safeguards on heat producing equipment to prevent accidental ignition of combustible materials;

(d) Names or job titles of employees responsible for maintaining equipment to prevent or control sources of ignition or fires; and,

(e) Names or job titles of those responsible for control of fuel source hazards.

(3) Employee Information. The employer must:

(a) Inform employees of the fire hazards in their work area; and

(b) Review with each employee, when first assigned to a job, those parts of the fire prevention plan necessary for self-protection.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-2000, f. & cert. ef. 10-10-00; OSHA 12-2001, f. & cert. ef. 10-26-01

#### **437-002-0047**

##### **Working Near Overhead High Voltage Lines and Equipment**

(1) Definitions.

(a) Insulating Barrier or Guard. A structure, installation, barrier, or guard (such as a wall, fence, pole, shield, or something similar) that stops movement and prevents all possible contact with the lines or equipment. Its design, material composition, and installation

prevents possible conduction of electricity up to the maximum voltage of the system.

(b) Restricted Space.

(A) For lines rated more than 600 V to 50 kV, restricted space extends 10 feet in all directions from the surface of the line or equipment.

(B) For lines rated over 50 kV, restricted space extends 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the insulator (but never less than 10 feet) in all directions from the surface of the line or equipment.

(C) For equipment or structures in transit, on level surfaces, restricted space extends 4 feet in all directions from lines or equipment rated 50 kV or less, 10 feet in all directions for lines or equipment rated over 50 kV, and 16 feet in all directions for lines or equipment rated over 345 kV up to and including 750 kV.

(c) Proper Notification. The person(s) responsible for the (planned) activity must notify the owner/operator of the line or equipment, at their business office, at least 2 business days prior to the anticipated beginning of work (business days are Monday through Friday, excluding federal and state holidays). The notification must include: (1) the proposed date to start activity within restricted space; (2) the location of the planned activity; (3) a description of the planned activity; and (4) name and contact information of the contact person.

(2) General requirement. Do not enter, perform any function or activity (such as handling, erecting, operating, transporting, or storing any tools, equipment or materials, moving a building or structure) within the restricted space surrounding an overhead high voltage line or equipment unless:

(a) Proper notification is provided; and

(A) The line and/or equipment is de-energized and visibly grounded by the owner of the high voltage system or their authorized agent; or

(B) Accidental contact is effectively prevented by use of insulating barriers or guards. Barriers or guards must:

(i) Be erected or installed by the owner of the high voltage system or their authorized agent;

(ii) Not be attached to, or be part of the lines, equipment, or machinery;

**NOTE:** Overhead line covers are only for visual reference, and their use does not allow entry into restricted space. If used, they must be installed by the owner of the high voltage system or their authorized agent.

(iii) Prevent all possible contact with the lines or equipment; and

(iv) Insulate against the system's maximum voltage; or

(b) You are the owner, an authorized employee, or authorized (in writing) agent of the overhead high voltage system; or

(c) Insulated lines (not tree wire) and equipment (designed and engineered to allow only incidental contact) are erected or installed by the owner of the high voltage system or their authorized agent.

**NOTE:** Nothing in this standard shifts the responsibility for safe and healthy working conditions from the person(s) responsible for the activity to the owner of the lines or their agent.

**NOTE:** Nothing in this standard mandates that the owner of the lines or equipment, or their authorized agent must agree to de-energize, move, barricade, guard, or insulate lines or equipment, or take other action to allow entry into restricted space.

(3) Do not move, reposition, or reduce restricted space in any direction by applying stress or force to a line, equipment, or supporting structure.

(4) Operation of machinery or equipment.

(a) Do not enter restricted space when using insulating links or proximity warning devices on equipment.

(b) Post a warning sign on each piece of equipment which is capable of vertical, lateral, or swinging motion, such as a crane, derrick, power shovel, drilling rig, or pile driver.

(A) The sign must be made of durable material.

(B) It must be in clear view of the operator.

(C) The message must be legible to the operator when at the controls.

(D) The message must be understood by the operator.

(E) The message must clearly convey that it is "Unlawful to operate the piece of equipment within 10 feet of high voltage lines".

(c) Use an observer to provide audible warning (able to be clearly heard over surrounding noise) when it becomes difficult for an operator to identify restricted space by using visual means. The observer's only task is to watch the clearance and warn the operator if it appears that restricted space will be breached.

(d) Restrict, barricade, or otherwise make it impossible for a machine or piece of equipment to reach into restricted space if it is reasonable to anticipate that the operator's attention may be focused on the work process rather than the location of an overhead high voltage line or equipment (such as during excavating, or other fast-paced, repetitive work).

(5) Railway and commuter systems.

(a) Standard rail equipment used to transport freight and/or passengers, and relief trains or other equipment used in emergencies, may enter restricted space surrounding high voltage lines or equipment.

(b) Qualified employees, authorized and supervised by a person familiar with the hazards of the railway high voltage system, may perform normal repair or construction work within restricted space prior to compliance with the clearance and safeguard requirements in sections (1) through (4).

Stat. Auth.: ORS 654.025(2) & 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 4-2007, f. & cert. ef. 8-15-07

### **437-002-0060**

#### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.66 Powered Platforms for Building Maintenance, published 2/14/07, FR vol. 72, no. 30, p. 7136.

(2) 29 CFR 1910.67 Vehicle-Mounted Elevating and Rotating Work Platforms, published 7/1/14, FR vol. 79, no. 126, p. 37189.

(3) 29 CFR 1910.68 Manlifts, published 12/14/07, FR vol. 72, no. 240, p. 71061.

(4) These standards are on file with the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 4-1990, f. & cert. ef. 1-23-90; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 4-2007, f. & cert. ef. 8-15-07; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA 1-2015, f. & cert. ef. 1-5-15

### **437-002-0072**

#### **Manually Propelled Elevating Aerial Platforms**

When using manually propelled elevating aerial platforms as covered by ANSI/SIA A92.3-1990, the manufacturer's operating manual must be with the equipment. You must follow all manufacturers' operating and maintenance instructions and recommendations.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2009, f. 4-13-09, cert. ef. 4-17-09

### **437-002-0074**

#### **Scissor Lifts — Self-Propelled Elevating Work Platforms**

When using self-propelled elevating aerial platforms, scissor lifts, as covered by ANSI/SIA A92.6-1990, the manufacturer's operating manual must be with the equipment. You must follow all manufacturers' operating and maintenance instructions and recommendations.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2009, f. 4-13-09, cert. ef. 4-17-09

### **437-002-0076**

#### **Boom Supported Elevating Work Platforms**

(1) When using boom supported elevating work platforms as covered by ANSI/SIA A92.5-1996, the manufacturer's operating



manual must be with the equipment. You must follow all manufacturers' operating and maintenance instructions and recommendations.

(2) All occupants on platforms must use a personal fall protection system that will protect against the potential effects of ejection.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2009, f. 4-13-09, cert. ef. 4-17-09

#### **437-002-0080**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.94 Ventilation, published 9/9/09, FR vol. 74, no. 173, pp. 46350-46361; amended with OR-OSHA Admin. Order 1-2012, f. and ef. 4/10/12.

(2) 29 CFR 1910.95 Occupational Noise Exposure, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

NOTE: 29 CFR 1910.96 Ionizing radiation, has been redesignated to 29 CFR 1910.1096.

(3) 29 CFR 1910.97 Nonionizing radiation, published 6/13/13, FR vol. 78, no. 114, p. 35559.

(4) 29 CFR 1910.98 Effective dates, published 6/27/74, Federal Register, vol. 39, p. 23502.

(5) 29 CFR 1910.99 Sources of standards, published 3/7/96, FR vol. 61, no. 46, p. 9236.

(6) 29 CFR 1910.100 Standards organization, published 3/7/96, FR vol. 61, no. 46, p. 9236.

These standards are on file with the Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92; OSHA 4-1993, f. 4-1-93, cert. ef. 5-1-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 8-1999, f. & cert. ef. 8-6-99; OSHA 3-2003, f. & cert. ef. 4-21-03; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 7-2013, f. & cert. ef. 12-12-13

#### **437-002-0081**

##### **Oregon Ventilation Regulations**

In addition to, and not in lieu of 29 CFR 1910.94, the following rules pertaining to ventilation apply in Oregon:

(1) Definitions:

(a) "Administrative Control" means the reduction of employee exposure to physical or chemical agents by control of the time of exposure to some period less than eight hours in length;

(b) "Harmful" or "Hazardous" as applied to the health effects of dusts, fumes, vapors, mists, gases, or any environmental condition, means any mechanical, infectious, toxic, or other action which is likely to produce medically determined injury or disease of exposed workers;

(c) "Health Hazard Control Measure" means the equipment or working arrangements designed to prevent the exposure of employees to harmful or hazardous situations. Such control measures may include, but are not limited to:

(A) Ventilation systems;

(B) Energy absorption system;

(C) Personal protective equipment;

(D) Air contaminant monitoring; and

(E) Human biological monitoring.

(d) "Local Exhaust System" means a system of hoods, booths, or enclosures designed to remove contaminants at points of generation or release into the atmosphere connected by means of piping to airflow or suction producing equipment;

(e) "Occupational Health Hazard" means those materials, processes, and atmospheric contaminants or energy concentrations which during normal or abnormal working conditions are likely to result in injury or illness to the unprotected employee;

(f) "Ventilation, Dilution" means ventilation provided to dilute the concentration of atmospheric contaminants in the atmosphere in all or part of the place of employment;

(g) "Ventilation, General" means the provision of fresh air at the place of employment;

(h) "Ventilation, Local Exhaust" means that the type of ventilation in which suction is applied at the point of generation or release of atmospheric contaminants;

(i) "Ventilation, Natural" means ventilation designed to depend wholly upon relative air density, and includes the use of openable doors, windows, and other building apertures.

(2) Recirculation. No air from any local exhaust system shall be recirculated, unless:

(a) The inert dust contained therein has a Permissible Exposure Limit (PEL) equal to or greater than ten milligrams per cubic meter as listed in Tables Z-1, Z-2, or Z-3 in OAR chapter 437, division 2, subdivision Z, 1910, OAR 437-002-0382, Oregon Rules for Air Contaminants. The inert dust concentration in such recirculated air shall not exceed five milligrams per cubic meter; or

(b) The contaminant contained therein has a Permissible Exposure Limit (PEL) equal to or greater than 100 parts per million as listed in Tables Z-1, Z-2, or Z-3 or OAR chapter 437, division 2, subdivision Z, OAR 437-002-0382, Oregon Rules for Air Contaminants. The contaminant concentration in such recirculated air shall not exceed 25 percent of its PEL; or

(c) The concentrations of contaminants in recirculated air do not exceed 25 percent of unity as calculated by the formula given in Division 2, Subdivision Z, OAR 437-002-0382(4)(b), Oregon Rules for Air Contaminants.

(3) Make-Up Air. Outside air equal in amount to the air removed by local exhaust systems shall be provided to replace air removed by an exhaust ventilation system.

(4) Air Contamination from Exhaust System. The discharge from any exhaust system shall be such that no air contamination therefrom will enter any window, door, or other opening of any work area in quantities sufficient to create a harmful or hazardous work atmosphere.

(5) Use of Salamanders and Fuel-Burning Heating Devices. Salamanders and other fuel-burning heating devices shall not be used in enclosed or inadequately ventilated spaces in which workers are employed unless such heating device is provided with a proper pipe, chimney, or enclosure to carry hazardous gases to the outside atmosphere.

(6) Local Exhaust Ventilation. The capacity of a local exhaust system shall be calculated on the basis of all hoods, booths, and enclosures connected to the system being open, except where the system is so interlocked that only a portion of it can be operated at a given time, in which case the capacity shall be calculated on the basis that all the hoods in the group requiring the greatest volume rate of exhaust are open.

(7) Exhausting More Than One Substance. Two or more operations involving more than one substance shall not be connected to the same exhaust system when a combination of the substances removed may constitute a fire hazard, or otherwise dangerous mixture.

(8) Exhausting Materials with Flammable Properties. Those processes or operations which require local exhaust ventilation and generate materials with flammable properties shall be protected from sources of ignition.

(9) Removal of Collected Materials. Collected materials shall be removed when necessary so as to maintain effective operation of the local exhaust system at all times.

(10) Disposal of Collected Materials. Collected materials shall be disposed of in a manner which will not result in a hazard.

(11) Requirements for Reduction of Air Contaminant Concentrations. A local exhaust system shall be in operation until all contaminants are reduced to concentrations at or below the Threshold Limit Values when any person is at risk.

NOTE: 1910.94(a)(6) was NOT adopted by OR-OSHA. In Oregon, OAR 437-002-0081(12) (which references a more current ANSI standard) applies.)

(12) Air supply and air compressors. The air for abrasive-blasting respirators shall be free of harmful quantities of dusts, mists, or noxious gases, and shall meet the requirements for air purity set forth in ANSI Z9.2-1979, Fundamentals Governing the Design and Operation of Local Exhaust Systems. The air from the regular compressed air line of the plant may be used for the abrasive-blasting respirator if:

(a) A trap and carbon filter are installed and regularly maintained to remove oil, water, scale, and odor;

(b) A pressure reducing diaphragm or valve is installed to reduce the pressure down to requirements of the particular type of abrasive-blasting respirator; and

(c) An automatic control is provided to either sound an alarm or shut down the compressor in case of overheating.

**NOTE:** Oregon did not adopt 1910.94(a)(6), which references an outdated ANSI standard. Instead, the following Oregon-initiated rule applies. This rule is identical, except that the current ANSI standard is referenced.

(13) Blasting Nozzles. In addition to and not in lieu of the provisions of 1910.94(a)(7), blasting nozzles shall be equipped with a deadman switch or other effective means to prevent hose and nozzle from whipping. A support shall be provided on which the nozzle may be mounted when not in use.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92

#### **437-002-0095**

##### **Audiometric Testing in Oregon**

Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.

##### **NOTES:**

-1- Technicians currently certified by OR-OSHA may continue to use their Oregon certificates until they expire, or until July 1, 1996, whichever occurs first.

-2- In Oregon, free on-site assistance may be obtained from the Consultative Section, Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services, 350 Winter St NE, Salem, OR 97310. Telephone (503) 378-3272.

**NOTE:** 1910.95(g)(3) was NOT adopted by OR-OSHA because in Oregon, only CAOHC-certified technicians, audiologists, otolaryngologist or physicians may perform audiometric examinations. In Oregon, OAR 437-002-0095 applies:

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1993, f. 4-1-93, cert. ef. 5-1-93

#### **437-002-0098**

##### **Additional Applicability**

In addition to, and not in lieu of **1910.1096**, the rules and regulations specified in ORS 453.605 to 453.745, Control of Radiation, administered by the Department of Human Resources, Oregon Health Division, shall apply to all employees working with or near ionizing radiation sources.

**NOTE:** §1910.1096, Ionizing Radiation, is enforced in Oregon by the Department of Human Resources, Health Division, under an Interagency Agreement with the Department of Consumer and Business Services, OR-OSHA Division. Oregon-initiated Rule 437-002-0098 also applies and is enforced by the Health Division. Copies are available from OR-OSHA and the Health Division.

##### **NOTES:**

-1- The following Oregon-initiated rule, OAR 437-002-0098, relates to 29 CFR 1910.96, Ionizing Radiation.

-2- The provisions of OAR 437-002-0080(3) and 437-002-0098 will be enforced by the Department of Human Resources, Health Division, under an Interagency Agreement with the Department of Insurance and Finance, Occupational Safety and Health Division (OR-OSHA). Copies are available from OR-OSHA and the Health Division.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 4-1997, f. & cert. ef. 4-2-97

#### **437-002-0100**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.101 Compressed gases (General requirements). Repealed. Oregon OSHA Admin. Order 6-2014, f. 10/28/14, ef. 5/1/15. In Oregon, OAR 437-002-2101 applies.

(2) 29 CFR 1910.102 Acetylene. Repealed. Oregon OSHA Admin. Order 1-2010, f. 2/19/10, ef. 2/19/10. In Oregon, OAR 437-002-2102 applies.

(3) 29 CFR 1910.103 Hydrogen, published 12/14/07, FR vol. 72, no. 240, p. 71061.

(4) 29 CFR 1910.104 Oxygen, published 3/7/96, FR vol. 61, no. 46, p. 9237.

(5) 29 CFR 1910.105 Nitrous oxide, published 3/7/96, FR vol. 61, no. 46, p. 9237.

(6) 29 CFR 1910.106 Flammable and combustible liquids, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(7) 29 CFR 1910.107 Spray finishing using flammable and combustible materials, amended with AO 3-2003, removed 1910.107, and Oregon note added, f. and ef. 4/21/03.

(8) 29 CFR 1910.108 Reserved. Published 3/23/99, Federal Register, vol. 64, no. 55, p. 13909.

(9) 29 CFR 1910.109 Explosives and blasting agents, published 6/18/98, FR vol. 63, no. 117, p. 33466.

(10) 29 CFR 1910.110 Storage and handling of liquefied petroleum gases, published 12/14/07, FR vol. 72, no. 240, p. 71061.

(11) 29 CFR 1910.111 Storage and handling of anhydrous ammonia, published amended with AO 12-2001, Oregon note added, f. and ef. 10/26/01; 12/14/07, FR vol. 72, no. 240, p. 71061.

(12) Reserved for 29 CFR 1910.112 (Reserved)

(13) Reserved for 29 CFR 1910.113 (Reserved)

(14) 29 CFR 1910.114 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9238.

(15) 29 CFR 1910.115 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9238.

(16) 29 CFR 1910.116 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9238.

(17) 29 CFR 1910.119 Process safety management of highly hazardous chemicals, amended 2/8/13, FR vol. 78, no. 27, p. 9311.

(18) 29 CFR 1910.120 Hazardous waste operations and emergency response, amended 2/8/13, FR vol. 78, no. 27, p. 9311.

(19) 29 CFR 1910.121 Reserved. Published 3/23/99, Federal Register, vol. 64, no. 55, p. 13909.

(20) 29 CFR 1910.122 Table of contents. Repealed with OR-OSHA Admin. Order 9-2007, f. and ef. 12/3/07.

(21) 29 CFR 1910.123 Dipping and coating operations: Coverage and definitions. Repealed with OR-OSHA Admin. Order 9-2007, f. and ef. 12/3/07.

(22) 29 CFR 1910.124 General requirements for dipping and coating operations. Repealed with OR-OSHA Admin. Order 9-2007, f. and ef. 12/3/07.

(23) 29 CFR 1910.125 Additional requirements for dipping and coating operations that use flammable or combustible liquids. Repealed with OR-OSHA Admin. Order 9-2007, f. and ef. 12/3/07.

(24) 29 CFR 1910.126 Additional requirements for special dipping and coating applications. Repealed with OR-OSHA Admin. Order 9-2007, f. and ef. 12/3/07.

These standards are on file with the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 19-1988, f. & ef. 11-17-88; APD 12-1989, f. & ef. 7-14-89; OSHA 22-1990, f. 9-28-90, cert. ef. 10-1-90; OSHA 3-1992, f. & cert. ef. 2-6-92; OSHA 3-1993, f. & cert. ef. 2-23-93; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 3-1995, f. & cert. ef. 2-22-95; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 8-1999, f. & cert. ef. 8-6-99; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 4-2002, f. & cert. ef. 5-30-02; OSHA 3-2003, f. & cert. ef. 4-21-03; OSHA 4-2004, f. & cert. ef. 9-15-04; OSHA 4-2005, f. & cert. ef. 12-14-05; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 9-2007, f. & cert. ef. 12-3-07; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA

1-2010, f. & cert. ef. 2-19-10; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 4-2013, f. & cert. ef. 7-19-13; OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15

### 437-002-0101

#### Oregon Start-Up Dates

29 CFR 1910.120, **Hazardous Waste Operations and Emergency Response — Final Rules**, is effective on July 14, 1990.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 19-1988, f. & ef. 11-17-88; APD 12-1989, f. & ef. 7-14-89

### 437-002-0107

#### Spray Finishing

(1) Scope. This section applies to finishing materials when applied as a spray by any means in a continuous or intermittent process. This section also covers the application of powders by powder spray guns, electrostatic powder spray guns, fluidized beds, or electrostatic fluidized beds. This section also applies to any sprayed material that produces combustible deposits or residue. This section does not apply to outdoor spray application of buildings, tanks, or other similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.

(2) Definitions:

(a) Aerated solid powders – Any powdered material used as a coating material fluidized within a container by passing air uniformly from below. It is common practice to fluidize such materials to form a fluidized powder bed and then dip the part to be coated into the bed in a manner similar to that used in liquid dipping. Such beds are also used as sources for powder spray operations.

(b) Approved – Approved and listed by a nationally recognized testing laboratory. Refer to §1910.7 for definition of nationally recognized testing laboratory.

(c) Electrostatic fluidized bed – A chamber holding powder coating material that is aerated from below to form an air-supported, expanded cloud of the powder. The powder is electrically charged with a charge opposite to that of the object or material being coated.

(d) Fluidized bed – A chamber holding powder coating material that is aerated from below to form an air-supported, expanded cloud of the powder. The object or material being coated is preheated, then immersed into the cloud.

(e) Infrequent and of short duration – Spray finishing that is:

(A) Less than 9 square feet surface area per job, and

(B) Uses less than 1-gallon of material in 1-day, and

(C) Intermittent spraying where enough time elapses between spraying episodes to dilute the concentration of vapors essentially to zero before spraying is resumed.

(f) Listed – See “approved.”

(g) Noncombustible materials – Materials that have a fire resistance rating of at least 1-hour.

(h) Overspray – Any sprayed material that is not deposited on the intended object.

(i) Spray area – Any area in which potentially dangerous quantities of flammable vapors or mists, or combustible residues, dusts, or deposits are present due to the operation of spraying processes.

(j) Spray booth – A power-ventilated structure provided to enclose or accommodate a spraying operation to confine and limit the escape of spray, vapor, and residue, and to safely conduct or direct them to an exhaust system.

(k) Spray room – A room designed to accommodate a spraying operation. For the purposes of this rule, the term “spray booth” includes spray rooms except where specifically noted.

(3) Rules for All Spray Finishing Operations.

(a) Conduct spray finishing in a spray booth provided with local exhaust ventilation except:

(A) When spraying is infrequent and of short duration; or

(B) When spraying is a single “air brush;” or

(C) The object to be sprayed is of such weight or proportion as to render it impracticable to move it into a spray booth; or

(D) When only liquids with a flashpoint above 199.4 degrees F (93 degrees C) are used. This exception only applies when the liquid

is not heated for use to within 30 degrees F (16.7 degrees C) of the flashpoint; or

(E) When spray painting is conducted out-of-doors. For the purposes of this rule, out-of-doors means an area away from the main building and completely open at all times on at least two sides.

(b) Spray finishing outside of a booth, as permitted by OAR 437-002-0107(3)(a)(A), (C), and (D) above, must be done only in a spray area that meets the following requirements:

(A) All light switches, fans, receptacles, overhead lights and all other sources of ignition within 20 horizontal feet and 10 vertical feet of the overspray area must be inoperative or consist of Class I, Group D, explosion-proof types as specified in the National Electrical Code, NFPA 33-2000 and ANSI C2-2002.

(B) All building construction including floors, walls, ceilings, beams, etc., within 20 horizontal feet and 10 vertical feet of the overspray area must consist of or be protected by noncombustible materials.

(C) Protect all areas within 20 feet of the overspray area with automatic sprinklers. Where automatic sprinklers are not available, use other automatic extinguishing equipment. Alternatives may be used only when authorized in writing by the local fire authority.

(D) Aisles leading to exits from the spray finishing area must remain clear at all times.

(E) Provide the spray finishing area with at least six air changes per hour of airflow.

(F) Follow the requirements of paragraphs (3)(c) through (3)(e).

(c) Do not allow employees not engaged in spray finishing operations within 20 feet of the spraying and overspray area.

(d) Employees engaged in spray finishing operations must be provided with and wear respiratory protection unless exhaust ventilation is provided and reduces employee exposure to any material in the finish or its solvent to below the limits established in OAR 437-002-0382, Oregon Rules for Air Contaminants. Follow all of the requirements of OAR 437-002-1910.134, Respiratory Protection.

(e) Combustible Materials.

(A) Do not store combustible material or allow combustible material to accumulate in the spraying and overspray area unless specifically authorized in writing by the local fire authority.

(B) Give the spraying and overspray area daily housekeeping and maintenance while in use and keep it free of any accumulations between uses. Use only nonsparking tools for cleaning purposes.

(C) Combustible materials, such as paper, may be used to cover floors and walls in the spray and overspray area, but must be removed at the end of each workshift. The employer may use longer intervals only when the local fire authority has provided written approval to do so.

(f) Spray booths.

(A) Construction:

(i) Construct spray booths of substantially supported steel, concrete, or masonry.

(ii) When the booth is only used for intermittent or low volume spraying, other substantial noncombustible material may be used.

(iii) Design spray booths to sweep air currents toward the exhaust outlet.

(iv) Construct spray booths with materials that have a fire resistance rating of at least 1 hour. All adjacent construction must have a fire resistance rating of at least 1-hour or as otherwise required by the Oregon Building Codes Division.

(B) The interior surfaces of spray booths must be smooth and continuous without edges, designed to prevent residue pocketing, and designed to ease cleaning and washing.

(C) When the floor surface of a spray booth and operators' working area is combustible, it must be covered with a noncombustible material designed to prevent pocketing of residues and ease cleaning and washing.

(D) A spray booth should be equipped with:

(i) A water washing system designed to minimize dusts or residues entering exhaust ducts and to permit the recovery of overspray finishing material; or



(ii) Distribution or baffle plates to promote an even flow of air through the booth or cause the deposit of overspray before it enters the exhaust duct; or

(iii) Overspray dry filters to minimize dusts or residues entering exhaust ducts.

(E) Where dry powders are sprayed, arrange the powder collection systems in the exhaust to capture oversprayed material.

(F) When distribution or baffle plates are used, they must be of noncombustible material and readily removable or accessible on both sides for cleaning. Such plates will not be located in exhaust ducts.

(G) When using conventional dry type spray booths with overspray dry filters or filter rolls:

(i) Inspect filter rolls to ensure proper replacement of filter media.

(ii) Immediately remove all discarded filter pads and filter rolls to a safe area away from the spray finishing operation. Alternatively, place them in a water-filled metal container and dispose of them at the close of the day's operation unless they remain completely submerged.

(iii) Do not use filters or filter rolls when spraying a material known to be highly susceptible to spontaneous heating and ignition.

(iv) Clean filters or filter rolls must be noncombustible or authorized by the local fire authority.

(v) Do not use filters and filter rolls alternately for different types of coating materials, where the combination of materials may be conducive to spontaneous ignition.

(H) Spray booths with an open frontal area larger than 9 square feet must have a metal deflector or curtain at least 4 1/2 inches deep installed at the upper outer edge of the booth over the opening.

(I) Where conveyors are used to carry work into or out of spray booths, the openings must be as small as practical.

(J) Separate each spray booth from all other nonspray finishing operations by at least 3 feet, a wall, or a partition. This requirement does not apply to spray rooms.

(K) All portions of the spray booth must be readily accessible for cleaning.

(L) The exterior of the spray booth must have a clear space of at least 3 feet on all sides. Do not store any materials within this clear space. All construction within 3 feet of all sides of the spray booth must be noncombustible. This requirement does not apply to spray rooms.

(i) Exception: This requirement does not prohibit locating a spray booth closer than 3 feet to an exterior wall or roof assembly, provided that the wall or roof is constructed of a noncombustible material and the booth can be cleaned and maintained.

(M) When spraying areas are illuminated through glass panels or other transparent materials, use only fixed lighting units as a source of illumination.

(i) Seal panels to effectively isolate the spraying area from the area in which the lighting unit is located.

(ii) Use only noncombustible material constructed or protected so that breakage will be unlikely. Arrange panels so that normal accumulations of residue on the exposed surface of the panel will not be raised to a dangerous temperature by radiation or conduction from the source of illumination.

(N) Protect all spaces within the spray booth with automatic sprinklers acceptable to the local fire authority.

(i) Sprinkler heads must provide water distribution throughout the entire booth.

(ii) When filters are used, automatic sprinklers must be on both the downstream and upstream sides of the filters.

(iii) Keep sprinkler heads as free of overspray deposits as possible. Clean them daily if necessary. When sprinkler heads are covered to protect them from overspray, the material and method used must be authorized by the local fire authority.

(iv) When automatic sprinklers are infeasible or not practical, other means of fire protection must be provided and authorized in writing by the local fire authority.

(g) Electrical and other sources of ignition.

(A) Do not allow open flame or spark producing equipment within 20 feet of the spray area, unless separated by a partition.

(B) Do not place space-heating appliances, steam pipes, or hot surfaces in a spraying area where deposits of combustible residues may readily accumulate.

(C) Ensure all electrical wiring and equipment conforms to the provisions of this paragraph and OAR 437, division 2, subdivision S.

(D) Do not put any electrical equipment in the spray or overspray area unless it is specifically approved for those locations. All wiring must be in rigid conduit or in boxes or fittings that do not contain taps, splices, or terminal connections.

(E) Electrical wiring and equipment not subject to deposits of combustible residues but located in a spraying area must be explosion-proof, approved for Class I, Group D locations, and conform to the provisions of OAR 437, division 2, subdivision S, for Class I, division 1, Hazardous Locations. Electrical wiring, motors, and other equipment outside of but within 20 feet of any spraying area, and not separated by partitions, must not produce sparks under normal operating conditions and must conform to the provisions of OAR 437, division 2, subdivision S for Class I, division 2, Hazardous Locations.

(F) Electric lamps outside of any spraying area but within 20 feet, and not separated by a partition, will be totally enclosed to prevent the falling of hot particles and will be protected from physical damage by appropriate guards or by location.

(G) Do not use portable electric lamps in any spraying area during spraying operations. If portable electric lamps are used during cleaning or repairing operations, use only the type approved for hazardous Class I locations.

(H) Electrically ground all metal parts of spray booths and exhaust ducts. Electrically ground piping systems that convey flammable or combustible liquids or aerated solids.

(h) Ventilation.

(A) Provide all spraying areas with mechanical ventilation adequate to remove flammable vapors, mists, or powders to a safe location and confine and control combustible residues so that life is not endangered. Keep mechanical ventilation in operation at all times while spraying operations are being conducted and for a sufficient time afterwards to exhaust vapors from drying material and residue.

(B) Interlock the spraying equipment with the ventilation system so that spraying operations cannot be conducted unless the ventilation system is operating.

(C) Air velocity throughout the spray booth must be sufficient to keep airborne contaminants below 25 percent of their lower explosive limit (LEL).

(i) Open-faced booths must maintain at least an average of 100 feet per minute (fpm) of airflow across the open face of the booth.

(ii) Enclosed booths must maintain at least an average of 100 fpm of airflow of cross-sectional area at the operators' position.

(iii) Any deviation from the above must be authorized in writing by the local fire authority.

(iv) Install a visible gauge, audible alarm, or pressure activated device on each spray booth to indicate or ensure that the required air velocity is maintained.

(D) Provide each spray booth with an independent exhaust duct system that discharges to the exterior of the building. A common exhaust system may be used for multiple spray booths only when identical materials are sprayed and the combined frontal area of those booths is no more than 18 square feet.

(E) When more than one fan serves one booth, interconnect all fans so that one fan cannot operate without all fans being operated.

(F) The fan-rotating element must be nonferrous or nonsparking or the casing must consist of or be lined with such material.

(i) Maintain ample clearance between the fan-rotating element and the fan casing to avoid a fire by friction. Prevent contact between moving parts and the duct or fan housing by making allowance for ordinary expansion and loading.

(ii) Mount fan blades on a shaft sufficiently heavy to maintain perfect alignment even when the blades of the fan are heavily loaded.

(iii) All bearings must be of the self-lubricating type, or lubricated from the outside duct.

(G) Place electric motors driving exhaust fans outside booths or ducts. See also paragraph (3)(g) of this section.

(H) When belts and pulleys are inside the duct or booth, they must be thoroughly enclosed.

(I) Construct exhaust ducts of substantially supported steel. Exhaust ducts without dampers are preferred; however, if dampers are installed, they must be fully opened when the ventilating system is in operation.

(i) Protect exhaust ducts against mechanical damage and maintain a clearance of at least 18 inches from unprotected combustible construction or other combustible material.

(ii) If combustible construction is provided with the following protection applied to all surfaces within 18 inches of the exhaust duct, clearances may be reduced to the distances indicated:

(I) 28-gage sheet metal on 1/4-inch insulating millboard 12 inches.

(II) 28-gage sheet metal on 1/8-inch insulating millboard spaced out 1 inch on noncombustible spacers 9 inches.

(III) 22-gage sheet metal on 1-inch rockwool batts reinforced with wire mesh or the equivalent 3 inches.

(J) The terminal discharge point must be at least 6 feet from any combustible exterior wall or roof. The discharge point must not discharge in the direction of any combustible construction or unprotected opening in any noncombustible exterior wall within 30 feet.

(K) Keep air exhaust from spray operations away from make-up air or other ventilation intakes. Do not recirculate air exhausted from spray operations.

(L) Supply clean fresh air, free of contamination from adjacent industrial exhaust systems, chimneys, stacks, or vents, to a spray booth in quantities equal to the volume of air exhausted through the spray booth.

(M) Provide exhaust ducts with an ample number of access doors when necessary to facilitate cleaning.

(N) Provide air intake openings to rooms containing spray finishing operations adequate for the efficient operation of exhaust fans and placed to minimize the creation of dead air pockets.

(O) Dry freshly sprayed articles only in spaces provided with adequate ventilation to prevent the formation of explosive vapors. Drying spaces without adequate ventilation will be considered a spraying area. See also paragraph (6) of this section.

(4) Rules for Spray Finishing with Flammable Liquids.

(a) These rules apply to spray finishing with flammable liquids with a flashpoint below 199.4 degrees F (93 degrees C). These rules only apply to liquids with a flashpoint above 199.4 degrees F (93 degrees C) when they are heated for use to within 30 degrees F (16.7 degrees C) of their flashpoint.

(b) Flammable liquids — storage and handling.

(A) Store flammable in compliance with the requirements of OAR 437-002-1910.106.

(B) Keep only the minimum quantity of flammable liquids required for operations in the vicinity of spraying operations and do not exceed a supply for one day or one shift. Bulk storage of portable containers of flammable liquids must be in a separate, constructed building detached from other important buildings or cut off in a standard manner.

(C) Use only the original closed containers, approved portable tanks, approved safety cans, or a properly arranged system of piping for bringing flammable liquids into the spray area. Do not use open or glass containers.

(D) Use approved pumps to withdraw flammable liquids from containers with a capacity of 61 gallons or more except as provided in paragraph (4)(b)(F) of this section.

(E) Withdraw and fill containers with flammable liquids only in a suitable mixing room or in a spraying area when the ventilating system is in operation. Take adequate precautions to protect against spilling liquids and sources of ignition.

(F) Containers must conform to the following requirements:

(i) Use only closed containers to supply spray nozzles. Use metal covers to close containers that are not closed.

(ii) Use metal supports or wire cables to support containers that are not resting on floors.

(iii) When spray nozzles are supplied by gravity flow, do not use containers that exceed 10 gallons capacity.

(iv) Do not use air pressure in the original shipping containers to supply spray nozzles.

(G) Containers under air pressure supplying spray nozzles must also conform to the following requirements

(i) Use only limited capacity containers that only hold enough material for one day's operation.

(ii) Use only containers that are designed and approved for such use.

(iii) Provide containers with a visible pressure gauge.

(iv) Containers must be provided with a relief valve set to operate in conformance with the requirements of the Oregon Building Codes Division OAR 918-225, "Boilers and Pressure Vessels."

(H) Pipes and hoses.

(i) All containers or piping with an attached hose or flexible connection must have a shutoff valve at the connection. Keep such valves shut when not spraying.

(ii) When a pump is used to deliver the liquid used in a spray application process, use only piping, tubing, hoses, and accessories that are designed to withstand the maximum working pressure of the pump. Alternatively, provide automatic means to limit the discharge pressure of the pump to a level within the design working pressure of the piping, tubing, hoses, and accessories.

(iii) Inspect all pressure hose and couplings at regular intervals appropriate to this service. Test the hose and couplings with the hose extended using the "inservice maximum operating pressures." Repair or discard any hose showing material deteriorations, signs of leakage, or weakness in its' carcass or at the couplings.

(iv) Piping systems conveying flammable liquids must be of steel or other material having comparable properties of resistance to heat and physical damage. Properly bond and ground piping systems.

(I) Use approved and listed electrically powered spray liquid heaters. Do not put heaters in spray booths or any other location subject to the accumulation of deposits or combustible residue.

(J) If flammable liquids are supplied to spray nozzles by positive displacement pumps, use an approved relief valve on the pump discharge line that discharges to a pump suction or a safe detached location, or use a device provided to stop the prime mover if the discharge pressure exceeds the safe operating pressure of the system.

(K) Whenever flammable liquids are transferred from one container to another, effectively bond and ground both containers to prevent discharge sparks of static electricity.

(c) Install an adequate supply of suitable portable fire extinguishers near all spraying areas.

(d) Operations and maintenance.

(A) Immediately remove and dispose residue scrapings and debris contaminated with residue from the premises. Deposit all rags or waste impregnated with finishing material in tightly-closing metal waste cans immediately after use. Properly dispose of the contents of waste cans at least once daily or at the end of each shift.

(B) Do not leave clothing worn during spray finishing on the premises overnight unless kept in metal lockers.

(C) Only use solvents for cleaning operations with flashpoints at or above the flashpoints of material normally used. Cleaning operations must be done inside a spray booth with the ventilation system on, or an area authorized in writing by the local fire authority.

(D) Do not alternately use spray booths for different types of coating materials when the materials are incompatible with each other, unless all deposits of the first used material are removed from the booth and exhaust ducts prior to spraying with the second material.

(e) Mixing.

(A) Mix materials only in a mixing room, a spray area that meets the requirements of (3)(b), or in a spray booth. When a spray area or spray booth is used for mixing, the ventilation system must be on.

(B) Construct mixing rooms of substantially supported steel, concrete, or masonry. Use only noncombustible materials to construct mixing rooms.

(C) Design mixing rooms so that any spills remain inside the room.

(D) Provide at least 150 cubic feet per minute (CFM) of airflow in each mixing room. When the flooring of the mixing room is greater than 150 square feet, provide at least 1 CFM per square foot of flooring. The ventilation system for each mixing room must be on and operational at all times.

(E) Follow all of the provisions of paragraph (3)(g).

(F) Protect all spaces within the mixing room with automatic sprinklers acceptable to the local fire authority. Where automatic sprinklers are not available, use other automatic extinguishing equipment. Alternatives may be used only when authorized in writing by the local fire authority.

(5) Rules for Electrostatic Spray Finishing.

(a) Fixed electrostatic apparatus.

(A) Use only approved electrostatic apparatus and devices in connection with coating operations.

(B) Transformers, power packs, control apparatus, and all other electrical portions of the equipment, with the exception of high-voltage grids, electrodes, and electrostatic atomizing heads and their connections, must be located outside of the spraying area, or must otherwise conform to the requirements of paragraph (3) of this section.

(C) Adequately support electrodes and electrostatic atomizing heads in permanent locations and effectively insulate them from the ground. Electrodes and electrostatic atomizing heads which are permanently attached to their bases, supports, or reciprocators are considered to comply with this section. Use only nonporous and non-combustible insulators.

(D) Properly insulate and protect high-voltage leads to electrodes from mechanical injury or exposure to destructive chemicals. Effectively and permanently support electrostatic atomizing heads on suitable insulators and effectively guard against accidental contact or grounding. Provide an automatic means for grounding the electrode system when it is electrically de-energized for any reason. Keep all insulators clean and dry.

(E) Maintain a safe distance between goods being painted and electrodes or electrostatic atomizing heads or conductors of at least twice the sparking distance. Conspicuously post a sign indicating this safe distance near the assembly.

(F) Support goods being painted using this process on conveyors. Arrange the conveyors to maintain safe distances between the goods and the electrodes or electrostatic atomizing heads at all times. Any irregularly shaped or other goods subject to possible swinging or movement must be rigidly supported to prevent swinging or movement which would reduce the clearance to less than that specified in paragraph (5)(a)(E) of this section.

(G) Equip electrostatic apparatus with automatic controls that immediately disconnect the power supply to the high voltage transformer and signals the operator when:

(i) Any failure occurs in the ventilation equipment.

(ii) The conveyor carrying goods through the high voltage field stops.

(iii) Occurrence of a ground or of an imminent ground at any point on the high voltage system.

(iv) The safe distance required by (5)(a)(E) is not maintained.

(H) Place adequate booths, fencing, railings, or guards around the equipment to assure, either by their location or character or both, that a safe isolation of the process is maintained from plant storage or personnel. Construct such railings, fencing, and guards of conducting material that is adequately grounded.

(b) Electrostatic hand spraying equipment.

(A) This paragraph applies to any equipment that uses electrostatically charged elements for the atomization and/or, precipitation of materials for coatings on articles, or for other similar purposes in which the atomizing device is hand held and manipulated during the spraying operation.

(B) Use only approved electrostatic hand spray apparatus and devices in connection with coating operations. The high voltage circuits must be designed so it does not produce a spark of sufficient intensity to ignite any vapor-air mixtures or result in appreciable shock hazard upon coming in contact with a grounded object under

all normal operating conditions. The electrostatically charged exposed elements of the handgun must be capable of being energized only by a switch which also controls the coating material supply.

(C) Locate transformers, powerpacks, control apparatus, and all other electrical portions of the equipment outside of the spraying area. This requirement does not apply to the handgun itself and its connections to the power supply.

(D) Electrically connect the handle of the spraying gun to ground by a metallic connection. Ensure that the operator in normal operating position is in intimate electrical contact with the grounded handle.

(E) Adequately ground all electrically conductive objects in the spraying area. This requirement applies to paint containers, wash cans, and any other objects or devices in the area. Prominently and permanently install a warning on the equipment regarding the necessity for this grounding feature.

(F) Maintain metallic contact between objects being painted or coated and the conveyor or other grounded support. Regularly clean hooks to ensure this contact.

(G) Areas of contact must be sharp points or knife edges where possible.

(H) Conceal points of support of the object from random spray where feasible.

(I) When objects being sprayed are supported from a conveyor, the point of attachment to the conveyor must not collect spray material during normal operation.

(J) Interlock the electrical equipment with the ventilation of the spraying area so that the equipment cannot be operated unless the ventilation fans are on.

(6) Drying, Curing, or Fusion Apparatus.

(a) Drying, curing, or fusion equipment.

(A) Equipment manufactured or modified on or before June 1, 2003, must comply with the provisions of the Standard for ovens and furnaces, NFPA No. 86A-1969 where applicable.

(B) Equipment manufactured or modified after June 1, 2003, must comply with the provisions of the Standard for Ovens and Furnaces, NFPA No. 86-1999 where applicable.

(b) Do not use a spray area for drying when such drying can increase the surface temperature of the spray area.

(c) Except as specifically provided in paragraph (6)(e) of this section, do not install an open flame heating system for drying, curing, or fusion in a spray area.

(d) Drying, curing, or fusion units may be installed adjacent to spray areas only when equipped with an interlocked ventilating system arranged to:

(A) Thoroughly ventilate the drying space before the heating system can be started;

(B) Maintain a safe atmosphere at any source of ignition;

(C) Automatically shut down the heating system in the event of failure of the ventilating system.

(e) Automobile refinishing spray booths or enclosures, otherwise installed and meeting the requirements of this section, may alternately be used for drying with portable electrical infrared drying apparatus that meets the following:

(A) Keep the interior (especially floors) of spray enclosures free of overspray deposits.

(B) Keep the apparatus out of the spray and overspray area while spray finishing is in progress.

(C) Equip the spraying apparatus, the drying apparatus, and the ventilating system of the spray enclosure with suitable interlocks arranged so:

(i) The spraying apparatus cannot be operated while the drying apparatus is inside the spray enclosure.

(ii) The spray enclosure is purged of spray vapors for at least 3 minutes before the drying apparatus is energized.

(iii) The ventilating system maintains a safe atmosphere within the enclosure during the drying process, and the drying apparatus will automatically shut off in the event of failure of the ventilating system.

(D) All electrical wiring and equipment of the drying apparatus must meet the applicable sections of OAR 437, Division 2, Sub-



division S. Only equipment of a type approved for Class I, Division 2 hazardous locations will be located within 18 inches of floor level. All metallic parts of the drying apparatus will be properly electrically bonded and grounded.

(E) Place a warning sign on the drying apparatus indicating that ventilation must be maintained during the drying period and that spraying must not be conducted in the vicinity where spray will deposit on apparatus.

(7) Powder Coating.

(a) Ventilation.

(A) Ensure that exhaust ventilation is sufficient to maintain the atmosphere below the lowest explosive limits for the materials being applied. Ensure that all nondeposited air-suspended powders are safely removed via exhaust ducts to the powder recovery cyclone or receptacle.

(B) Do not release powders to the outside atmosphere.

(b) Operation and maintenance.

(A) Keep all areas free of the accumulation of powder coating dusts, particularly horizontal surfaces as ledges, beams, pipes, hoods, booths, and floors.

(B) Clean surfaces in a manner to avoid scattering dust to other places or creating dust clouds.

(C) Conspicuously post "No Smoking" signs in large letters on contrasting color background at all powder coating areas and powder storage rooms.

(c) Electrostatic fluidized beds.

(A) Use only approved electrostatic fluidized beds and associated equipment.

(B) Ensure that the maximum surface temperature of this equipment in the coating area does not exceed 150 degrees F.

(C) Use only high voltage circuits that will not produce a spark of sufficient intensity to ignite any powder-air mixtures.

(D) Use circuits designed to eliminate shock hazards upon coming in contact with a grounded object under normal operating conditions.

(E) Locate transformers, powerpacks, control apparatus, and all other electrical portions of the equipment outside of the powder coating area, with the exception of the charging electrodes and their connections to the power supply.

(F) Adequately ground all electrically conductive objects within the charging influence of the electrodes. The powder coating equipment must carry a prominent, permanently installed warning regarding the necessity for grounding these objects.

(G) Objects being coated will be maintained in contact with the conveyor or other support in order to ensure proper grounding. Regularly clean hangers to ensure effective contact and areas of contact will be sharp points or knife edges where possible.

(H) Interlock the electrical equipment with the ventilation system so the equipment cannot be operated unless the ventilation fans are in operation.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92; OSHA 3-2003, f. & cert. ef. 4-21-03; OSHA 5-2012, f. & cert. ef. 9-25-12

#### **437-002-0109**

##### **Explosives and Blasting Agents**

(1) Blasting and Use of Explosives:

(a) Smoking, firearms, matches, open flame lamps, fires and flame or spark producing devices shall be prohibited in any explosive magazine or within a radius of 100 feet thereof, and with 100 feet of where explosives are being handled, transported, or used;

(b) All blasts shall be fired electronically with an electric blasting machine or properly designed electric power sources, except as provided in sections of this rule;

(c) All explosives shall be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them. The employer shall maintain an inventory and use records of all explosives. Appropriate authorities shall be notified of any loss, theft, or unauthorized entry into a magazine;

(d) The preparation of primers shall be done in a safe place, well away from fire, possible sparks, magazines or powder boxes. Where practical to do so, primers should be prepared at the point of use and immediately placed in the bore hole.

(2) Recordkeeping and Loading:

(a) The blaster shall keep an accurate, up-to-date records of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate running inventory of all explosives and blasting agents stored on the operations;

(b) No explosives or blasting agents shall be left unattended at the blast site. No loaded holes shall be left unattended or unprotected. All loaded holes shall be fired before leaving the blast site.

(3) Electric Firing. Flashlight batteries shall not be used when firing a circuit of electric blasting caps. The electric current delivered to the charge shall meet the manufacturer's recommended level.

(4) Locks. Each door shall be equipped with two mortise locks; with two padlocks fastened in separate hasps and staples; with a combination or mortise lock and padlock; with a mortise lock that requires two keys to open; or a three-point lock. Locks shall be five-tumbler proof. All padlocks shall be protected with 1/4-inch steel caps constructed so as to prevent sawing or lever action on the locks or hasps.

(5) Cap Boxes. Storage facilities for blasting caps in quantities of 100 or less shall have sides, bottoms, and covers constructed of No. 12-gauge metal and lined with a nonsparking material. Hinges and hasps shall be attached thereto by welding. A single five-tumbler proof lock shall be sufficient for locking purposes.

##### **NOTES:**

-1- Use the American Table of Distances for Storage of Explosive Materials to determine safe distances from inhabited dwellings, highways, passenger railways, and between explosive materials magazines.

-2- Use the appendix, Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives or Blasting Agents, to determine non-propagating distances to ammonium nitrate fuel oil (ANFO) blasting agents and to ammonium nitrate.

-3- Use the greater of the distances shown in the American Table of Distances and in the Table of Recommended Separation Distances to determine the required separation between a magazine for storage of explosives and a magazine for storage of blasting agents.

(6)(a) Table of Distances. The provisions contained in Table 21 are in lieu of the provisions contained in 29 CFR 1910.109, Table H-21, American Table of Distances for Storage of Explosives. Related Notes are printed following the table for clarity in using Table OR-H-21;

(b) Table of Recommended Separation Distances. The provisions contained in Table 22 are in lieu of the provisions contained in 29 CFR 1910.109, Table H-22, Table of Recommended Separation Distances of Ammonium Nitrate and Blasting Agents from Explosives or Blasting Agents. Related notes are printed following the table for clarity in using Table OR-H-22.

[Publications: Publications referenced are available from the agency.]

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92

#### **437-002-0118**

##### **Oregon Rules for Reinforced Plastics Manufacturing**

(1) Applicability. If a specific type of equipment, process or practice is not limited to the reinforced plastics industry, the provisions contained in other Divisions of OAR 437, Oregon Occupational Safety and Health Code, shall apply.

(2) Scope.

(a) These rules shall apply to reinforced plastics manufacturing operations, in their shop buildings (not field work) involving the use of polyester, vinylester, and other similar products in which styrene monomer is a reactive monomer for the resin. This division applies to chopper gun, gel coating, hand laminating and casting operations utilizing resin and organic peroxide catalyst.

(b) This division does not apply to:

(A) Application of flammable organic materials such as acetone, methyl ethyl ketone (MEK), either alone or mixed as flammable paints or diluents;

(B) Operations, involving polyurethane finishes or foams utilizing isocyanate catalysts;

(C) Operations involving epoxy resin compounds utilizing amine hardeners; or

(D) Cleaning of chopper guns, lines, and associated equipment in which acetone, MEK, or other flammable organic solvents are sprayed into the open air as part of the cleaning process.

(3) Definitions. The following definitions shall apply to OAR 437-002-0118:

(a) Chopper Gun — A device that feeds fiber glass rovings through a chopper and ejects them into a stream of resin and organic peroxide catalyst onto a mold surface. The resin and organic peroxide catalyst are combined and ejected from the chopper gun by either one of two systems:

(A) One nozzle ejects resin while another nozzle ejects organic peroxide catalyst towards the mold surface; or

(B) The resin and organic peroxide catalyst are fed into a single chopper gun mixing chamber ahead of the nozzle.

**NOTE:** By either method, the resin mixture precoat the strands of glass and the merged product is directed onto a mold surface by the operator.

(b) Flammable liquid means any liquid having a flashpoint at or below 199.4 degrees F (93 degrees C). Flammable liquids are divided into four categories as follows:

(A) Category 1 shall include liquids having flashpoints below 73.4 degrees F (23 degrees C) and having a boiling point at or below 95 degrees F (35 degrees C).

(B) Category 2 shall include liquids having flashpoints below 73.4 degrees F (23 degrees C) and having a boiling point above 95 degrees F (35 degrees C).

(C) Category 3 shall include liquids having flashpoints at or above 73.4 degrees F (23 degrees C) and at or below 140 degrees F (60 degrees C). When a Category 3 liquid with a flashpoint at or above 100 degrees F (37.8 degrees C) is heated for use to within 30 degrees F (16.7 degrees C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint below 100 degrees F (37.8 degrees C).

(D) Category 4 shall include liquids having flashpoints above 140 degrees F (60 degrees C) and at or below 199.4 degrees F (93 degrees C). When a Category 4 flammable liquid is heated for use to within 30 degrees F (16.7 degrees C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint at or above 100 degrees F (37.8 degrees C).

(c) Flashpoint — The minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture shall be determined as follows:

(A) For a liquid which has a viscosity of less than 45 SUS at 100 degrees F (37.8 degrees C), does not contain suspended solids, and does not have a tendency to form a surface film while under test, the procedure specified in the Standard Method of Test for Flashpoint by Tag Closed Tester (ASTM D-56-70), which is incorporated by reference as specified in 1910.6, or an equivalent test method as defined in Appendix B to OAR 437-002-1910.1200 — Physical Hazard Criteria, shall be used.

(B) For a liquid which has a viscosity of 45 SUS or more at 100 degrees F (37.8 degrees C), or contains suspended solids, or has a tendency to form a surface film while under test, the Standard Method of Test for Flashpoint by Pensky-Martens Closed Tester (ASTM D-93-71) or an equivalent method as defined by Appendix B to OAR 437-002-1910.1200 — Physical Hazard Criteria, shall be used except that the methods specified in Note 1 to section 1.1 of ASTM D-93-71 may be used for the respective materials specified in the Note. The preceding ASTM standard is incorporated by reference as specified in OAR 437-002-1910.6.

(C) For a liquid that is a mixture of compounds that have different volatilities and flashpoints, its flashpoint shall be determined by using the procedures in subsection (3)(c)(A) or (3)(c)(B) of this definition on the liquid in the form it is shipped.

(D) Organic peroxide catalysts are excluded from any of the flashpoint determination methods specified in this section.

(d) Gelcoating — A chopper gun pressure pot or similar device is used to apply the resin and organic peroxide catalyst mixture to a mold surface without glass fibers;

(e) Hand Laminating — Resin is mixed with organic peroxide catalyst and applied by hand with a brush, squeegee, or roller with fiber glass reinforcements.

(f) Hazard — A substance, process, practice or condition which could result in an injury or illness to an employee.

(g) Resin — A mixture of true esters dissolved in a polymerizable monomer (styrene).

(h) Threshold-Limit Value — Short Term Exposure Limit (TLV-STEL) — The maximum concentration to which workers can be exposed for a period of up to 15 minutes continuously without suffering from (a) irritation, (b) chronic or irreversible tissue change, or (c) narcosis of sufficient degree to increase accident proneness, impair self-rescue, or materially reduce work efficiency, provided that no more than four excursions per day are permitted, with at least 60 minutes between exposure periods, and provided that the daily TLV-TWA also is not exceeded. The STEL should be considered a maximum allowable concentration, or ceiling, not to be exceeded at any time during the 15-minute excursion period.

#### GENERAL REQUIREMENTS

##### (4) Permissible Exposure Limits.

(a) An employee's exposure to any material listed in Table 1, in any 8-hour workshift of a 40-hour work week, shall not exceed the 8-hour time-weighted average limit for that material in the table.

(b) An employee's exposure to a material listed in Table 1 shall not exceed, at any time during an 8-hour shift, the TLV-STEL level given for the material in the table, except for a time period, and up to a concentration not exceeding the maximum duration and concentration allowed in the column under "Acceptable Maximum Peak."

(c) Employee exposure to other airborne contaminants shall be in accordance with OAR 437, Division 2, Subdivision Z, 1910.1000, Air Contaminants, and other applicable regulations.

**NOTE:** In the Oregon Rules for Reinforced Plastics Manufacturing, Table 1, Permissible Exposure Limits, in OAR 437-002-0118(4), has been revised to reflect the current limits in OAR 437-002-0382, Oregon Rules for Air Contaminants, which were adopted on 11/15/93 in lieu of 1910.1000, Air Contaminants, Table.

##### (5) Methods of Compliance.

(a) To achieve compliance with OAR 437-002-0118(4), Permissible Exposure Limits, administrative or engineering controls must first be determined and implemented whenever feasible.

(b) When such controls are not feasible to achieve full compliance, protective measures as prescribed in OAR 437, Division 2/I, Personal Protective Equipment, shall be used to keep the exposure of employees to airborne contaminants within the limits prescribed in OAR 437-002-0118.

(6) Employee Information and Training. A training program shall be established and all affected employees shall be trained regarding the safe handling of materials used in the industry which shall include instruction in storage, handling large and small quantities, cleanup and disposal of spills, first aid for spills, equipment training, potential health and safety hazards, personal hygiene, personal protective measures, and the labeling system.

##### (7) Personal Protective Equipment.

(a) Safety glasses shall be worn at all times by personnel working in the manufacturing area of reinforced plastics plants.

(b) Face shields and safety glasses shall be worn when opening and filling pressurized catalyst injection equipment.

(c) An eyewash fountain shall be provided no more than 25 feet or 15 seconds of actual travel from a work area where MEK peroxide is being mixed or transferred.

(A) The criteria of 25 feet shall apply if the employee is working alone.

(B) The criteria of 15 seconds shall apply if other employees are close enough under normal working conditions to provide assistance and a formal training program which includes emergency first aid procedures for eye protection has been implemented.

(d) Clothing saturated or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents, that present a health hazard to employees shall be removed and disposed of, or properly cleaned before reuse; however, clothing coated with cured resin may be worn.

**(8) Warning Signs and Labels.**

(a) Label chemical containers in accordance with OAR 437-002-1910.1200, Hazard Communication.

(b) Where extreme occupational health hazards are known to exist in the workplace, the employer shall provide warning signs or other equally effective means of calling attention to such hazards at the location where the hazards exist.

**(9) Housekeeping.**

(a) Housekeeping shall be sufficient to keep accumulations of combustible residues to a minimum as practical.

(b) All combustible and flammable residues shall be placed in covered noncombustible containers.

(c) To prevent excessive permanent buildup of overspray and overchop, the use of paper, polyethylene film, building or roofing paper or other similar sheet material shall be permitted on side walls and floors of chopper gun and gelcoat areas.

(A) When the accumulated depth of overchop and/or gelcoat has reached an average thickness of 2 inches in the overspray area, it shall be disposed of after at least 4 hours curing.

(B) A single day's accumulation of more than an average of 2 inches shall be permitted provided it is disposed of before operations are resumed the next day.

(d) Excess catalyzed resin inside a building shall be disposed of in open-topped containers provided with bar screens, large mesh wire screens, or other means, to support individual containers across its top through which surplus catalyzed resin can be poured and upon which empty containers that once held catalyzed resin can be placed to cure. The open-topped containers shall contain water at least 2 inches deep in which the resin shall be poured and permitted to cure in a safe fashion. Containers can be used until filled with setup resin and disposed of along with other nontoxic waste.

(10) Hygiene Facilities and Practices. If acetone is used directly on the skin to clean hands, barrier or a therapeutic cream must be made available to the employee. Gloves shall be provided should any employee wish additional protection.

**(11) Storage and Handling of Flammable Liquids.**

(a) The storage and handling of acetone and other Category 1-3 flammable liquids for cleanup and gun flushing shall be subject to the following requirements:

(A) Category 1-3 flammable solvents shall be kept in containers that are covered during storage;

(B) Areas within the shop where acetone or other Category 1-3 flammable solvents are transferred into containers less than 5 gallons each shall be considered Class I, Division 1 areas for a 5-foot radius around the point of transfer, and Class I Division 2, for an additional 5 feet outside of the area; and

(C) "Dirty" acetone in small individual cleanup containers of less than 5 gallons each may be handled by pouring into a larger container suitable for disposal or recycling which shall be kept covered.

(b) The following subsections shall apply to chopper gun or gelcoating areas:

(A) Areas where flammable liquids are used, shall be protected by automatic sprinklers or equivalent extinguishing systems. If a special extinguishing system including, but not limited to, those employing foam, carbon dioxide, or dry chemical is provided, approved equipment shall be used and installed in an approved manner.

(B) Exhaust fans mounted 4 feet or less, as measured from the invert (bottom) of the duct above the floor, shall have nonsparking fan blades, and

(i) A motor mounted external to the air stream in a nonexplosive atmosphere. The fan shall be driven by an interconnecting belt.

(ii) Those fans having air suction ducts 4 feet or less above the floor shall comply with subsection (11)(b)(B).

(C) Exhaust fans mounted more than 4 feet above the floor shall have nonsparking fan blades.

(D) All other electrical equipment in chopper gun or gelcoating operations must conform to the requirements of National Fire Protection Association (NFPA) 33-1989.

(c) Acetone and other Category 1-3 flammable liquids shall be transferred only through a closed piping system from a safety can by

means of a device drawing through the top or from a container or portable tank by gravity through an approved self-closing valve. The nozzle and container shall be electrically interconnected.

(d) Acetone shall be kept in covered containers when not in use.

(e) Special input and exhaust ventilation shall be provided where employees must be inside or under the item being fabricated (e.g., inside a pipe or boat hull or under a large fabricated shape) to keep air concentrations of hazardous and/or flammable materials at or below 25 percent of the lower explosive limit and employee exposure at or below the permissible exposure limit.

(f) Areas where flammable materials are handled shall either be posted with "No Smoking" signs, or smoking shall be prohibited throughout plant, manufacturing and storage areas.

(g) Storage and handling of flammable liquids not addressed in these rules shall meet the requirements of 1910.106, Flammable Liquids.

**(12) Storage and Handling of Organic Peroxide Catalysts.**

(a) Organic peroxide catalysts shall be isolated and stored in their original containers in a cool place under 100 degrees F (37.8 degrees C), away from other flammable materials and ignition sources.

(b) Organic peroxide catalyst containers shall be covered or kept closed at all times.

(c) Organic peroxide catalysts shall be brought into the area of use in no more than two consecutive days' supply.

(d) Larger than 8-pound containers of organic peroxide catalyst shall not be permitted outside designated catalyst storage areas, except for hand layup operations or for filling the catalyst reservoir of chopper gun and gelcoat equipment.

(e) When organic peroxide catalyst is being poured into the catalyst reservoir of chopper gun and gelcoat equipment, the catalyst container shall be equipped with a special curved pouring spout or other device which directs the catalyst into the reservoir without splashing.

(A) A supply of water of not less than 1-gallon shall be permanently installed on the chopper gun or gelcoat apparatus to wet down any catalyst spills which may occur due to overfilling. Catalyst spills shall be absorbed in accordance with the manufacturer's recommendations.

(B) Immediately after filling the chopper gun or gelcoat apparatus with catalyst, the empty or partially filled catalyst container shall be removed immediately before commencement of any other operation.

(13) Fire Protection. Areas where flammable materials are handled shall either be posted with "No Smoking" signs, or smoking shall be prohibited throughout plant, manufacturing and storage areas.

**(14) Ventilation.**

(a) Special input and exhaust ventilation shall be provided where employees must be inside or under the item being fabricated (e.g., inside a pipe or boat hull or under a large fabricated shape) to keep air concentrations of hazardous and/or flammable materials at or below 25 percent of the lower explosive limit and employee exposure at or below the permissible exposure limit.

(b) During cleanup and gun flushing with acetone or other Category 1-3 flammable liquids, sufficient ventilation shall be provided to maintain air concentrations below 25 percent of the lower explosive limit (LEL) and employee exposure at or below the permissible exposure limit.

(c) Where acetone and Category 1-3 flammable solvents are used in physical operations (e.g., mixing), there shall be a minimum ventilation rate of 1 cubic foot per minute per square foot of floor area in the immediate work area.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1992, f. 2-6-92, cert. ef. 5-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 5-2012, f. & cert. ef. 9-25-12



**437-002-0119**

**Oregon Effective Dates**

(1) Information pertaining to the equipment in the process shall include material and energy balances for processes built after November 24, 1992.

(2) The employer shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and document the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. The process hazard analysis shall be conducted as soon as possible, but not later than the following schedule:

(a) No less than 25 percent of the initial process hazards analyses shall be completed by November 24, 1994;

(b) No less than 50 percent of the initial process hazards analyses shall be completed by November 24, 1995;

(c) No less than 75 percent of the initial process hazards analyses shall be completed by November 24, 1996;

(d) All initial process hazard analyses shall be completed by November 24, 1997;

(e) Process hazards analyses completed after November 24, 1987, which meet the requirements of this paragraph are acceptable as initial process hazards analyses. These process hazard analyses shall be updated and revalidated, based on their completion date.

(3) In lieu of initial training for these employees already involved in operating a process on November 24, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-1992, f. 8-13-92, cert. ef. 11-24-92; OSHA 3-1993, f. & cert. ef. 2-23-93; OSHA 6-1994, f. & cert. ef. 9-30-94

**437-002-0120**

**Adoption by Reference**

In addition to, and not in lieu of, any other health and safety codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.132 General requirements. Repealed with Oregon OSHA Admin. Order 4-2011, filed and effective 12/8/11. In Oregon, OAR 437-002-0134 applies.

(2) 29 CFR 1910.133 Eye and face protection. Repealed with Oregon OSHA Admin. Order 4-2011, filed and effective 12/8/11. In Oregon, OAR 437-002-0134 applies.

(3) 29 CFR 1910.134 Respiratory protection, published 8/7/12, FR vol. 77, no. 152, p. 46948.

(4) 29 CFR 1910.135 Occupational head protection. Repealed with Oregon OSHA Admin. Order 4-2011, filed and effective 12/8/11. In Oregon, OAR 437-002-0134 applies.

(5) 29 CFR 1910.136 Occupational foot protection. Repealed with Oregon OSHA Admin. Order 4-2011, filed and effective 12/8/11. In Oregon, OAR 437-002-0134 applies.

(6) 29 CFR 1910.137 Electrical protective equipment, published 4/11/14, FR vol. 79, no. 70, p. 20316.

(7) 29 CFR 1910.138 Hand Protection. Repealed with Oregon OSHA Admin. Order 4-2011, filed and effective 12/8/11. In Oregon, OAR 437-002-0134 applies.

(8) 29 CFR 1910.139 Respiratory protection for M. tuberculosis. Removed, 12/3/03, FR vol. 68, p. 75776-75780 (OR-OSHA Admin. Order 1-2004, f. 3/26/04, ef. 7/1/04).

(9) Appendices.

Appendix A – References for further information (nonmandatory).

Appendix B – Nonmandatory compliance guidelines for hazard assessment and personal protective equipment selection; amended with OR-OSHA Admin. Order 3-2015, f. 10/9/15, ef. 1/1/16.

These standards are available from the Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services; and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 9-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 3-1994, f. & cert. ef. 8-1-94; OSHA 3-1997, f. & cert. ef. 3-28-97; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 1-2004, f. 3-26-04, cert. ef. 7-1-04; OSHA 5-2004, f. & cert. ef. 11-19-04; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 10-2006, f. & cert. ef. 11-30-06; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

**437-002-0122**

**Dipping and Coating**

(1) Scope.

(a) This rule applies to all operations where an object is partially or fully immersed in a liquid, or the vapors of a liquid. Such operations include, but are not limited to, cleaning, coating, altering the surface of an object, or changing the character of an object. Examples of covered operations are paint dipping, electroplating, pickling, quenching, tanning, degreasing, stripping, cleaning, roll coating, flow coating, and curtain coating. This rule also applies to draining or drying an object that has been dipped or coated.

(b) This rule does not apply to tanks that contain only water or a molten material.

(2) Definitions. Adjacent area: Any area within 20 feet (6.1 m) of a vapor area that is not separated from the vapor area by tight partitions. Approved: The equipment is listed or approved by a nationally recognized testing laboratory. Autoignition temperature: The minimum temperature required to cause self-sustained combustion, independent of any other source of heat. Dip tank: A container holding a liquid other than water and is used for dipping or coating. An object may be immersed (or partially immersed) in a dip tank or it may be suspended in a vapor coming from the tank. Flammable liquid: A liquid having a flashpoint at or below 199.4 degrees F (93 degrees C). Flashpoint: The minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite if tested in accordance with the test methods in Appendix B to OAR 437-002-1920.1200 — Physical Hazard Criteria. Lower flammable limit (LFL): The lowest concentration of a material that will propagate a flame. The LFL is usually expressed as a percent by volume of the material in air (or other oxidant). Vapor area: Any space containing a dip tank, including its drain boards, associated drying or conveying equipment, and any surrounding area where the vapor concentration exceeds 25% of the LFL of the liquid in the tank.

(3) Any container used as a dip tank must be strong enough to withstand any expected load.

(4) Ventilation.

(a) Ensure airborne concentrations of materials in any vapor area do not exceed 25% of its LFL.

(b) A tank cover or material that floats on the surface of the liquid in a dip tank to replace or supplement ventilation is acceptable, as long as the airborne concentrations do not exceed 25% of the LFL or any limit established by Division 2, Subdivision Z.

(c) When mechanical ventilation is used, it must conform to design standards based on national consensus standards that meet the following:

(A) The standard specifies the safety requirements for the particular equipment;

(B) The standard is recognized in the United States as providing specifications that result in an adequate level of safety;

(C) The standard was developed by a standards development organization under a method providing for input and consideration of views of industry groups, experts, users, governmental authorities, and others having broad experience and expertise in issues related to the design and construction of the particular equipment.

(d) Nonmandatory appendix A of this section contains examples of consensus standards that meet the requirements of paragraph (4)(c) of this section.

(e) When mechanical ventilation is used, each dip tank must have an independent exhaust system unless the combination of sub-

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stances being removed will not cause a fire, explosion, or chemical reaction.

(f) When mechanical ventilation is used, it must draw the flow of air into a hood or exhaust duct.

(A) Ensure each room with exhaust hoods has make-up airflow that is at least 90% of the volume of air exhausted.

(B) Ensure that make-up air does not damage exhaust hoods.

(C) When air is recirculated, it must meet the requirements of OAR 437-002-0081, "Oregon Ventilation Regulations."

(g) Inspect hoods and ventilation ductwork for corrosion or damage at least quarterly and prior to operation after a prolonged shutdown.

(h) Ensure the ventilation airflow is adequate at least quarterly and prior to operation after a prolonged shutdown.

(5) Periodically inspect all dipping and coating equipment, including covers, drains, overflow piping, and electrical and fire-extinguishing systems, and promptly correct any deficiencies.

(6) Thoroughly clean dip tanks of solvents and vapors before permitting welding, burning, or open-flame work.

(7) Provide mechanical ventilation or respirators (selected and used as specified in 1910.134, Respiratory Protection) to protect employees in the vapor area from exposure to toxic substances released during welding, burning, or open-flame work.

(8) Medical, first aid, and hygiene facilities.

(a) All employees working with or around dip tanks must know the first-aid procedures appropriate to the dipping and coating hazards to which they are exposed.

(b) When employees work with liquids that may burn, irritate, or otherwise harm their skin:

(A) Obtain a physician's approval before an employee with a sore, burn, or other skin lesion that requires medical attention can return to work in a vapor area.

(B) Only a properly designated person can provide treatment for any skin abrasion, cut, rash, or open sore.

(C) Keep appropriate first-aid supplies near dipping or coating operations.

(D) Provide employees who work with chromic acid periodic examinations, at least annually, of their exposed body parts, especially their nostrils.

(E) Provide locker space or other storage space to prevent contamination of employee's street clothes.

(F) Provide at least one basin with hot water for every 10 employees who work with such liquids.

(G) Follow the emergency eyewash and shower facilities requirements of OAR 437-002-0161, Medical & First Aid.

(9) Before cleaning a dip tank:

(a) Drain the tank and open the cleanout doors; and

(b) Ventilate and clear any pockets where hazardous vapors may have accumulated.

(10) Use of flammable or combustible liquids.

(a) Use only dip tanks constructed from non-combustible materials. When drainboards are used, use only drainboards constructed from non-combustible materials.

(b) Overflow piping.

(A) Provide properly trapped overflow piping for dip tanks that have a capacity greater than 150 gallons (568 liters) or a surface area greater than 10 square feet (0.95 square meters).

(B) Overflow piping must discharge to a safe location.

(C) Overflow piping must be at least 3 inches (7.6 cm) diameter and must have sufficient capacity to prevent the tank from overflowing.

(D) The bottom of the overflow connector must be at least 6 inches (15.2 cm) below the top of the dip tank.

(c) Bottom Drains.

(A) Dip tanks containing more than 500 gallons (1893 L) of liquid must have a bottom drain.

(i) A bottom drain is not required if an automatic cover that meets the requirements of paragraph (10)(d)(C) is used.

(ii) A bottom drain is not required if the viscosity of the liquid at normal atmospheric temperature makes this impractical.

(B) Ensure the bottom drain will empty the dip tank in the event of a fire.

(C) Properly trap the bottom drain.

(D) Ensure the bottom drain has pipes that will empty the dip tank within 5 minutes.

(E) Bottom drains must discharge to a safe location.

(F) Bottom drains must be capable of manual and automatic operation. Manual operation must be from a safe and accessible location.

(G) When gravity flow from the bottom drain is impractical, use automatic pumps.

(d) Fire Protection.

(A) Provide portable fire extinguishers that meet the requirements of OAR 437-002-0187 in every vapor area.

(B) Provide an automatic fire extinguishing system:

(i) When the capacity of the dip tank is at least 150 gallons (568 L) or the liquid surface area is 4 square feet (0.38 square meters) or more; or

(ii) When the capacity of a hardening or tempering tank is at least 500 gallons (1893 L) or a liquid surface area of 25 square feet (2.37 square meters) or more.

(C) A cover that is closed by an approved automatic device for the automatic fire-extinguishing system may be used instead of the fire extinguishing system if the cover:

(i) Can also be activated manually;

(ii) Is noncombustible or tin-clad, with the enclosing metal applied with locked joints; and

(iii) Is kept closed when the dip tank is not in use.

(D) In each vapor area and any adjacent area, ensure that:

(i) All electrical wiring and equipment conform to OAR 437, Division 2, Subdivision S (except as specifically permitted in paragraph (15)); and

(ii) There are no flames, spark-producing devices, or other surfaces that are hot enough to ignite vapors.

(E) Electrically bond and ground portable containers used to add liquids to dip tanks to prevent static electrical sparks or arcs.

(F) All vapor areas must be free of combustible debris and as free as practicable of combustible stock.

(G) Deposit all rags or waste impregnated with dipping or coating material in a tightly-closing metal waste can immediately after use. Use only waste cans that are approved or acceptable to the local fire authority.

(H) Empty all waste containers at the end of each shift.

(I) Prohibit smoking in all vapor areas. Post a readily visible "No Smoking" sign near each dip tank or designate the entire area as "No Smoking."

(e) If a conveyor system is used with a dip tank, it must automatically shut down in the event of a fire. If a ventilation system is used to meet the ventilation requirements of paragraph (4), the conveyor system must automatically shut down if the ventilation system fails.

(f) If a liquid is heated in a dip tank, it must be maintained below the liquid's boiling point, and it must be maintained at least 100° F (37.8° C) below the liquid's autoignition temperature.

(g) Ensure that a heating system that is used in a drying operation and could cause ignition:

(A) Is installed in accordance with NFPA 86A-1969, Standard for Ovens and Furnaces (which is incorporated by reference in 1910.6 of this part); and

(B) Has adequate mechanical ventilation that operates before and during the drying operation; and

(C) Shuts down automatically if any ventilating fan fails to maintain adequate ventilation.

(11) Hardening or Tempering Tanks.

(a) Ensure that hardening or tempering tanks:

(A) Are located as far as practicable from furnaces;

(B) Are on noncombustible flooring;

(C) Have noncombustible hoods and vents (or equivalent devices) for venting to the outside. For this purpose, treat vent ducts as flues and keep them away from combustible materials, particularly roofs.

(b) Equip each tank with an alarm that will sound if the temperature of the liquid comes within 50° F (10° C) of its flashpoint (the alarm set point).

(c) When practicable, provide each tank with a limit switch to shut down the conveyor supplying work to the tank.

(d) If the temperature of the liquid can exceed the alarm set point, equip the tank with a circulating cooling system.

(e) If the tank has a bottom drain, the bottom drain may be combined with the oil-circulating system.

(f) Do not use air under pressure when filling the dip tank or agitating the liquid in the dip tank.

**(12) Flow Coating.**

(a) Use a direct low-pressure pumping system or a 10-gallon (38 L) or smaller gravity tank to supply the paint for flow coating. In case of fire, an approved heat-actuated device must shut down the pumping system.

(b) Ensure that the piping is substantial and rigidly supported.

**(13) When roll coating, roll spreading, or roll impregnating operations use a flammable or combustible liquid that has a flashpoint below 140° F (60° C), prevent sparking of static electricity by:**

(a) Bonding and grounding all metallic parts (including rotating parts) and installing static collectors; or

(b) Maintaining a conductive atmosphere (for example, one with a high relative humidity) in the vapor area.

**(14) Vapor degreasing tanks.**

(a) Ensure that the condenser or vapor-level thermostat keeps the vapor level at least 36 inches (91 cm) or one-half the tank width, whichever is less, below the top of the vapor degreasing tank.

(b) When using gas as a fuel to heat the tank liquid, the combustion chamber must be airtight (except for the flue opening) to prevent solvent vapors from entering the air-fuel mixture.

(c) The flue must be made of corrosion-resistant material, and it must extend to the outside. Install a draft diverter if mechanical exhaust is used on the flue.

(d) Do not allow the temperature of the heating element to cause a solvent or mixture to decompose or to generate an excessive amount of vapor.

**(15) Ensure that cyanide tanks have a dike or other safeguard to prevent cyanide from mixing with an acid if a dip tank fails.**

**(16) If a liquid is sprayed in the air over an open-surface cleaning or degreasing tank, control the spraying to the extent feasible by:**

(a) Enclosing the spraying operation; and

(b) Using mechanical ventilation to provide enough inward air velocity to prevent the spray from leaving the vapor area.

**(17) Electrostatic paint detearing.**

(a) Use only approved electrostatic equipment in paint-detearing operations. Electrodes in such equipment must be substantial, rigidly supported, permanently located, and effectively insulated from ground by nonporous, noncombustible, clean, dry insulators.

(b) Use conveyors to support any goods being paint deteared.

(c) Do not manually handle goods being electrostatically deteared.

(d) Maintain a minimum distance of twice the sparking distance between goods being electrostatically deteared and the electrodes or conductors of the electrostatic equipment. This minimum distance must be displayed conspicuously on a sign located near the equipment.

(e) Ensure that the electrostatic equipment has automatic controls that immediately disconnect the power supply to the high-voltage transformer and signal the operator if:

(A) Ventilation or the conveyors fail to operate;

(B) A ground (or imminent ground) occurs anywhere in the high-voltage system; or

(C) Goods being electrostatically deteared come within twice the sparking distance of the electrodes or conductors of the equipment.

(f) Use fences, rails, or guards, made of conducting material and adequately grounded, to separate paint-detearing operations from storage areas and from personnel.

(g) To protect paint-detearing operations from fire, use automatic sprinklers or an automatic fire-extinguishing system con-

forming to the requirements of OAR 437, Division 2, Subdivision F.

(h) To collect paint deposits, provide drip plates and screens and clean these plates and screens in a safe location.

Stat. Authority: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 9-2007, f. & cert. ef. 12-3-07; OSHA 5-2012, f. & cert. ef. 9-25-12

**437-002-0134**

**Personal Protective Equipment**

**Application.** This rule applies to personal protective equipment and other protective equipment for the eyes, face, head, extremities and torso to include protective clothing, respiratory devices, and protective shields and barriers, wherever employees encounter hazardous processes or environments, chemical hazards, radiological hazards, or mechanical irritants that are capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

**NOTE:** The assessment for eyes, face, head, hands, and feet are currently in effect. The torso and extremities (e.g. arms and legs) element of the body assessment will not be enforced until July 1, 2012.

**(1) Hazard assessment and equipment selection.**

(a) The employer must assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE) or other protective equipment. If such hazards are present, or likely to be present, the employer must:

(A) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(i) All protective equipment must be of safe design and construction for the work to be performed.

(ii) Protective equipment must be worn and used in a manner which will make full use of its protective properties.

(B) Communicate selection decisions to each affected employee; and,

(C) Select PPE that properly fits each affected employee.

**NOTE:** Non-mandatory Appendix B contains an example of procedures that would comply with the requirement for a hazard assessment.

(b) The employer must verify that the required workplace hazard assessment has been performed through a written certification that identifies the workplace evaluated; the person certifying that the evaluation has been performed; the date(s) of the hazard assessment; and, which identifies the document as a certification of hazard assessment.

**(2) Equipment.**

(a) Where employees provide their own protective equipment, the employer is responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(b) All personal protective equipment must be provided, used, and maintained in a sanitary and reliable condition.

(c) Defective or damaged personal protective equipment must not be used.

(d) Each employer must maintain a regular system of inspection and maintenance of personal protective equipment furnished to workers.

**(3) Training.**

(a) The employer must provide training to each employee who is required by this section to use PPE and each employee that is provided training must know at least the following:

(A) When PPE is necessary;

(B) What PPE is necessary;

(C) How to properly don, doff, adjust, and wear PPE;

(D) The limitations of the PPE; and,

(E) The proper care, maintenance, useful life and disposal of the PPE.

(b) Each affected employee must demonstrate an understanding of the training specified in paragraph (3)(a) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (3)(b) of this section, the



employer must retrain each such employee. Circumstances where retraining is required include, but are not limited to situations where:

(A) Changes in the workplace render previous training obsolete; or

(B) Changes in the types of PPE to be used render previous training obsolete; or

(C) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(4) Payment for protective equipment.

(a) Except as provided by paragraphs (4)(b) through (4)(f) of this section, the protective equipment, including personal protective equipment (PPE), used to comply with this part, must be provided by the employer at no cost to employees.

(b) The employer is not required to pay for non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, provided that the employer permits such items to be worn off the job-site.

(c) When the employer provides metatarsal guards and allows the employee, at his or her request, to use shoes or boots with built-in metatarsal protection, the employer is not required to reimburse the employee for the shoes or boots.

(d) The employer is not required to pay for:

(A) The logging boots required by OAR 437-007-0330 in Division 7.

(B) Everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots; or

(C) Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, and sunscreen.

(e) The employer must pay for replacement PPE, except when the employee has lost or intentionally damaged the PPE.

(f) Where an employee provides adequate protective equipment he or she owns pursuant to paragraph (2)(a) of this section, the employer may allow the employee to use it and is not required to reimburse the employee for that equipment. The employer must not require an employee to provide or pay for his or her own PPE, unless the PPE is excepted by paragraphs (4)(b) through (4)(e) of this section.

(5) Fall Protection.

(a) All employees must be protected from fall hazards when working on unguarded surfaces more than 10 feet above a lower level or at any height above dangerous equipment.

(b) The employer must ensure that fall protection systems are provided, installed, and used according to the criteria in 1926.502(d), and 437-003-0502 in Division 3/M, Construction/Fall Protection.

(6) Work Clothing.

(a) Clothing must be worn which is appropriate to the work performed and conditions encountered.

(b) Appropriate high temperature protective clothing must be worn by workers who are exposed to possible contact with molten metals or other substances that can cause burns.

(c) Loose sleeves, ties, lapels, cuffs, or other loose clothing must not be worn near moving machinery.

(d) Clothing saturated or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents must be removed immediately and not worn again until properly cleaned.

(e) Rings, wristwatches, earrings, bracelets, and other jewelry which might contact power driven machinery or electric circuitry, must not be worn.

(7) High Visibility Garments. Employees exposed to hazards caused by on highway type moving vehicles in construction zones and street/highway traffic must wear highly visible upper body garments. The colors must contrast with other colors in the area sufficiently to make the worker stand out. Colors equivalent to strong red, strong orange, strong yellow, strong yellow-green or fluorescent versions of these colors are acceptable. During hours of darkness, the garments must also have reflective material visible from all sides for 1000 feet.

(8) Eye And Face Protection.

(a) The employer must ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

(b) The employer must ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g., clip-on or slide-on side shields) meeting the pertinent requirements of this section are acceptable.

(c) The employer must ensure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

(d) Eye and face PPE must be distinctly marked to facilitate identification of the manufacturer.

(e) The employer must ensure that each affected employee uses equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. The following is a listing of appropriate shade numbers for various operations. Tables.

(f) Protective eye and face protection devices must comply with any of the following consensus standards:

(A) ANSI/ISEA Z87.1-2010, Occupational and Educational Personal Eye and Face Protection Devices, incorporated by reference in 1910.6;

(B) ANSI Z87.1-2003, American National Standard Practice for Occupational and Educational Eye and Face Protection, which is incorporated by reference in 1910.6; or

(C) ANSI Z87.1-1989 (R-1998), American National Standard Practice for Occupational and Educational Eye and Face Protection, which is incorporated by reference in 1910.6.

(g) Protective eye and face protection devices that the employer demonstrates are at least as effective as protective eye and face protection devices that are constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(h) Employees whose occupation or assignment requires exposure to laser beams shall be furnished laser safety goggles as required by Occupational Health Regulations which will protect for the specific wavelength of the laser and be of optical density adequate for the energy involved.

(9) Head Protection.

(a) The employer must ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling or flying objects.

(b) The employer must ensure that a protective helmet designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head.

(c) Head protection must comply with any of the following consensus standards:

(A) ANSI Z89.1-2009, American National Standard for Industrial Head Protection, which is incorporated by reference in §1910.6;

(B) ANSI Z89.1-2003, American National Standard for Industrial Head Protection, which is incorporated by reference in 1910.6; or

(C) ANSI Z89.1-1997, American National Standard for Industrial Head Protection, which is incorporated by reference in 1910.6.

(d) Head protection devices that the employer demonstrates are at least as effective as head protection devices that are constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(e) Employees who are exposed to power-driven machinery or to sources of ignition shall wear caps or other head covering which completely covers the hair.

(10) Foot Protection.

(a) The employer must ensure that each affected employee use protective footwear when working in areas where there is a danger

of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards, such as static-discharge or electric-shock hazard, that remains after the employer takes other necessary protective measures.

(b) Protective footwear must comply with any of the following consensus standards:

(A) ASTM F-2412-2005, Standard Test Methods for Foot Protection, and ASTM F-2413-2005, Standard Specification for Performance Requirements for Protective Footwear, which are incorporated by reference in 1910.6;

(B) ANSI Z41-1999, American National Standard for Personal Protection—Protective Footwear, which is incorporated by reference in 1910.6; or

(C) ANSI Z41-1991, American National Standard for Personal Protection—Protective Footwear, which is incorporated by reference in §1910.6.

(c) Protective footwear that the employer demonstrates is at least as effective as protective footwear that is constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(d) Special types or designs of shoes or foot guards are required where conditions exist that make their use necessary for the safety of workers.

(11) Leg protection

(a) Leggings or high boots of leather, rubber, or other suitable material must be worn by persons exposed to hot substances or dangerous chemical spills.

(b) Employees using chain saws must wear chaps or leg protectors that cover the leg from the upper thigh to mid-calf. The protector must be material designed to resist cuts from the chain saw. Employers must provide this protection at no cost to the employee.

NOTE to 437-002-0134(11)(b): Employees working in the tree and shrub services industry must follow rules on this subject in Subdivision 2/R instead of the above.

(12) Hand Protection.

(a) Employers must select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

(b) Employers must base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

(c) Gloves must not be worn by persons whose hands are exposed to moving parts in which they could be caught.

(13) Skin protection. Where the need for their use is necessary, protective covering, ointments, gloves, or other effective protection must be provided for and used by persons exposed to materials which are hazardous to the skin.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 2-2013, f. 2-15-13, cert. ef. 4-1-13; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

### 437-002-0139

#### Working Underway on Water.

(1) Scope and Application: This rule applies to all employees not covered by division 3, Construction; division 4, Agriculture or division 6, Forest Practices.

(2) Definitions:

(a) Boat — means every description of water craft used or capable of being used as a means of transportation on the water, but does not include aircraft built to land on the water.

EXAMPLE: A partial list includes: boats, rafts, barges, pontoons, dredges and floating logs.

(b) Serviceable condition — means the flotation device is able to perform the function that the manufacturer intended.

(c) Underway — means when a boat is not at anchor, or moored, or made fast to the shore, or aground.

(3)(a) Workers in boats that are underway must wear a Coast Guard approved or equivalent, wearable personal flotation device (PFD).

EXCEPTION: Workers, below deck or in enclosed parts of boats, like cabins and pilot houses need not wear the PFD but must have it at hand.

(b) The PFD must be the right size for the wearer and must be in serviceable condition according to the manufacturer's requirements and recommendations.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 9-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 1-2001, f. 1-18-01, cert. ef. 3-1-01

### 437-002-0140

#### Adoption by Reference

In addition to and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.141 Sanitation, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.

(2) Reserved for 29 CFR 1910.142 Temporary labor camps.

(3) 29 CFR 1910.143 Nonwater carriage disposal systems (Reserved).

(4) 29 CFR 1910.144 Safety color code for marking physical hazards, published 12/14/07, FR vol. 72, no. 240, p. 71061.

(5) 29 CFR 1910.145 Specifications for accident prevention signs and tags, published 6/13/13, FR vol. 78, no. 114, p. 35559.

(6) 29 CFR 1910.146 Permit-required confined spaces. Repealed with Oregon OSHA AO 6-2012, f. 9/28/12, ef. 4/1/13. In Oregon, OAR 437-002-0146 applies.

(7) 29 CFR 1910.147 The control of hazardous energy, (lock-out/tagout); published 5/2/11, Federal Register vol. 76, no. 84, p. 24576; 7/25/11, FR vol. 76, no. 142, p. 44265.

(8) 29 CFR 1910.148 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

(9) 29 CFR 1910.149 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

(10) 29 CFR 1910.150 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

These federal standards are on file with the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1990, f. 1-19-90, cert. ef. 3-1-90; OSHA 4-1991, f. 2-25-91, cert. ef. 3-15-91; OSHA 13-1992, f. 12-7-92, cert. ef. 2-1-93; OSHA 8-1993, f. & cert. ef. 7-1-93; OSHA 5-1994, f. & cert. ef. 9-30-94; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 5-1999, f. & cert. ef. 5-26-99; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA 3-2011, f. & cert. ef. 11-1-11; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 7-2013, f. & cert. ef. 12-12-13

### 437-002-0141

#### Additional Oregon Sanitation Requirements

(1) Definitions:

(a) "Potable Water" means water meeting the bacteriological and chemical quality requirements prescribed in OAR chapter 333, division 61, Public Water Systems, of the Oregon State Health Division;

(b) "Sanitary" means free from agents injurious to health.

(2) Expectoration. Expectoring upon the walls, floors, workplaces, or stairs of any establishment is prohibited.

(3) Disposal of Waste Materials.

(a) Scrap, waste material, or debris shall not be permitted to accumulate in work areas in a manner that will constitute a hazard or contribute to a hazardous condition in a place of employment. It shall be removed as required for the safety of workers.

(b) Flammable waste, such as oily rags, shall be removed to a safe place, or be placed in containers designed or suitable for such use.

(c) Where the operation of machines or equipment creates waste materials hazardous to workers, such machines or equipment shall be equipped with suitable collecting or removal systems, except that where the refuse is too heavy, bulky, or otherwise unsuitable to be handled by such means, provision for the temporary safe storage and regular removal of the refuse shall be made.

**NOTE:** Water supply systems design and construction standards are contained in the Oregon Health Division rules, OAR chapter 333, division 61, Public Water Systems.

(4) Toilet Facilities. Toilet facilities at permanent worksites must be reasonably accessible.

(5) Washing Facilities. Handwashing facilities shall be provided in work areas where the employees are exposed to hazardous materials which will have a deleterious effect on or be absorbed through the skin if the contamination is not removed.

**NOTE:** OR-OSHA did not adopt 1910.141(d)(3)(ii). In Oregon, OAR 437-002-0141(6) applies:

(6) Shower Facilities. One shower shall be provided for each five employees of each sex, or numerical fraction thereof, who are required to shower during the same shift.

(7) Ventilation/Smoking.

(a) Exhaust or natural ventilation in eating facilities shall be sufficient to prevent the excessive build-up of cigarette smoke, or other atmospheric contaminants.

(b) Where employees work in an enclosed space, exhaust or natural ventilation shall be sufficient to prevent the build-up of cigarette smoke or other atmospheric contaminants.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 13-1992, f. 12-7-92, cert. ef. 2-1-93; OSHA 6-1994, f. & cert. ef. 9-30-94

**NOTE:** In lieu of 1910.142, Temporary Labor Camps, the following Oregon-initiated rules have been adopted. OAR 437, division 147, Labor Camps, was redesignated as part of Division 2/J, and renumbered as OAR 437-002-0142.

#### **437-002-0142**

##### **Labor Camps**

For temporary labor camps operated by employers covered under Divisions 2 (General Industry), 3 (Construction) and 7 (Forest Activities), the following rule applies: Division 4/J, 437-004-1120 (Agricultural Labor Housing and Related Facilities) except paragraphs (5), (6)(p) and (24).

Stat. Auth.: ORS 654.025(2) & 656.726(3).

Stats. Implemented: ORS 315.164, 658.750, 658.755, 658.780, 658.785, 658.805, 658.810 & 658.825

Hist.: OSHA 13-1992, f. 12-7-92, cert. ef. 2-1-93; OSHA 9-1995, f. & cert. ef. 11-29-95; OSHA 5-2000, f. 5-18-00, cert. ef. 6-1-00; OSHA 4-2008, f. 3-24-08, cert. ef. 5-1-08

#### **437-002-0144**

##### **Additional Oregon Rules for General Environmental Controls**

(1) Illumination.

(a) Adequate general and local lighting shall be provided for rooms, building and work areas during the time of use.

(b) Factors upon which the adequacy and effectiveness of illumination shall be judged, include the following:

(A) The quantity of light as specified in American National Standard ANSI A11.1-1965, "American Standard Practice for Industrial Lighting."

(B) The quality of light in terms of freedom from glare, and correct direction, diffusion and distribution.

(C) Freedom from shadows and extreme contrasts.

(c) All skylights, side windows, lamps and other accessories which are necessary for illumination shall be kept clean, and in work-in order.

(2) Temperature Provisions. Where processes create harmful or hazardous temperature and humidity conditions, measures shall be taken to control the conditions or to control the effect on the employee.

**NOTE:** The following Oregon-initiated rule relates to 29 CFR 1910.147(c)(5).

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-1994, f. & cert. ef. 9-30-94

#### **437-002-0145**

##### **Additional Oregon Rules for Accident Prevention and Tags**

Warning Devices. Warning signs, danger signs, warning flags, warning lights, or similar devices shall be conspicuously posted at all locations where existing conditions not otherwise adequately guarded warrant their use.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-1994, f. & cert. ef. 9-30-94

#### **437-002-0146**

##### **Confined Spaces**

(1) Purpose and application. This rule applies to all activities in confined spaces and provides requirements to protect employees from the hazards of entering and working in confined spaces.

(2) Exceptions. This standard does not apply to the following:

(a) Construction work regulated by Division 3/P Excavations, except for entry into sanitary sewer spaces that are large enough to bodily enter.

(b) Construction work regulated by Division 3/S Underground Construction, Caissons, Cofferdams and Compressed Air, except for sewers.

(c) Enclosed spaces regulated by Division 2/RR Electric Power Generation, Transmission and Distribution, except when that standard requires compliance with this standard.

(d) Reserved.

(e) Manholes and vaults regulated by 1910.268(o) in Division 2/R Telecommunications, unless the space cannot be made safe to enter even after following the requirements of 1910.268(o).

(f) Welding in confined spaces regulated by Division 2/Q Welding, Cutting & Brazing, when the only hazards are related to the welding process.

(g) Grain bins, silos, tanks, and other grain storage structures regulated by 1910.272, Grain Handling Facilities.

(h) Diving operations regulated by Division 2/T, Commercial Diving Operations.

(i) Except for (a) through (h) above, when any other applicable standard addresses work in confined spaces or additional hazards that may be present, you must comply with the provisions of that standard and this standard. Where the requirements of one standard are more restrictive than the other, follow the more stringent requirements.

(3) Definitions.

(a) Acceptable entry conditions: The conditions that must exist in a permit-required confined space to allow safe entry and work.

(b) Alternate entry — An alternative process for entering a permit space under very specific conditions. The space remains a permit space even when entered using alternate entry and even though no entry permit is required in those circumstances.

(c) Atmospheric hazard (see the definition of hazardous atmosphere).

(d) Atmospheric testing — see "Testing."

(e) Attendant — An individual stationed outside one or more permit spaces to monitor the authorized entrants and who performs all attendants duties assigned in the employer's permit space program.

(f) Authorized — Approved by the employer or controlling contractor.

(g) Authorized entrant — An employee who is authorized by the employer to enter a permit space.

(h) Barrier — A physical obstruction that blocks or limits access.

(i) Blanking or blinding — The absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

(j) Calibration — The checking of a direct-reading instrument against an accurate standard (such as a calibration gas) to determine any deviation and correct for errors.

**NOTE:** A similar process may also be referred to as a "bump test" in which an instrument is tested with an accurate standard to ensure it is still



reading correctly. For the purposes of this rule, a “bump test” performed in accordance with the manufacturer’s instructions can be used to verify calibration.

(k) Confined space — A space that meets all of the following:

(A) Large enough and so configured that an employee can fully enter the space and perform work.

(B) Has limited or restricted means for entry and/or exit.

(C) Is not designed for continuous human occupancy.

(l) Continuous system — a confined space that meets all of the following:

(A) Part of, and contiguous with, a larger confined space (for example, storm sewers, sanitary sewers, or steam tunnels)

(B) Subject to a potential release from the larger confined space that can overwhelm control measures and/or personal protective equipment, resulting in a hazard that is immediately dangerous to life and health.

(m) Control or controlling — Authority to regulate, direct or influence.

(n) Controlling contractor — The employer that has overall responsibility for construction at a worksite.

**Note:** A controlling contractor who owns or manages a property is both a controlling contractor and a host employer.

(o) Double block and bleed — The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

(p) Emergency — Any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

(q) Engulfment hazard — A physical hazard consisting of a liquid or flowable solid substance that can surround and capture an individual. Engulfment hazards may cause death or serious physical harm if: the individual inhales the engulfing substance into the respiratory system (drowning, for example); the substance exerts excessive force on the individual’s body resulting in strangulation, constriction, or crushing; or the substance suffocates the individual.

(r) Entrant (see the definition of authorized entrant).

(s) Entry — The action by which any part of an employee’s body breaks the plane of an opening into a confined space. Entry (or entry operations) also refers to the period during which an employee occupies a confined space.

(t) Entry Permit — Written authorization from the employer, controlling contractor, or host employer to enter a permit-required confined space and perform work.

(u) Entry supervisor — The person (such as the employer, foreman, or crew chief, or any other designated employee) responsible for:

(A) Determining if acceptable entry conditions are present at a permit space where entry is planned; and

(B) Authorizing entry and overseeing entry operations; and

(C) Terminating entry as required.

(v) Hazard — For the purpose of this rule, hazard means a physical hazard or hazardous atmosphere.

(w) Hazard control — The action taken to reduce the level of any hazard inside a confined space using engineering methods (for example, by isolation or ventilation), and then using these methods to maintain the reduced hazard level. Hazard control also refers to the engineering methods used for this purpose. Personal protective equipment is not a hazard control.

(x) Hazard elimination — The action taken to remove a hazard from the work environment. For confined spaces, this includes isolation. For a hazard to be eliminated, the conditions that create or cause the hazard no longer exist within the confined space.

(y) Hazardous atmosphere — An existing or potential atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to escape unaided from a permit space, injury, or acute illness from one or more of the following:

(A) A flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit.

(B) An airborne combustible dust at a concentration that meets or exceeds its lower explosive limit.

**NOTE:** This concentration may be approximated as a condition in which

the dust obscures vision at a distance of 5 feet (1.52 meters) or less.

(C) An atmospheric oxygen concentration below 19.5 percent (oxygen deficient) or above 23.5 percent (oxygen enriched).

(D) An airborne concentration of a substance that exceeds the dose or exposure limit specified by an Oregon OSHA requirement.

**NOTE:** An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to escape unaided, injury, or acute illness due to its health effects is not covered by this provision. You must still follow all other applicable Oregon OSHA requirements to protect employee health.

(E) An atmosphere that presents an immediate danger to life or health (IDLH).

(z) Host employer — An employer who owns or manages the property on which confined space work is taking place.

(aa) Immediately dangerous to life or health (IDLH) — Means any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual’s ability to escape unaided from a permit space.

**NOTE:** Some materials — hydrogen fluoride gas and cadmium vapor, for example — may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12–72 hours after exposure. The victim “feels normal” from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be “immediately” dangerous to life or health.

(bb) Inerting — The displacement of the atmosphere in a permit space by a noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible.

**NOTE:** This procedure produces an IDLH oxygen-deficient atmosphere.

(cc) Isolate or isolation — The elimination or removal of a physical or atmospheric hazard by preventing its release into a confined space. Isolation includes, but is not limited to, the following methods:

(A) Blanking or blinding.

(B) Misaligning or removing sections of lines, pipes, or ducts.

(C) A double block-and-bleed system.

(D) Machine guarding;

(E) Blocking or disconnecting all mechanical linkages;

(F) Lockout or tagout of all sources of energy.

**NOTE:** When using lockout/tagout, you must follow all of the requirements of 1910.147, “The Control of Hazardous Energy”.

(dd) Mobile worker — An employee who performs work in multiple locations such as customer sites, company offices, private homes, vendor offices, or construction sites.

(ee) Monitor or monitoring — The process used to identify and evaluate the atmosphere in a permit space after an authorized entrant enters the space. This is a process of checking for changes in the atmospheric conditions within a permit space and is performed in a periodic or continuous manner after the completion of the initial testing of that space. (See also “testing.”)

(ff) Non-entry rescue — Retrieval of entrants from a permit space without entering the permit space.

(gg) Permit-required confined space (permit space) — A confined space that has one or more of the following characteristics:

(A) Contains, or has a potential to contain, a hazardous atmosphere.

(B) Contains a material that has the potential to engulf an entrant.

(C) Has an internal configuration such that an entrant could become trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section.

(D) Contains any other recognized serious safety or health hazard that can inhibit an entrant’s ability to escape unaided.

(hh) Physical hazard — An existing or potential hazard that can cause death or serious physical harm in or near a confined space, or a hazard that has a reasonable probability of occurring in or near a confined space, and includes, but is not limited to:

(A) Explosives; mechanical, electrical, hydraulic, and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces; and

(B) Chemicals that can cause death or serious physical harm through skin or eye contact (rather than through inhalation).

(ii) Potential hazards — All reasonably anticipated conditions within the space and outside the space that can adversely affect conditions within the space.

(jj) Rescue — Retrieving employees who are unable to remove themselves from a permit space. Rescue can be entry or non-entry, and can be conducted by the employer's employees or a third-party.

(kk) Rescue service — The onsite or offsite personnel who the employer designates to engage in non-entry and/or entry rescue of employees from a permit space.

(ll) Retrieval system — The equipment, including mechanical retrieval devices, used for non-entry rescue of authorized entrants from a permit space.

(mm) Serious physical harm — An impairment in which a body part is made functionally useless or is substantially reduced in efficiency. Such impairment may include loss of consciousness or disorientation, and may be permanent or temporary, or chronic or acute. Injuries involving such impairment would usually require treatment by a physician or other licensed health-care professional while an illness resulting in serious physical harm could shorten life or substantially reduce physical or mental efficiency by impairing a normal bodily function or body part.

(nn) Simulated Permit-Required Confined Space — Is a confined space or a mock-up of a confined space that has similar entrance openings, and is similar in size, configuration, and accessibility to the permit space the authorized entrants enter. A simulated space does not need to contain any physical or atmospheric hazards.

(oo) Testing — The process of identifying and evaluating the atmospheric hazards that entrants may be exposed to in a permit-required confined space. Testing includes specifying the initial tests that are to be performed in the permit space. (See also "monitor or monitoring")

**NOTE:** Testing enables employers both to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to and during entry.

(pp) Ventilate or ventilation — Controlling an actual or potentially hazardous atmosphere using either powered equipment, such as fans and blowers, or reliable natural air flow, or a combination of the two, to reduce an otherwise hazardous atmosphere below the level that makes it a hazardous atmosphere. Ventilation is a method of hazard control, not hazard elimination.

(qq) You — The employer. Table.

(4) Evaluation.

(a) You must determine if any of your confined spaces are permit-required confined spaces. This evaluation must include:

(A) Any known or anticipated hazard.

**NOTE:** If the only hazard associated with a confined space is a fall hazard, it is not covered by the Confined Space rule. If the space contains other hazards that make it a permit space, the fall hazard must be addressed on the permit.

(B) The determination from any previous evaluation of that space.

(C) Any precautions and procedures previously implemented for entering the space.

(b) Exceptions:

(A) Employers of mobile workers (for example, contractors, electricians, plumbers) where they are not the property owner or controlling contractor are not required to perform this evaluation for the entire site. Mobile worker employers must evaluate the areas they are responsible for or where their employees will be working and must follow the requirements of (4)(e).

(B) Controlling contractors on sites with existing confined spaces are responsible for performing this determination only for the area under their control.

(C) On sites where confined spaces are being built, the host employer or controlling contractor is responsible for ensuring this determination is accomplished only when:

(i) Any of their employees enter that space.

(ii) An agent of the employer enters that space.

(iii) Employees of an employer accountable to that controlling contractor or host employer enter that space.

(iv) They assume control over that space.

(c) Before employees of another employer enter a confined space at your workplace that is under your control, and you have information related to paragraph (4)(a), you must provide it to that employer.

(d) When a space has hazards that make it a permit space:

(A) Develop and implement a means so employees can identify that space. Signs, labels, or tags are methods that can be used to accomplish this.

(B) Allow employees or their representatives to observe the evaluation or re-evaluation of the space.

(C) When conditions within a confined space or a permit space change, re-evaluate it.

(D) Take all necessary measures to prevent unauthorized employees from entering permit spaces.

(e) Prevent employees from entering any unevaluated confined space until it is fully evaluated.

(f) When your employees are mobile, you must determine if they will be exposed to permit-required confined spaces at their assigned work locations. This determination must include information, if any, from the host employer or controlling contractor.

(A) Identify any physical and atmospheric hazards that make the space a permit-required confined space.

(B) Allow employees or their representatives to observe the evaluation or re-evaluation of the space.

(C) When conditions within a confined space or a permit space change, re-evaluate it.

(D) Take all necessary measures to prevent unauthorized employees from entering permit spaces.

(E) Prevent employees from entering any unevaluated confined space until it is fully evaluated.

(5) Permit-Required Confined Space Entry Program and Permits.

(a) When employees must enter a permit space, develop and implement a written program that describes the means, practices, and procedures to safely identify and enter permit spaces.

(b) Include the following in the program:

(A) Documentation of entry permit procedures.

(B) Measures taken to prohibit unauthorized persons from entering permit spaces.

(C) Designation of employee roles, such as entrants, attendants, entry supervisors, rescuers, or those who test or monitor the atmosphere in a permit space.

(D) Identification of designated employee duties.

(E) Training on the written program and entry permits.

(F) Training employees on their designated roles.

(G) Instructions to identify and evaluate hazards.

(H) Methods to eliminate and/or control hazards.

(I) Instructions on equipment use and maintenance.

(J) Instructions to coordinate entry with another employer.

(K) Procedures necessary for concluding the entry and canceling the permit after entry operations have been completed.

(c) On fixed sites, include the following additional elements:

(A) The location of all permit spaces.

(B) The reason for the classification of each permit space or each type of permit space.

**NOTE:** Where there are multiple permit spaces of the same type that have the same hazards, such as sewers, water vaults, or valve pits, the exact location of each space does not need to be identified so long as there is enough information so that employees can readily identify each type of space and its hazards at each location.

(C) Exception: The locations of permit spaces at remote unmanned locations do not need to be added to the program until the first time employees go to that location after the effective date of this rule.

(d) Provide employees and their representatives access to the written program.

(e) Provide entrants or their authorized representatives access to the completed permit before entry so they can confirm that pre-entry preparations have been completed.

(f) Review the permit program when there is any reason to believe that employees are not adequately protected, and revise it as necessary.

- (A) Situations that require this review include:
  - (i) Unauthorized entry of a permit space.
  - (ii) Discovery of a previously unrecognized hazard.
  - (iii) Existence of a condition prohibited by the permit or permit program.
  - (iv) An injury or near-miss during entry.
  - (v) An employee reports of concerns about the effectiveness of the program.
  - (vi) Any other condition that affects employee safety or health.
- (B) When revising the permit program to correct hazard-related deficiencies, do not allow entries into affected permit spaces to be made until the revisions are complete.
- (C) Provide employees and their representatives access to the revised permit program.
- (g) Review permits within one year of their cancellation to evaluate:
  - (A) The permit program.
  - (B) The protection provided to employees entering permit spaces.
- (6) Permit Entry.
  - (a) Develop and implement procedures for issuing permits. Procedures must include how to:
    - (A) Evaluate the hazards of the space.
    - (B) Evaluate hazards of the work to be performed.
    - (C) Identify safe entry conditions.
    - (b) Entry permits must include the following information:
      - (A) The space to be entered.
      - (B) The purpose of the entry.
      - (C) The date, start, and stop times of the permit.
      - (D) The hazards of the space.
      - (E) Acceptable entry conditions.
      - (F) Results of initial tests and periodic monitoring performed to evaluate and identify the hazards and conditions of the space, or the period for continuous monitoring, accompanied by the names or initials of the testers and by an indication of when the tests were performed.
      - (G) Appropriate measures used before entry to isolate the space and eliminate or control hazards.
  - Examples** of appropriate measures include the de-energizing and lockout or tagging of equipment, and procedures for purging, inerting, ventilating, and flushing permit spaces.
  - (H) Names of entrants and current attendants.
  - (I) The signature of the original supervisor authorizing entry.
  - (J) The current entry supervisor.
  - (K) Communication procedures for entrants and attendants to maintain contact during the entry.
  - (L) Equipment provided for safe entry, such as:
    - (i) Personal protective equipment (PPE).
    - (ii) Testing and monitoring equipment.
    - (iii) Communications equipment.
    - (iv) Alarm systems.
    - (v) Rescue equipment.
  - (M) Rescue services available, and how to contact them.
  - (N) Other information needed for safety in the particular permit space.
  - (O) Additional permits issued for work in the space, such as for hot work.
  - (P) Any problems, if any, encountered during the entry.
  - (c) Perform initial testing for atmospheric hazards, where necessary, before entry is made.
  - (d) Provide each entrant or their authorized representative with the results of any initial testing before they enter the space.
  - (e) Maintain safe entry conditions for the duration of the entry.
    - (A) When the space is too large to isolate, or is part of a continuous system, such as a sewer, ensure continuous monitoring where entrants are working for the duration of the entry.
    - (B) When an entrant or their authorized representative has reason to believe that the testing or monitoring was inadequate, re-test the space.
    - (f) Follow all actions and precautions identified on the permit.
    - (g) When conditions require the space to be evacuated, do not allow re-entry unless you:

- (A) Re-assess the conditions of the space to ensure it is safe for re-entry and ensure the permit reflects the evacuation and subsequent re-assessment; or
- (B) Issue a new permit.
- (h) Allow entrants or their authorized representatives the opportunity to observe monitoring, testing, and all other actions taken to eliminate or control the hazards of the space.
- (7) Equipment.
  - (a) When employees enter permit spaces, provide the following equipment as necessary:
    - (A) Testing and monitoring equipment.
    - (B) Ventilating equipment, when needed, used to obtain and maintain acceptable entry conditions.
    - (C) Communication equipment, such as a two-way radio, for effective communication between the attendant and all entrants and to initiate rescue when necessary.
    - (D) Lighting equipment needed to ensure employees can see well enough to work safely and exit the space quickly in the event of an emergency.
    - (E) Barriers or shields to protect entrants from external hazards, such as pedestrians and vehicles.
    - (F) Ladders or other equipment to safely enter and exit the space.
    - (G) Rescue and emergency equipment necessary to safely and effectively rescue entrants.
    - (H) Any other equipment necessary to safely enter and exit the space.
    - (I) Personal protective equipment as mandated by any applicable Oregon OSHA standard or as otherwise required by the employer's assessment of the hazards.
  - (b) Provide all necessary equipment at no cost to employees.
  - (c) Ensure all equipment is maintained and used in accordance with the instructions from the manufacturer.
  - (d) Train all employees who use equipment in the use of that equipment.
- (8) Personnel.
  - (a) Before employees enter permit spaces, designate entrants, attendants, and entry supervisors.
  - NOTE:** The entry supervisor can also be either the attendant or entrant.
  - (b) Entrants must:
    - (A) Know the hazards that may be faced during entry, including information on the type of hazard, as well as signs, symptoms, and consequences of exposure to those hazards.
    - (B) Communicate with the attendant as necessary so the attendant can monitor the entrant's status and to enable the attendant to alert entrants of the need to evacuate the space.
    - (C) Alert the attendant whenever the entrant detects a dangerous or hazardous condition or warning sign or symptom of exposure to a dangerous situation.
    - (D) Exit from the permit space as quickly as possible whenever:
      - (i) An order to evacuate is given by the attendant or the entry supervisor, or
      - (ii) The entrant recognizes any warning sign or symptom of exposure to a dangerous situation, or
      - (iii) The entrant detects a dangerous or hazardous condition, or
      - (iv) An evacuation alarm is activated.
  - (c) Attendants must:
    - (A) Know the hazards that may be faced during entry, including information on the type of hazard, as well as signs, symptoms, and consequences of exposure to those hazards.
    - (B) Be aware of possible behavioral effects of hazard exposure in authorized entrants.
    - (C) Continuously maintain an accurate count of authorized entrants in the permit space and ensure that the means used to identify authorized entrants accurately identifies who is in the permit space.
    - (D) Remain outside the permit space during entry operations until relieved by another attendant.



(E) Communicate with authorized entrants as necessary to monitor entrant status and to alert entrants of the need to evacuate the space.

(F) Monitor activities inside and outside the space to determine if it is safe for entrants to remain in the space and order the authorized entrants to evacuate the permit space immediately under any of the following conditions:

- (i) If the attendant detects a dangerous or hazardous condition;
- (ii) If the attendant detects the behavioral effects of hazard exposure in an authorized entrant;
- (iii) If the attendant detects a situation outside the space that could endanger the authorized entrants; or
- (iv) If the attendant cannot effectively and safely perform all the duties required of the attendant.

(G) Summon rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.

(H) Take the following actions when unauthorized persons approach or enter a permit space while entry is underway:

- (i) Warn the unauthorized persons that they must stay away from the permit space;
- (ii) Advise the unauthorized persons that they must exit immediately if they have entered the permit space; and
- (iii) Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

**NOTE:** The employer can give the attendant the authority to remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations, so long as the attendant does not enter the space.

(I) Perform non-entry rescues as specified by the employer's rescue procedure; and

(J) Perform no duties that might interfere with the attendant's primary duty to monitor and protect any authorized entrant.

**NOTE:** An attendant may monitor more than one space at a time, but the duties in relation to one space may not interfere with the duties for any other spaces. If an attendant's attention is focused on one space, such as to initiate the rescue procedures, all other spaces that the attendant is monitoring must be evacuated or another attendant must take over those duties first.

(d) Entry supervisors must:

(A) Know the hazards that may be faced during entry, including information on the type of hazard, as well as signs, symptoms, and consequences of exposure to those hazards.

(B) Understand the means and methods to control and/or eliminate the hazards of the permit space.

(C) Verify, by checking that the appropriate entries have been made on the permit, that all tests specified by the permit have been conducted and that all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin.

(D) Inform entrants and attendants of the hazards and conditions associated with the space and the methods used to eliminate and/or control those hazards.

(E) Terminate the entry and cancel the permit as required by the permit entry program.

(F) Verify that rescue services are available and that the means for summoning them are operable.

(G) Remove unauthorized individuals who enter or who attempt to enter the permit space during entry operations.

(H) Reevaluate the conditions within the space whenever responsibility for a permit space entry operation is transferred and at intervals dictated by the hazards and operations performed within the space.

(9) Rescue.

(a) Before employees enter a permit space, develop and implement procedures to remove entrants in the event of an emergency or when they are unable to evacuate without outside assistance. These procedures must include:

(A) The process for summoning rescue services.

**NOTE:** At a minimum, if an off-site rescue service is being considered, the employer must contact the service to plan and coordinate the evaluations required by the standard. Merely posting the service's number or planning to rely on the 911 emergency phone number to obtain these services at the time of a permit space emergency would not comply with the rescue requirements of the standard.

(B) The process for summoning emergency medical services or transporting injured entrants to a medical facility.

(C) If an injured entrant is exposed to a substance for which a Safety Data Sheet (SDS) or other similar written information is required to be kept at the worksite, that SDS or written information must be made available to the medical facility treating the exposed entrant.

(b) Ensure rescue personnel can respond to a rescue call in a timely manner. Timeliness is based on the identified hazards of the space. Rescuers must be able to reach potential victims within an appropriate time frame based on the identified hazards of the permit space.

**NOTE:** When there are multiple entrants in a permit space, the rescue plan needs to address how all entrants will be removed in a timely manner.

(c) Ensure all rescuers, including non-entry, entry, and third-party, are knowledgeable in basic first aid and cardiopulmonary resuscitation (CPR). At least one member must be certified in first aid and CPR.

**NOTE:** Additional medical training, such as oxygen administration, the use of automated external defibrillators (AEDs), and personnel decontamination should be considered.

(d) Rescuers must practice performing permit space rescues prior to entry and no more than 12 months before an entry.

(A) The practice rescue must include every type of space in which the rescue team may perform rescues.

(B) The practice rescue must include removing persons, dummies, or manikins from the actual permit spaces, or representative spaces (simulated permit-required confined spaces) that have similar opening size, configuration, and accessibility issues as the actual permit spaces where rescue may be performed.

**NOTE:** Reliance upon "self rescue" does not constitute an acceptable rescue program.

(e) Where feasible, use non-entry retrieval systems or methods whenever an authorized entrant enters a permit space, unless it would increase the overall risk to the entrant or would not contribute to the rescue of the entrant.

(A) Non-entry Rescue. Use a retrieval system that meets the following requirements.

(i) Each authorized entrant must use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which you can establish presents a profile small enough for the successful removal of the entrant. Wristlets or ankle straps or other equally effective means may be used in lieu of the chest or full body harness if you can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of other methods are the safest and most effective alternative.

(ii) Attach the other end of the retrieval line to a mechanical device or fixed point outside the permit space so that rescue can begin as soon as the attendant becomes aware that rescue is necessary. Ensure a mechanical device is available to retrieve personnel from vertical type permit spaces more than 5 feet (1.52 m) deep.

(B) Entry Rescue.

(i) Where non-entry rescue is not feasible or would increase the overall risk to the entrant, designate a rescue team before employees enter any permit space.

(ii) Ensure the rescue team:

(I) Can efficiently rescue employees from permit spaces.

(II) Has the appropriate equipment to rescue employees from all permit spaces employees enter.

(iii) Inform each rescue team or service about the hazards they may confront when called to perform rescue.

(iv) Provide the rescue team or service with access to all permit spaces from which rescue may be necessary.

(v) Provide rescue team members with personal protective equipment (PPE) needed for safe entry and any other equipment required to safely conduct rescues.

(vi) Rescue team personnel must have the same training and proficiencies as a permit space entrant, attendant, and/or entry supervisor.

(vii) When a third-party rescue service is used, ensure that the service is:

(I) Aware that they are so designated and agree to it prior to entry.

(II) Capable of performing all required rescue operations.

(III) Knowledgeable in first aid and CPR, and at least one member is certified in first aid and CPR.

(10) Alternate Entry.

(a) Permit spaces may be entered without a permit when:

(A) All hazards have been eliminated; or

(B) All physical hazards, if any, have been eliminated and all atmospheric hazards are controlled with continuous ventilation.

**NOTE:** For purposes of this rule, tagout alone does not eliminate a hazard.

**NOTE:** Continuous ventilation does not eliminate atmospheric hazards. It only controls the hazards.

(b) Exception: Alternate entry cannot be used to enter a continuous system unless you can isolate the area to be entered from the rest of the space, can demonstrate that the conditions that caused the hazard or potential hazard no longer exist within the system during the entry, or can demonstrate that engulfment cannot occur and continuous ventilation in the area to be entered is sufficient to control atmospheric hazards.

(c) When employees enter permit spaces under alternate entry, you do not need to comply with the requirements of paragraphs (5), (6), (8), (9), (12), and (13) of this rule for those entries.

(d) Develop and implement procedures for each space that can be entered with alternate entry procedures. These procedures must address:

(A) Who can authorize alternate entry procedure and is responsible for ensuring safe entry conditions.

(B) The hazards of the space.

**NOTE:** When fall hazards (if any) have been addressed and all other physical hazards, if any, have been eliminated and all atmospheric hazards have been eliminated, or are controlled with continuous ventilation, alternate entry is allowed.

(C) The methods used to eliminate hazards.

(D) The methods used to ensure that the hazards have been eliminated.

(E) The methods used to test the atmosphere within the space, where applicable, for all atmospheric hazards.

(F) The methods used to determine if unsafe conditions arise before or during entry.

(G) The criteria and conditions for evacuating the space during entry.

(H) The methods for training employees in these procedures.

(I) The methods for ensuring employees follow these procedures.

(e) When using ventilation to control atmospheric hazards:

(A) Use only properly calibrated direct-reading meters to test the atmosphere.

(B) Test the atmosphere for all identified atmospheric hazards before entering the space.

(C) Do not allow employees to enter until testing verifies that all identified atmospheric hazards are adequately controlled by the ventilation.

(D) Perform continuous monitoring for all atmospheric hazards during the entry.

(E) Immediately evacuate the space:

(i) When monitoring indicates the return of atmospheric hazards.

(ii) Upon any failure with the direct-reading instrument.

(iii) Upon any failure with the ventilation.

(iv) When a new hazard is introduced or conditions within the space change.

(f) Provide all employees who will conduct the entry or their representatives the opportunity to observe all activities used to comply with this section.

(g) Provide all employees who conduct entry an effective means of communication, such as a two-way radio, cell phone, or voice if other employees are present, to summon help while within the space.

(h) When a space is evacuated, it cannot be re-entered as an alternate entry unless:

(A) The conditions that necessitated the evacuation are corrected; and

(B) The re-entry is treated and documented as a new entry.

(i) Document each entry. This documentation must include:

(A) The location of the space.

(B) The hazards of the space.

(C) The measures taken to eliminate the hazards.

(D) When applicable, the measures used to control the atmospheric hazards.

(E) When applicable, the identity of the direct-reading instruments used to test the atmosphere.

(F) When applicable, the results of the atmospheric testing.

(G) The date of the entry.

(H) The duration of the entry.

(I) When applicable, any and all conditions that required the evacuation of the space.

(J) The name, title, and signature of the person responsible for ensuring the safe entry conditions.

(j) Maintain this documentation for the duration of the entry at the location of the entry.

**NOTE:** Additional record retention requirements may apply under 1910.1020, "Access to Employee Medical and Exposure Records."

(11) Training.

(a) Train each employee involved in permit space activities so they acquire the understanding, knowledge, and skills necessary to safely perform their duties, according to their assigned responsibilities.

(A) Provide training:

(i) For all new employees.

(ii) Before an employee is assigned permit space duties.

(iii) Before there is a change in an employee's assigned duties.

(iv) When there is a hazard for which the employee hasn't already been trained, or when there is a change in the hazards of an existing confined space.

(v) When there are changes to the permit program.

(vi) When the permit audit shows deficiencies.

(vii) Whenever there is a deviation from the established procedures or employee knowledge of the procedures is inadequate.

(B) Document employee training. Ensure the documentation:

(i) Contains the employee's name, the name and signature of the trainer, and the date of training.

(ii) Contains the responsibilities for which they were trained.

(iii) Is available for inspection by employees and their authorized representative.

(b) Ensure each employee is proficient in their assigned duties.

(c) Awareness training:

(A) Provide all employees whose work operations are or may be in an area where permit spaces are present with a basic overview of:

(i) The permit space program.

(ii) The entry permit system.

(iii) The alternate entry procedures, if used.

**NOTE:** Awareness training is not required for employees whose exposure is negligible, such as office workers who walk in a parking lot that has a sewer manhole or workers entering a building with a baghouse near it, as long as those employees have no other exposures to permit spaces. Similarly, when all permit spaces cannot be accessed or opened by employees, awareness training is not required.

An example of this are spaces that are locked or require a specialized tool, access to the key or tool is controlled, and access without the key or tool would require extraordinary means (such as a chop saw or cutting torch).

(B) Provide this training:

(i) For all new affected employees.

(ii) For all employees whose duties change to include work in areas with permit spaces.

(iii) When inadequacies in an employee's knowledge indicate that the employee has not retained the requisite understanding.

(iv) When there is a change in the permit program.

(v) When there are new or previously unidentified permit spaces.

(C) Ensure all employees understand how to recognize permit spaces in their work area.

(12) Multi-employer worksites.

(a) Unless you fall within an exemption under paragraph (4)(b), before employees of another employer enter permit spaces under your control, you must:

(A) Inform the employer and their employees:

(i) That the workplace contains permit spaces and can be entered only when the applicable requirements of this rule are met.

(ii) Of the identified hazards and your experience with each permit space they will enter.

(iii) Of any precautions or procedures you require to protect employees in or near spaces where the work will be performed.

(B) Coordinate entry operations with the employer, when employees of different employers will be working in or near the same permit spaces.

(C) Discuss entry operations with the employer after they are complete. This discussion must include:

(i) The program followed during permit space entry, and

(ii) Any hazards confronted or created.

(b) When your employees enter a permit space under the control of another entity, at the conclusion of entry operations, inform the controlling contractor and host employer about the precautions and procedures you followed and any hazards that were present or that developed during entry operations.

(13) Records. Keep cancelled permits for at least one year from the date the permit expires for review (see paragraph (5)(g)).

**NOTE:** Additional record retention requirements may apply under 1910.1020 "Access to Employee Medical and Exposure Records."

(14) Effective dates. For work covered under Division 3, Construction, these rules are effective as of March 1, 2015.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 5-2014, f. 10-20-14, cert. ef. 1-1-15; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-0154**

##### **Individual Locks**

In addition to and not instead of the definition of "lockout device" in this section, the user must have the only key to each lock(s) or only the user may have the combination to each lock.

**NOTE:** This exemption of construction, agriculture and maritime employment was not adopted in Oregon. Lockout/ tagout rules continues to apply to all Oregon employers.)

**NOTE:** The following Oregon-initiated rule relates to 29 CFR 1910.147(c)(5):

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1990, f. 1-19-90, cert. ef. 3-1-90; OSHA 12-2001, f. & cert. ef. 10-26-01

#### **437-002-0161**

##### **Medical Services and First Aid**

(1) Definitions.

(a) "Emergency medical service" is the provision of care by a medically trained person, whether this service is provided by a hospital, clinic, ambulance, disaster car, or rescue vehicle.

(b) "In proximity" is defined as that which is available nearby to ensure prompt treatment in the event of need.

(c) "Qualified first aid person" means a person with evidence to show valid (current) first aid training by the American Red Cross or equivalent.

(2) First Aid Supplies.

(a) The employer shall provide first aid supplies based upon the intended use and types of injuries that could occur at the place of employment. The first aid supplies shall be available in close proximity to all employees. Either bulk pack or unit pack supplies are acceptable.

(b) First aid supplies must be stored in containers adequate to protect the contents from damage, deterioration, or contamination. The container shall be clearly marked, available when needed and must not be locked, but may be sealed.

(c) The employer shall ensure that the first aid supplies are available for each shift.

**NOTE:** Supplies such as gloves and a mouth barrier device are considered personal protective equipment, and are regulated by OAR 437-002-0134 in Division 2/I, Personal Protective Equipment.

**NOTE:** The Safety Code for Motor Vehicle Transportation of Workers (Rule 735 120 000) adopted by the Motor Vehicles Division of the Department of Transportation contains requirements for the first aid kit which is required when school buses are used to transport workers. In addition, the Public Utilities Commission has adopted Federal Motor Carrier Safety Regulations which apply to for hire buses.

(3) Personnel.

(a) The employer shall ensure the ready availability of emergency medical services for the treatment of all injured employees.

(b) Where emergency medical services are not in proximity to the place of employment, a qualified first aid person shall be available.

**NOTE:** More specific requirements for first aid training are found in: 1910.94, Ventilation, in Division 2/G; OAR 437-002-0118, Reinforced Plastics, in Division 2/H; 1910.120, Hazardous Waste Operations and Emergency Response, in Division 2/H; 1910.252 in Division 2/Q, Welding, Cutting and Brazing; OAR 437-002-0304, Ornamental Tree & Shrub Services, in Division 2/R; 1910.268, Telecommunications, in Division 2/R; Division 2/T, Commercial Diving Operations.

(4) Emergency Medical Plan.

(a) An emergency medical plan to ensure the rapid provision of medical services to employees with major illnesses and injuries shall be developed. In such cases, the employer shall determine that the service will be available in an emergency.

(b) If a physician or an ambulance with Emergency Medical Technicians is readily accessible to the place of employment, then the minimum emergency medical plan must contain the emergency telephone number of the ambulance service. The emergency telephone number shall be posted conspicuously at the place of employment.

(c) Employers in areas with a designated 911 telephone number may utilize the 911 service in lieu of posting the specific ambulance telephone number.

(d) If the place of employment is not in proximity to emergency medical services, then the employer shall have, in addition to the information required in 437-002-0161(4)(a), a definite plan of action to be followed in the event of serious injury to an employee. The plan of action shall consist of the arrangements for:

(A) Communication. Two-way radio, telephone, or provision for emergency communication to contact the emergency medical services.

(B) Transportation. Availability of transportation to a point where an ambulance can be met or to the nearest suitable medical facility. Vehicles provided for this purpose shall be available at all times, shall have right of way over all vehicles or equipment under the control of the employer, and shall be equipped so that due consideration can be given to the proper care and comfort of the injured employee.

(C) Qualified medical personnel at destination.

(D) All employees shall be knowledgeable concerning the qualified first aid person(s), the first aid requirements, and emergency medical plan.

(5) Emergency Eyewash and Shower Facilities.

(a) Where employees handle substances that could injure them by getting into their eyes or onto their bodies, provide them with an eyewash, or shower, or both based on the hazard.

(A) Emergency eyewash and showers must meet the following:

(i) Locate it so that exposed employees can reach it and begin treatment in 10 seconds or less. The path must be unobstructed and cannot require the opening of doors or passage through obstacles unless other employees are always present to help the exposed employee.

(ii) Water must flow for at least 15 minutes.

(iii) Install the equipment according to the manufacturer's instructions.

(iv) The eyewash must have valves that stay open without the use of the hands. The shower must not be subject to unauthorized shut-off.

(v) Follow the system manufacturer's criteria for water pressure, flow rate and testing to assure proper operation of the system.

(vi) Emergency shower and eyewash facilities must be clean, sanitary and operating correctly.



(vii) In self-contained systems, do not use solutions or products past their expiration date.

**NOTE:** If the employer can demonstrate, with the support of a physician board certified in ophthalmology, toxicology or occupational medicine, that an alternative eyewash solution is adequate for their specific hazard, OR-OSHA will accept that solution. An example would be a buffered isotonic solution preserved with a suitable antibacterial agent, that may be less irritating when used in a 15-minute flush.

(b) If the product label, MSDS or other information about the expected contaminant gives treatment instructions different from those required in this section, follow the most protective of those instructions.

(c) If the contaminant manufacturer requires specific decontaminants or procedures, you must provide them in addition to the eyewash or shower. The employer must assure this treatment is available.

(d) If eyewash facilities or showers can freeze, take protective measures to prevent freezing.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 757.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 13-1979, f. & ef. 7-7-75; WCB 4-1975, f. 10-6-75, ef. 11-1-75; WCB 4-1976, f. 4-5-76, ef. 4-15-76; OSHA 2-1993, f. & cert. ef. 2-3-93; OSHA 1-2000, f. & cert. ef. 1-28-00; OSHA 1-2005, f. & cert. ef. 4-12-05; OSHA 1-2012, f. & cert. ef. 4-10-12

### **437-002-0170**

#### **Worker Protection Standard**

Oregon OSHA administers and enforces the pesticide Worker Protection Standard (WPS — 40 CFR 170) as adopted in OAR 437-004-6000. When a pesticide product with Worker Protection Standard language (“Agricultural Use Requirements”) on the product label is used on plants grown or maintained for sale or resale, such as those at retail nurseries or greenhouses, the WPS applies. Plants grown or maintained for sale or resale include but are not limited to food, feed and fiber plants; ornamental trees and shrubs; turfgrass sod; flowering plants and seedlings. This is consistent with the Environmental Protection Agency’s interpretation and application of the WPS. All parts of the WPS apply (without regard to the scope of Division 4) in addition to, and not instead of, any other part of Division 2, General Industry. Should any conflict exist between the WPS and other Division 2 rules, the employer must comply with the rule offering the most protection to workers. A full text of the Worker Protection Standard is found in Division 4, Agriculture, Subdivision W.

**NOTE:** 437-002-0170 Worker Protection Standard does not apply when any pesticide is applied in the following circumstances: (See 437-004-6000, 170.103 Exceptions)

For mosquito abatement, or similar wide-area public pest control programs sponsored by governmental entities;

To control pests on livestock or other animals, or in or about animal premises;

To control pests on plants not grown for sale or resale such as ornamental plants in or around habitations, home fruit and vegetable gardens, and home greenhouses;

To control pests on plants that are in ornamental gardens, parks, public or private lawns or grounds that are intended only for aesthetic purposes or climatic modification;

By direct injection into plants; (Direct injection does not include pesticides applied through irrigation water or soil-injection.)

For control of structural pests;

For control of vegetation in non-crop areas;

For control of vertebrate pests;

As attractants or repellents in traps.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001-654.295

Hist.: OSHA 9-2009 f. & cert. ef. 9-21-09

### **437-002-0180**

#### **Adoption by Reference**

In addition to and not in lieu of, any other health and safety codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.155 Scope, application and definitions applicable to this subpart, published 4/12/88, FR vol. 53, p. 12122.

(2) 29 CFR 1910.156 Fire brigades, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589; amended with OR-OSHA Admin. Order 1-2012, f. and ef. 4/10/12.

(3) 29 CFR 1910.157 Portable fire extinguishers. REPEALED with OR-OSHA Admin. Order 7-2007, f. and ef. 11/8/07.

(4) 29 CFR 1910.158 Standpipe and hose systems, published 3/7/96, FR vol. 61, no. 46, p. 9239.

(5) 29 CFR 1910.159 Automatic sprinkler systems, published 5/1/81, FR vol. 46, p. 24557.

(6) 29 CFR 1910.160 Fixed extinguishing systems, general, published 9/12/80, FR vol. 45, p. 60711; amended with AO 12-2001, Oregon note added, f. and ef. 10/26/01.

(7) 29 CFR 1910.161 Fixed extinguishing systems, dry chemical, published 9/12/80, FR vol. 45, p. 60712.

(8) 29 CFR 1910.162 Fixed extinguishing systems, gaseous agent, published 5/1/81, FR vol. 46, p. 24557.

(9) 29 CFR 1910.163 Fixed extinguishing systems, water spray and foam, published 9/12/80, FR vol. 45, p. 60712.

(10) 29 CFR 1910.164 Fire detection systems, published 9/12/80, FR vol. 45, p. 60713; amended with AO 12-2001, Oregon note added, f. and ef. 10/26/01.

(11) 29 CFR 1910.165 Employee alarm systems, published 9/12/80, FR vol. 45, p. 60713.

(12) Appendix A to Subpart L — Fire protection, published 9/12/80, FR vol. 45, p. 60715; amended 5/1/81, FR vol. 46, p. 24557; amended with OR-OSHA Admin. Order 1-2012, f. and ef. 4/10/12.

(13) Appendix B to Subpart L — National consensus standards, published 9/12/80, FR vol. 45, p. 60715; amended 6/30/93, FR vol. 58, no. 124, p. 35309.

(14) Appendix C to Subpart L — Fire protection references for further information, published 9/12/80, FR vol. 45, p. 60715; amended 6/30/93, FR vol. 58, no. 124, p. 35309.

(15) Appendix D to Subpart L — Availability of publications incorporated by reference in Section 1910.156, Fire Brigades, published 9/12/80, FR vol. 45, p. 60715; amended 6/30/93, FR vol. 58, no. 124, p. 35309; 3/7/96, FR vol. 61, no. 46, p. 9239.

(16) Appendix E to Subpart L — Test methods for protective clothing, published 9/12/80, FR vol. 45, p. 60715; amended 5/1/81, FR vol. 46, p. 24557.

These standards are available from the Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 14-1993, f. 8-37-93, cert. ef. 11-1-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 7-2007, f. & cert. ef. 11-8-07; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 1-2012, f. & cert. ef. 4-10-12

### **437-002-0182**

#### **Oregon Rules for Fire Fighters**

(1) Scope and Application. These rules apply to public and private employers who engage in structural fire service activities, including emergency first response.

**Note:** Employers subject to 437-002-0182 must comply with provisions of other applicable Oregon OSHA safety and health rules.

(2) Exceptions. These rules do not apply to the following fire-fighting activities:

(a) Private industry fire brigades covered under 1910.156, Division 2/L, Fire Protection.

(b) Forest and uncultivated wildland firefighting covered under Division 7/N, Wildland Fire Suppression and Prescribed Fire.

(c) Marine firefighting and rescue covered under CFR title 33, Navigation and Navigable Waters.

(d) Aircraft firefighting and rescue covered under CFR title 49, Transportation.

**Note:** Structural fire protection services who engage in activities listed under 437-002-0182(2)(a) through (d), must also comply with the applicable standard for the activity.

(3) Definitions.

(a) Aerial device — An aerial ladder, elevating platform, aerial ladder platform, or water tower that is designed to position personnel, handle materials, provide egress and discharge water.

- (b) ANSI — American National Standards Institute.
- (c) Apparatus — A mobile piece of firefighting equipment such as pumper, water tender, etc.
- (d) Certified — Attested or confirmed in a formal written statement, or someone or something officially recognized as possessing certain qualifications or meeting certain standards.
- (e) Confined space — A space that meets all of the following:
  - (A) Large enough and so configured that an employee can fully enter the space and perform work; and
  - (B) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
  - (C) Is not designed for continuous occupancy.
- (f) Designee — A person who has been officially chosen to do or be something.
- (g) DOT — Department of Transportation.
- (h) DPSST — Department of Public Safety Standards and Training.
- (i) Drill tower — A structure, which may or may not be attached to the station, that is over two stories high and primarily used for non-classroom firefighter training in fire service techniques.
- (j) Emergency incident — Any situation where a fire department delivers emergency services, rescue, fire suppression, medical treatment, and other forms of hazard control and mitigation.
- (k) Emergency scene — The site where the suppression of a fire or the emergency exists.
- (l) Enclosed structure — A structure with a roof or ceiling and at least two walls which may present fire hazards to employees, such as accumulations of smoke, toxic gases and heat, similar to those found in buildings.
- (m) Firefighter — A person involved in performing fire department duties and responsibilities, including fire suppression, who may be a career or volunteer member of a fire department and may occupy any position or rank within the fire department.
- (n) Fire ground — An emergency scene or location where firefighting or live fire training activities occur.
- (o) Fire training — Training received by firefighters to maintain proficiency in performing their assigned duties.
- (p) Hazardous material incident — The accidental release of hazardous materials from their containers.
- (q) Helmet — An element of the protective ensemble designed to provide minimum protection to the user's head against impact, flying or falling objects, electric shock, penetration, heat, and flame.
- (r) Hose tower — A vertical structure where a hose is hung to dry.
- (s) IFSTA — International Fire Service Training Association.
- (t) IMS — Incident Management System. Also referred to as an Incident Command System (ICS).
- (u) Immediately dangerous to life or health (IDLH) — An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- (v) Incipient stage fire — A fire which is in the initial or beginning stage and which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.
- (w) Interior structural firefighting — The physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.
- (x) Live fire training — Any fire set within a structure, tank, pipe, pan, etc., under controlled conditions to facilitate firefighter training under actual fire conditions.
- (y) NFPA — National Fire Protection Association.
- (z) NIOSH — National Institute of Occupational Safety and Health.
- (aa) Private Industry Fire Brigades — A group of employees who are required to fight interior structural fires at their place of employment.
- (bb) Protective ensemble — The clothing and personal protective equipment worn to provide limited protection to the user's head, body, and extremities from thermal, physical, chemical, and health hazards. Protective ensemble elements include firefighting coats and

- trousers, helmets, hoods, gloves, footwear, eye and face protection devices, and respirators.
- (cc) Qualified — Certified as being trained to perform a particular job or activity.
- (dd) Respirators;
  - (A) Atmosphere-supplying respirator is a respirator that supplies the user with air from a source independent of the ambient atmosphere and includes supplied-air respirators (SARS) and self-contained breathing apparatus (SCBA) units.
  - (B) Air-purifying respirator is a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
  - (C) Positive pressure demand respirator is a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
  - (D) Pressure-demand respirator is a positive pressure atmosphere-supplying respirator that admits air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
  - (E) Self-Contained Breathing Apparatus SCBA is a self-contained breathing apparatus designed to provide the wearer with a supply of respirable air carried in and generated by the breathing apparatus. This apparatus requires no intake of oxygen from the outside atmosphere and can be designed to be a demand or pressure-demand type respirator.
  - (F) Supplied-air respirator (SAR) or airline respirator is an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- (ee) Responder — A certified person who has the responsibility to respond to an emergency incident.
- (ff) Station (Fire station) — Structure to house the fire service apparatus and personnel.
- (gg) Tailboard — Standing space at rear of a fire apparatus where firefighters stand to access and reload hose and/or equipment.
- (hh) Training — Instruction with hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used and in the performance of assigned duties.
- (ii) Warning light — A flashing or rotating light.
- (4) Organizational statement.
  - (a) The employer must develop and implement a written statement or policy that includes basic organizational structure, basic functions of the organization, and type, amount, and frequency of training to be provided.
  - (b) This statement must be made available for inspection by Oregon OSHA and by fire department employees or their designated representatives.
- (5) Personnel.
  - (a) The employer must review and evaluate the physical capability of each firefighter annually to determine their ability to perform duties that may be assigned. The review and evaluation will be accomplished through physical examination, stress testing, or satisfactory performance demonstrated during the performance of their assigned duties.
  - (b) The employer must not permit a firefighter with a known medical condition that would significantly impair their ability to engage in fire suppression activities at the emergency scene unless a physician's certificate of the firefighter's fitness to participate in such activities is provided to the employer. This will not limit the employer's ability to assign firefighters to support activities (versus fire suppression activities).
- (6) Employer's Responsibility.
  - (a) Each employer must comply with the provisions of this Division to protect the life, safety, and health of employees.
  - (b) It is the responsibility of the employer to establish and supervise:
    - (A) A safe and healthful working environment, as it applies to nonemergency conditions or to emergency conditions at the scene after the incident has been terminated, as determined by the officer in charge.
    - (B) Programs for training employees in the fundamentals of accident prevention.

(C) A safe and healthful working environment as it applies to live fire training exercises.

(c) The employer must maintain all equipment in a safe condition.

(d) The employer must ensure that firefighters who participate in exempted firefighting activities listed under 437-002-0182(2) are properly trained, protected, clothed, and equipped for the known hazards of that particular emergency operation.

(7) Employee's Responsibility.

(a) Each firefighter must comply with the requirements of 437-002-0182 that are applicable to their own actions and conduct in the course of their employment.

(b) Firefighters must notify the appropriate employer or safety committee representative of unsafe practices, equipment, or workplace conditions.

(c) All firefighters, at regularly scheduled times, must attend required training and orientation programs designed to increase their competency in occupational safety and health.

(d) Firefighters and other employees must apply the principles of accident prevention in their work. They must use all required safety devices and protective equipment.

(e) Each firefighter must take proper care of their protective equipment.

(f) Firefighters who are expected to perform firefighting operations must notify their employer when health conditions arise that will limit their capability of performing those duties.

(8) Safety Committee.

(a) Fire departments must have a separate safety committee or hold safety meetings according to the requirements of Division 1, 437-001-0765, Safety Committees and Safety Meetings.

(b) When applicable, the representation on the safety committee must include both career and volunteer firefighters.

(9) Incident Management.

(a) The employer must develop and implement written procedures for incident management that meets the requirement of NFPA 1561 (2008): Standard on Emergency Services Incident Management System.

(b) These procedures must apply to all employees involved in emergency operations.

(c) Each employee involved in emergency operations must be familiar with these procedures.

(10) Accountability. The employer must develop and implement written procedures for a personnel accountability system that meets the requirement of NFPA 1561 (2008): Standard on Emergency Services Incident Management System.

(11) Firefighting Education and Training.

(a) The employer must develop and implement a policy for appropriately educating and training all department firefighting classifications (ranks) before they perform assigned duties.

(b) Firefighters who participate in interior structural firefighting activities must be trained according to NFPA 1001 (2013): Standard for Fire Fighter Professional Qualifications (Fire Fighter I), or they must meet the training levels required under 437-002-0182(11)(c) and be under the direct supervision of a firefighter trained to NFPA Fire Fighter I or higher.

**Note:** Department of Public Safety Standards and Training (DPSST) certification for NFPA Fire Fighter I or higher satisfies the training requirement in 437-002-0182(11)(b) but is not required by these rules.

(c) Firefighters who participate in live fire training in a structure, or only in structural firefighting activities not covered under 437-002-0182(11)(b), must be trained to meet the minimum job performance requirements for NFPA Fire Fighter I as prescribed by NFPA 1403 (2012): Standard on Live Fire Training Evolutions (Student Prerequisites).

(d) All live fire training must be conducted following the requirements of NFPA 1403 (2012): Standard on Live Fire Training Evolutions, or Appendix A (Mandatory), Minimum Requirements for Live Fire Training, of this standard.

(e) Live fire training must be conducted under the direction of the fire department's training officer or employer authorized representative.

(12) General Requirements for Protective Ensembles.

(a) Protective ensembles must protect the user's head, body, and extremities. Protective ensembles consist of the following elements: body protection; head protection; hand protection; foot and leg protection; eye and face protection; and respiratory protection.

**Note:** Employees must be protected from noise that exceeds the levels in Division 2/G, 1910.95, Occupational Noise Exposure.

(b) The employer must provide employees all protective ensemble elements at no cost to employees. The employer must not allow employee-owned protective ensemble elements that do not comply with the requirements under 437-002-0182(13) through (18) to be used for structural firefighting. See Appendix B (Non-mandatory), General Information and Recommendations, of this standard.

(c) Employees must wear all appropriate protective ensemble elements that meet the requirements under 437-002-0182(13) through (18) when engaged in interior structural firefighting.

(d) In situations other than interior structural firefighting, employees must wear the appropriate protective ensemble elements for the known hazards of that particular emergency operation.

(13) Body Protection. All structural firefighting coats and trousers must be at least equivalent to the requirements of NFPA 1971 (1991): Standard on Protective Clothing for Structural Fire Fighting. Structural firefighting coats and trousers purchased on or after July 1, 2016, must be at least equivalent to the requirements of NFPA 1971 (2013): Standard on Protective Ensemble for Structural Fire Fighting.

(14) Head Protection.

(a) All structural firefighting helmets must be at least equivalent to the requirements of NFPA 1971 (2000): Standard on Protective Ensemble for Structural Firefighting. Structural firefighting helmets purchased on or after July 1, 2016, must be at least equivalent to the requirements of NFPA 1971 (2013): Standard on Protective Ensemble for Structural Fire Fighting.

(b) Structural firefighting helmets must consist of a rigid shell; an energy absorbing system; a retention system; fluorescent and retroreflective trim; ear covers; and either a faceshield or goggles, or both.

(c) Use, care, alterations, and maintenance instructions for protective headgear must be supplied for each helmet.

(d) Care, maintenance, and alteration of helmets must conform to the manufacturer's recommendations.

(e) During structural firefighting, helmet accessories designed to provide or maintain protection from health and safety hazards must be worn in the manufacturer's recommended position. See Appendix B (Non-mandatory), General Information and Recommendations, of this standard.

(f) All flame-resistant protective hoods must be at least equivalent to the requirements of NFPA 1971 (1997): Standard on Protective Ensembles for Structural Fire Fighting. Flame-resistant protective hoods purchased on or after July 1, 2016, must be at least equivalent to the requirements of NFPA 1971 (2013): Standard on Protective Ensemble for Structural Fire Fighting.

(g) A flame-resistant protective hood that will not adversely affect the seal of a respirator facepiece must be worn during interior structural firefighting operations to protect the sides of the face and hair.

(15) Hand Protection.

(a) All structural firefighting hand protection must be at least equivalent to the requirements of NFPA 1973 (1988): Standard on Gloves for Structural Fire Fighting. Structural firefighting hand protection purchased on or after July 1, 2016, must be at least equivalent to the requirements of NFPA 1971 (2013): Standard on Protective Ensemble for Structural Fire Fighting.

(b) Hand protection for structural firefighting activities must consist of protective gloves or glove system that will provide protection against cut, puncture, and heat penetration.

(16) Foot and Leg Protection.

(a) All structural firefighting protective footwear must be at least equivalent to the requirements of NFPA 1971 (1997): Standard on Protective Ensembles for Structural Fire Fighting. Structural firefighting protective footwear purchased on or after July 1, 2016, must be at least equivalent to the requirements of NFPA 1971 (2013): Standard on Protective Ensembles for Structural Fire Fighting.



(b) Resoled firefighting footwear must comply with the applicable NFPA standard under 437-002-0182(16)(a).

Note: Employees using chain saws for non-firefighting activities must wear chaps or leg protectors in accordance with Division 2/I, 437-002-0134, Personal Protective Equipment.

**(17) Eye and Face Protection.**

(a) Face protection must be used where there is a reasonable probability of injury that can be prevented by such protection. When face protection does not protect the eyes from foreign objects, additional protection for the eyes must be used.

(b) The employer must make available eye and face protection devices suitable for the work performed, and employees must use such protection devices as required by 437-002-0182(17)(a).

(c) Protection devices that can be worn over corrective lenses must be available for employees who need them.

(d) Eye and face protection devices worn by firefighters at the fire ground must comply with the following minimum requirements:

(A) They must comply with any of the following consensus standards:

(i) ANSI/ISEA Z87.1-2010, Occupational and Educational Personal Eye and Face Protection Devices;

(ii) ANSI Z87.1-2003, American National Standard Practice for Occupational and Educational Eye and Face Protection; or

(iii) ANSI Z87.1-1989 (R-1998), American National Standard Practice for Occupational and Educational Eye and Face Protection.

(B) They must be reasonably comfortable when worn under the designated conditions.

(C) They must be durable.

(D) They must be capable of being disinfected.

(E) They must be easy to clean.

(e) Faceshields, when used, must be an integral part of the firefighting helmet and may be installed in a fixed position or hinged allowing adjustment of the shields. Face shields must accommodate any of the following styles:

(A) Clear transparent

(B) Colored transparent

(f) Goggles, when used, must consist of a fully flexible frame, a lens holder or a rigid frame with integral lens or lenses, and a separate cushioned fitting surface on the full periphery of the facial contact area.

(A) Materials used for goggles must be chemical-resistant, non-toxic, nonirritating and slow-burning.

(B) There must be support on the face, such as an adjustable headband of suitable material or other appropriate support to hold the frame comfortably and snugly in front of the eyes.

Note: When NIOSH approved full face respiratory equipment is being used by firefighters, additional eye and face protection is not required.

(18) Respiratory Protection. The employer must develop and implement a respiratory protection program in accordance with Division 2/I, 1910.134, Respiratory Protection.

The following note refers to the Respiratory Protection Standards, 1910.134(g)(3) Procedures for IDLH atmospheres and 1910.134(g)(4) Procedures for interior structural firefighting, ("two-in/two-out rule").

NOTE: If, upon arriving at the emergency scene, firefighters find an imminent life threatening situation where immediate action may prevent the loss of life or serious injury, the requirements for firefighters in the outside standby mode may be suspended, when notification is given by radio to incoming responders that they must provide necessary support and back-up upon their arrival.

**(19) Criteria for Approved Self-Contained Breathing Apparatus (SCBA).**

(a) All compressed air cylinders used with approved SCBAs must meet DOT and NIOSH criteria.

(b) In emergency and lifesaving situations, approved SCBAs may be used with approved cylinders from other approved SCBAs provided that such cylinders are of the same capacity and pressure rating. Once the emergency is over, return SCBAs to their original approved condition.

(c) Approved SCBAs must be provided with at least one indicator that automatically sounds an alarm when the remaining air supply of the SCBA is reduced to within a range of 25 percent of its rated service time.

**(20) Personal Alert Safety System (PASS).**

(a) Each member involved in rescue, fire suppression, or other hazardous duties, must be provided with and must use a PASS device in the hazardous area when self-contained breathing apparatus is in use.

(b) All PASS devices must be at least equivalent to the requirements of NFPA 1982 (1983): Standard on Personal Alert Safety Systems (PASS). PASS devices purchased on or after July 1, 2016 must be at least equivalent to the requirements of NFPA 1982 (2013): Standard on Personal Alert Safety Systems (PASS).

(c) Each PASS device must be tested at least monthly and must be maintained according to the manufacturer's instructions.

**(21) Breathing Air Compressors and Cylinders.**

(a) In addition to the requirements contained in Division 2/I, 1910.134(i), breathing air quality and use, air samples must be taken every six months from the compressor and analyzed by the employer or an independent laboratory for Grade D breathing air.

(b) Air samples must also be taken and analyzed when the system is installed or repaired.

(c) Analysis required by 437-002-0182(21)(a) and (b) must be conducted according to ANSI/CGA Standard G7.1 (2011): Commodity Specification for Air.

**(22) Hazardous Material Response Plan.**

(a) Fire departments that expect or plan to respond to hazardous material incidents must develop and implement a written response plan, and comply with additional requirements of Division 2/H, 1910.120(q), Emergency response to hazardous substance releases.

(b) The written response plan must contain the policies and procedures for:

(A) Pre-emergency planning and coordination with outside parties,

(B) Personnel roles, lines of authority, training, and communication,

(C) Emergency recognition and prevention,

(D) Safe distances,

(E) Scene security and control,

(F) Evacuation procedures,

(G) Decontamination,

(H) Emergency medical treatment and first aid,

(I) Personnel withdrawal procedures,

(J) Critique of response and follow-up, and

(K) Personal protective equipment and emergency equipment and response procedures.

(c) The incident commander must be responsible for:

(A) Identifying of the hazardous substance and condition,

(B) Implementing emergency operations,

(C) Ensuring personal protective equipment is worn,

(D) Limiting access of hot zone to those with a specific mission assignment,

(E) Implementing decontamination procedures,

(F) Designating a safety officer,

(G) Using appropriately trained personnel, and

(H) Providing on-scene medical surveillance for emergency responders.

**(23) Fire Apparatus Area.**

(a) Walkways around apparatus must be kept free of obstructions.

(b) The station's apparatus floors must be kept free of grease, oil, and tripping hazards.

(c) Exhaust gases from apparatus within buildings must be maintained within the limits of Division 2/Z, 437-002-0382, Oregon Air Contaminant Rules. See Appendix B (Non-mandatory), General Information and Recommendations, of this standard.

**(24) Fire Apparatus Design and Construction.**

(a) Employers who have acquired used fire apparatus or used military equipment prior to July 1, 1985 are not required to bring them under a more stringent code than the one in force at the time the apparatus was manufactured. The exceptions to 437-002-0182(24)(a) are:

(A) Restraint systems as required by 437-002-0182(25)(e); and

(B) Roll-over protective structures (ROPS) on all open top off-road vehicles as required by 437-002-0182(24)(f).

(b) There must be steps, ladders or railing to allow safe access to and exit from areas on vehicles that employees access.

(c) Vehicle tailboards must not project outboard of the vehicle sides or fenders and must be designed to provide safe footing.

(d) Exhaust systems must be installed and properly maintained, and must be designed to minimize the exposure of exhaust gases by employees.

(e) The loaded gross weight and empty height of the vehicle must be posted in the vehicle such that it can be clearly read by the driver.

(f) Roll-over protective structures (ROPS) must be provided, installed and maintained on all open top off-road vehicles.

(g) Vehicles with an obstructed view to the rear of the vehicle when backing must be equipped or provided with:

(A) An automatic back-up alarm that must sound when backing and can be heard over the surrounding noise;

(B) A video camera that provides the driver a full and clear view of the path of travel behind the vehicle; or

(C) A spotter who stands to the rear of the vehicle, is visible to the driver in the driver-side mirror and uses unassisted voice communication, portable radio communication or hand signal communication to guide the driver while backing.

**(25) Fire Apparatus Operation.**

(a) Employees must be trained in the safe operation of each type of vehicle they are authorized to drive.

(b) The employer must not allow an employee to drive a vehicle on a public highway or road unless they have a valid driver's license.

(c) Any item found that may affect the safe operation of a vehicle must be reported immediately to the officer in charge or other appropriate person.

(d) Employees must not drive or ride in any vehicle known to be unsafe.

(e) Employees being transported by fire department vehicles must ride in designated seat-belted or safety-harnessed positions.

(f) The employer must not allow employees to ride on tailboards, tail steps or running boards.

(g) Vehicles must come to a full stop before employees disembark.

(h) All equipment on a vehicle must be adequately secured when the vehicle is in motion.

(i) When traffic flow is inhibited, vehicles equipped with emergency warning lights must be used to control traffic at emergency scenes. The use of traffic cones, fire department personnel, police, or other traffic control measures must be used as soon as practical.

**(26) Fire Apparatus Maintenance and Repair.** Each employer must establish written records and procedures whereby apparatus has:

(a) At a minimum, a scheduled monthly maintenance check; or

(b) A maintenance check each time the apparatus is returned to the station following an emergency response, drill, or test drive.

**(27) Tires.**

(a) No motor vehicle must be operated on any tire that:

(A) Has body ply or belt material exposed through the tread or sidewall;

(B) Has any tread or sidewall separation;

(C) Is flat or has an audible leak; or

(D) Has a cut to the extent that the ply or belt material is exposed.

(b) Any tire on the front wheels of a bus, truck, or truck tractor must have a tread groove pattern depth of at least 4/32 of an inch when measured at any point on a major tread groove. The measurements must not be made where tie bars, humps, or fillets are located.

(c) Except as provided in 437-002-0182(27)(b), tires must have a tread groove pattern depth of at least 2/32 of an inch when measured in a major tread groove. The measurement must not be made where tie bars, humps or fillets are located.

**(28) Aerial Devices.**

(a) Aerial devices used for firefighting must be annually inspected and tested by a person qualified in performing such inspections and tests according to NFPA 1911 (2007): Standard for the Inspection, Maintenance, Testing, and Retirement of In-service Automotive Fire Apparatus.

(b) Where structural defects are found in critical components of an aerial device, the repairs must be tested and certified according to NFPA 1911 (2007): Standard for the Inspection, Maintenance, Testing, and Retirement of In-service Automotive Fire Apparatus, by a registered professional engineer, the manufacturer of the apparatus, or an American Welding Society (AWS) Certified Welding Inspector.

(c) A permanent record of tests and repairs under 437-002-0182(28)(b) must be maintained for each aerial device.

**(29) Hose Drying Towers.**

(a) Floor openings on hose tower platforms must be equipped with a guardrail meeting the requirements of Division 2/D, 1910.23, Guarding Floor and Wall Openings and Holes.

**Note:** The toeboard requirements for elevated work platforms in Division 2/D, 1910.23, do not apply to hose drying towers unless hand tools or objects other than hoses are carried onto the platforms.

(b) Fixed ladders must meet the requirements of Division 2/D, 437-002-0027, Fixed Ladders.

(c) Ropes used to hoist hose in the hose towers must have a working load limit that maintains a minimum safety factor of 3:1.

**(30) Drill Towers.** Permanent fixed ladders on the outside of drill towers and drill buildings are exempt from offset platform landings and ladder cage guards requirements of Division 2/D, 437-002-0027, Fixed Ladders.

**(31) Testing, Maintenance and Inspection of Fire Service Equipment.**

(a) The employer must inspect and maintain fire service equipment at least annually and perform all tests recommended by the manufacturer at the date of manufacture.

(b) When the manufacturer's recommendations required under 437-002-0182(31)(a) are not available from the manufacturer, the employer must identify and follow the recommendations of an applicable consensus standard or curriculum that is nationally recognized and generally accepted by the fire service industry.

**Note:** Examples of a consensus standard or curriculum under 437-002-0182(31)(b) include, but are not limited to, NFPA standards and IFSTA manuals.

**(32) Confined spaces.**

(a) Employers must comply with Division 2/J, 437-002-0146, Confined Spaces, for their own confined spaces.

(b) Employers must comply with Division 2/J, 437-002-0146, Confined Spaces, when they agree to serve as a designated rescue service provider.

(c) Employers that will respond to emergency calls for rescue from confined spaces must:

(A) Train responders to recognize inherent confined space hazards before assigning or attempting any related duties in confined space rescues.

(i) Provide responders with understanding, knowledge, and skills necessary for safe performance of confined space rescues.

(ii) Practice a confined space rescue operation at least once every year from a real or simulated confined space.

(B) Responders must be certified in writing to Department of Public Safety Standards and Training (DPSST) Firefighter 1 or equivalent.

(C) Use the Incident Management System (IMS) during confined space rescue incidents that meet the requirements of NFPA 1561 (2008): Standard on Emergency Services Incident Management System.

(D) Assess the situation and determine if it qualifies as a confined space incident.

(i) Classify the operation as a rescue or body recovery.

(ii) Assess and control physical hazards related to the incident or rescue.

(iii) Assess atmospheric hazards.

(I) Use calibrated direct-reading instruments to test the atmosphere in confined spaces for oxygen content, flammable gases and vapors, and toxic air contaminants.

(II) When calibrated direct-reading instruments are not available, the Incident Commander must assume the situation is IDLH and ensure that responders who enter are equipped with appropriate respiratory protective equipment that comply with Division 2/I, 1910.134, Respiratory Protection.

(iv) Determine if the space should be ventilated.

(v) Determine the precautions and procedures to follow for safe entry into the space.

(E) Provide the appropriate rescue, emergency, and personal protective equipment for safe entry into and rescue from confined spaces.

(F) Provide necessary equipment to facilitate non-entry retrieval for responders, unless the retrieval equipment would increase the overall risk or would not contribute to the rescue operations.

**Note:** For the reader's convenience, the following paragraphs are provided from Division 2/I, 1910.134(g)(3) and (g)(4), Respiratory Protection:

(g)(3) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer shall ensure that:

(i) One employee or, when needed, more than one employee is located outside the IDLH atmosphere;

(ii) Visual, voice, or signal line communication is maintained between the employee(s) in the IDLH atmosphere and the employee(s) located outside the IDLH atmosphere;

(iii) The employee(s) located outside the IDLH atmosphere are trained and equipped to provide effective emergency rescue;

(iv) The employer or designee is notified before the employee(s) located outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

(v) The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

(vi) Employee(s) located outside the IDLH atmospheres are equipped with:

(A) Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

(B) Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or

(C) Equivalent means for rescue where retrieval equipment is not required under paragraph (g)(3)(vi)(B).

(g)(4) Procedures for interior structural firefighting.

In addition to the requirements set forth under paragraph (g)(3), in interior structural fires, the employer shall ensure that:

(i) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times;

(ii) At least two employees are located outside the IDLH atmosphere; and

(iii) All employees engaged in interior structural firefighting use SCBAs.

**Note 1** to paragraph (g): One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

**NOTE 2** to paragraph (g): Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

**Table** [Table not included. See ED. NOTE.]

[ED. NOTE: Tables and Appendices referenced are available from the agency.] Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 2-2000, f. & cert. ef. 1-28-00; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 3-2005, f. & cert. ef. 6-10-05; OSHA 9-2008, f. 9-19-08, cert. ef. 1-1-09; OSHA 8-2009, f. 7-9-09, cert. ef. 10-1-09; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 4-2015, f. 10-23-15, cert. ef. 7-1-16; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

## 437-002-0187

### Portable Fire Extinguishers

This rule applies to portable fire extinguishers not in vehicles or vessels.

**NOTE:** The Oregon Office of State Fire Marshal and your local fire marshal also have rules that apply to portable fire extinguishers.

#### YOUR RESPONSIBILITY:

To assure that you provide functional extinguishers and your employees know when and how to use them safely.

If another Oregon rule requires you to provide fire extinguishers, the following exemptions do not apply to you.

#### EXEMPTIONS:

You are exempt from these rules if:

Your portable fire extinguishers are not accessible to employees.

#### AND

You have a written fire safety policy that requires the immediate and total evacuation of employees in the event of fire.

**NOTE:** This fire safety policy is not the same as your emergency action plan and fire prevention plan.

#### AND

You have an emergency action plan and fire prevention plan that conform to OAR 437-002-0042 and 437-002-0043.

#### PARTIAL EXEMPTION:

If extinguishers are present and accessible, but you do not intend employees to use them, AND you have an emergency action plan and fire prevention plan that meet OAR 437-002-0042 and 437-002-0043, then only paragraphs 1, 2, and 3 apply.

See Non-mandatory Appendix A — Summary of exemptions and rule requirements for 437-002-0187. [Appendix not included. See ED. NOTE.]

#### Definitions

Accessible — capable of being reached without hindrance.

Inspection — A quick check that the extinguisher has not been activated and has no damage or condition that would make it ineffective. This includes a check of the gauge or pressure indicator, if there is one.

Maintenance — A thorough examination for damage or conditions that would make internal examination or hydrostatic testing necessary more frequently than in Table 2 or 3. [Table not included. See ED. NOTE.]

#### (1) If you provide extinguishers

You must:

Never provide or allow the use of extinguishers with dangerous or banned agents like carbon tetrachloride or chlorobromomethane.

Never provide or allow the use of soda-acid foam, loaded stream, anti-freeze and water (inverting type) extinguishers. (See the latest NFPA 10 for a complete list of obsolete or banned extinguishers.)

**EXEMPTION:** You are exempt from the maximum travel distance requirements in Table 1 of this rule if you have an emergency action plan that complies with OAR 437-002-0042, designating which employees are authorized to use the available fire extinguishers and requiring all other employees to evacuate.

Provide and place the correct type and size fire extinguisher according to Table 1. This only applies to extinguishers for use inside buildings.

Table 1 [Table not included. See ED. NOTE.]

Mount extinguishers in a manner appropriate for their type and location.

Not allow extinguishers to sit on the floor, shelves or furniture.

Use appropriate signs or other unique markings to identify extinguisher locations.

Never block access to extinguishers.

#### (2) Inspection and maintenance

You must:

Visually inspect each extinguisher monthly.

Be sure the extinguishers have a full charge and no defects that prevent effective use.

Remove and replace any extinguisher that is not fully operable.

Complete annual maintenance on each extinguisher using only persons or companies acceptable to your local fire authorities.

Keep a record of the annual maintenance until replaced by a new record. The record must be available to OR-OSHA on request.

Provide replacement extinguishers or some method of coverage for the effected area while extinguishers are out of service for the maintenance check.

Do internal examinations at intervals not longer than the requirements set in Table 2, using only persons or companies acceptable to local fire authorities.

Nonrechargeable extinguishers are good for 12 years from the date of manufacture and then must be taken out of service.

Table 2 [Table not included. See ED. NOTE.]

**NOTE:** Nonrechargeable extinguishers do not require internal examinations or hydrostatic testing.

#### (3) Hydrostatic testing

You must:

Assure a hydrostatic test of each extinguisher at intervals in Table 3 or when the extinguisher shows corrosion or physical damage.

Use only persons or companies acceptable to local fire authorities to do



hydrostatic testing.

Empty and do applicable maintenance every six years on stored pressure extinguishers that require a 12-year hydrostatic test. This six-year requirement begins again after recharging or hydrostatic testing.

Table 3 [Table not included. See ED. NOTE.]

Keep a record of the hydrostatic test until it is replaced by a new record or the extinguisher is no longer in use. The record must have at least the date of test, test pressure, serial number of the extinguisher (or other unique identifier), and the person or company doing the test.

#### (4) Employee training

You must:

Train employees in the safe use of extinguishers and standpipe hoses when you require or allow their use. Training must be at first hiring and then annually and must include:

The general methods and tactics of using an extinguisher.

The hazards of using an extinguisher on early stage fires.

Hazards associated with using standpipe hoses.

[ED. NOTE: Tables & Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-2007, f. & cert. ef. 11-8-07; OSHA 10-2008, f. & cert. ef. 12-31-08

### **437-002-0200**

#### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/96, and any subsequent amendments published in the Federal Register as listed below:

(1) 29 CFR 1910.166 (Reserved).

(2) 29 CFR 1910.167 (Reserved).

(3) 29 CFR 1910.168 (Reserved).

(4) 29 CFR 1910.169 Air receivers, published 6/27/74, Federal Register, vol. 39, p. 23502; amended 2/10/84, FR vol. 49, p. 5322; 3/7/96, FR vol. 61, no. 46, p. 9239.

(5) 29 CFR 1910.170 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

(6) 29 CFR 1910.171 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 4-1997, f. & cert. ef. 4-2-97

### **437-002-0210**

#### **Additional Oregon Rules for Compressed Air and Compressed Gas Equipment**

(1) Air and Gas Compressors — General:

(a) Workers shall not use compressed gases to clean clothing which is being worn nor shall it be intentionally directed at any other person;

**NOTE:** Use of compressed air for cleaning work and work areas is also prohibited except under special conditions. See OAR chapter 437, division 2/P, Hand and Portable Powered Tools and Other Hand-Held Equipment.

(b) Hose connections shall be securely made and maintained in safe working condition. Effective means shall be used to prevent hose from whipping.

(2) Piping Systems:

(a) All piping systems and their component parts which are installed to carry air, steam, or other material at more than atmospheric pressure shall be of adequate design and strength to safely withstand pressures to be placed upon them without the resulting stresses exceeding the allowable stress for the material used in their construction. The allowable stresses to be used shall be determined by referring to recognized standards for materials and design as developed by the American National Standards Institute;

(b) The only non-metallic pipe acceptable for pressure line service with gaseous substances is that which is recommended and listed by its manufacturer as designed for compressed air or gas service. PVC pipe can only be used for compressed air if it is buried or encased;

(c) All compressed air or gas piping systems which use plastic pipe must be “project specific”; that is, designed by a competent person to specifications suited for a particular application or project.

Design and operational specifications and information must be kept with the system for as long as it is in use;

(d) Only a competent person(s) may install any compressed air or gas piping system described in subsections (b) and (c) of this section.

(3) High Temperature Piping:

(a) All steam and other high temperature pipe lines within seven feet of the floor or work platform or passageway shall be covered with non-combustible insulating material or otherwise protected against accidental contact with persons;

(b) Steam hose connections shall be securely made and maintained in safe working condition. Effective means shall be used to prevent hose from whipping.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93

### **437-002-0220**

#### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.176 Handling materials — general, published 10/24/78, FR vol. 43, p. 49749.

(2) 29 CFR 1910.177 Servicing of multi-piece and single piece rim wheels; published 12/27/11, FR vol. 76, no. 248, p. 80735.

(3) 29 CFR 1910.178 Powered industrial trucks, published 4/3/06, FR vol. 71, no. 63, p. 16669.

(4) 29 CFR 1910.179 Overhead and gantry cranes, published 3/7/96, FR vol. 61, no. 46, p. 9239.

(5) 29 CFR 1910.180 Crawler, locomotive and truck cranes, published 3/7/96, FR vol. 61, no. 46, p. 9239.

(6) 29 CFR 1910.181 Derricks, published 3/7/96, FR vol. 61, no. 46, p. 9240.

(7) 29 CFR 1910.182 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9240.

(8) 29 CFR 1910.183 Helicopters, published 6/18/98, FR vol. 63, no. 117, p. 33467.

(9) 29 CFR 1910.184 Slings, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.

(10) 29 CFR 1910.189 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9240.

(11) 29 CFR 1910.190 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9240.

These rules are on file at the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 7-2003, f. & cert. ef. 12-5-03; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 3-2011, f. & cert. ef. 11-1-11; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 1-2012, f. & cert. ef. 4-10-12

### **437-002-0221**

#### **Additional Oregon Rules for Handling Materials**

(1) Definitions:

(a) “Aerial Cableways” An aerial cableway is a cable-support system in which the material-handling carrier is not detached from the operating span and the travel is wholly within the span. A cableway transports a load for short distances, in a single carrier traveling back and forth on a single cable, or on multiple parallel cables, a hoisting operation being combined with the transfer of the load; the operation is intermittent;

(b) “Aerial Tramways” An aerial tramway is a cable-support system in which the travel of the materials handling carriers is continuous or reversible over the supports of one or more spans. On continuous tramways, a series of loaded carriers travel in one direction. On reversible tramways, one carrier travels back and forth on a cable. Bi-cable tramways have a fixed track cable, along which the carriers are hauled by a traction rope. Twin-cable tramways are similar, except that carriers run on a pair of track cables. Mono-cable

tramways have a single running rope to support and move the carriers.

(2) General:

(a) Permanent aisles and passageways shall be appropriately marked;

(b) Pile foundations shall be designed and arranged to support maximum loads without sinking, sagging, or permitting piles to tip;

(c) Containers of toxic, flammable, radioactive, or irritating substances shall be properly labeled and stored as specified in other sections of the Oregon Occupational Safety and Health Code;

(d) Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment and employees.

(3) Disposal of Material:

(a) Scrap, waste material, and rubbish shall be removed at reasonable intervals from the immediate work area as the work progresses. Materials shall not be permitted to accumulate in such volume as to impede safe access to the work area;

(b) All solvent waste, oily rags, and flammable liquids shall be kept in fire resistant covered containers.

(4) Storage — Location:

(a) Stored material shall not obstruct lights, sprinklers, and other fire extinguishing equipment, aisles, exits, or electrical switch panels;

(b) Temporarily stored material that creates a hazard shall be marked by highly visible warning signs;

(c) In conditions of reduced visibility, reflectorized signs shall be used on temporarily stored material which creates a hazard. If conditions make reflectorized signs ineffective, the sign shall be lighted or other effective warning shall be used;

(d) Materials which could cause hazardous reactions shall be kept segregated in storage and marked with appropriate warning signs.

(5) Stacks and Piles. All material stacks and piles shall be placed on level and solid supports and shall be stable and self-supporting.

(6) Bricks and Blocks:

(a) Brick stacks shall not be more than seven feet in height. When a loose brick stack reaches a height of four feet, it shall be cross-tied and tapered back two inches in every foot of height above the four-foot level;

(b) When masonry blocks are stacked higher than six feet, the stack shall be cross-tied and tapered back one-half block per tier above the six-foot level.

(7) Lumber:

**NOTE:** OAR chapter 437, division 2/R, Special Industries, 1910.265, Sawmills, contains requirements for unitizing, stacking, and transporting lumber and wood products at manufacturing facilities and mills.

(a) Used lumber shall have all nails removed before stacking;

(b) Lumber stacks shall be made of units whose height is no more than 1-1/2 feet higher than the base;

(c) Manual handling of lumber from stacks shall not be done from atop stacks more than one unit in height.

(8) Bagged Materials:

(a) Bagged materials shall be stacked by stepping back the layers and crosskeying the bags at least every ten bags high;

**NOTE:** This requirement does not apply where pallets effectively stabilize the stack of bagged materials.

(b) When bags are removed from a pile, the stability of the pile shall be maintained.

(9) Loose Material — Sand, Gravel, Crushed Rock, Sawdust, Etc. Undercutting of stock piles is prohibited; materials in such piles shall be kept as near as is practical to the angle of repose and present no hazard to employees.

(10) Corrugated and Flat Iron — Steel:

(a) Corrugated and flat iron shall be stacked in stable piles;

(b) Racks capable of supporting the imposed loads without deformation shall be used for storing steel plate on edge and shall provide positive protection against the danger to personnel from toppling or sliding plates.

(11) Pipe and Bar Stock:

(a) In removing pipe and bar stock from unsecured piles, workers shall not approach the side of the pile but shall remove it from the ends of the pile;

(b) Pipe or bar stock extending into passageways shall be clearly marked or padded.

(12) Drums, Rolls, Cylindrical Objects:

(a) Barrels, drums, large pipe, rolls of paper, and other cylindrical objects piled on their sides shall have the bottom row securely blocked. If separators are used between rows of the pile, blocks shall be secured at each end of the separators;

(b) Spacing strips shall be placed between bundles;

(c) Structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, shall be stacked and blocked to prevent spreading, tilting, or rolling.

(13) Equipment Design and Construction:

(a) All equipment, structures, and appurtenances used for handling or storing materials shall be designed, constructed and maintained in accordance with sound engineering practices and the specifications and recommendations of the manufacturer. They shall be of sufficient strength to support the loads acting on them in addition to their own dead loads. Allowances shall be made for wind, impact, erection and any special loadings that may occur. No combination of these loadings shall be permitted to cause a stress in any member that exceeds the allowable stress for the material of that member;

(b) Safe load capacities recommended by the manufacturers of equipment shall not be exceeded;

(c) Workers shall not remain or work under or near elevated loads and units of materials being moved unless they are provided with adequate protection;

(d) Loads suspended in slings or supported by hoists, jacks, or other devices, shall be blocked or cribbed before workers are permitted to work underneath;

(e) Materials shall not be dropped or thrown from an elevation where this procedure might endanger other workers;

**NOTE:** In such cases, materials should be lowered by means of proper rigging, slings, conveyors, chutes, or other safe means.

(f) Tag lines or guide ropes shall be provided and used whenever manual guidance is required to control swinging loads;

(g) Structures and devices used for loading and unloading performed units, loads, pallet boards, or trays shall be of construction and material to maintain safe support for the loads being handled on them;

(h) Pallet boards, and trays shall be loaded in a manner that will ensure stability of loads.

(14) Conveyors, General. Conveyors shall meet the applicable requirements for design, construction, inspection, testing, maintenance and operation as prescribed in ANSI B20.1-1957, Safety Code for Conveyors, Cableways, and Related Equipment.

(15) Controls of Conveyors:

(a) Means for stopping the motor or engine shall be provided at the operator's station;

(b) If the operator's station is remote from the power source, provisions for stopping the motor or engine shall be provided at the motor or engine location and at the operator's station;

(c) Conveyor systems shall be equipped with an audible warning signal to be sounded immediately before starting up the conveyor;

**NOTE:** This requirement does not apply to portable single unit conveyors where other warning methods are effective.

(d) Emergency stop devices shall be arranged so that the conveyor cannot be started again until the actuator has been reset to running or "on" position;

**NOTE:** Automatic electrical or mechanical stopping devices should be provided on a conveyor where the equipment into which it feeds has been stopped or has been blocked so that it cannot receive additional materials.

(e) Where overload conditions would create a hazard to workers, overload protection shall be provided.

(16) Backstops, Brakes on Conveyors. Inclined conveyors, where reversing or running away presents a hazard to workers, shall be provided with anti-runaway, backstop devices, or suitable guards.

(17) Loading, Transfer and Discharge Points of Conveyors:

(a) Means to guard workers from injury by moving material shall be provided at a conveyor loading, transfer and discharge points;

(b) The area around all loading and unloading points shall be kept clear of obstructions.

(18) Conveyor Guards:

(a) Screw conveyors shall be guarded to prevent employee contact with turning flights;

(b) Where a conveyor passes over work area, aisles and thoroughfares, suitable guards shall be provided to prevent material from falling from the conveyor;

(c) Return sections of conveyors higher than seven feet and located over or near passageways and work areas, shall be supported by roller or guards;

(d) Conveyor troughs in which moving sections of a conveyor operate shall be of ample dimensions and strength to carry broken conveyor parts;

(e) Conveyor drive mechanisms and power driven parts shall be guarded in accordance with the requirements in OAR chapter 437, division 2/O, Machine Guarding;

(f) Input conveyors for chippers, burners, furnaces, or other dangerous machines shall be fully guarded to prevent workers from falling to the conveyor. Where a part of the guard must be omitted to permit a worker to feet the conveyor, he or she shall be provided with and shall wear a life belt tied off to an effective lifeline;

(g) Conveyor crossovers, aisles, and passageways shall be conspicuously marked by suitable signs;

(h) Workers shall not cross over conveyors except where suitable bridges or walkways are provided.

(19) Portable Conveyors:

(a) Portable conveyors shall be stable at all operating ranges and shall be provided with adequate devices to prevent unintended movement;

(b) Portable conveyors, when powered electrically, shall be grounded as required in OAR chapter 437, division 2/S, Electrical. Where exposed to outside weather conditions, wiring, switches, and electrical connections shall be moisture and dust proof.

(20) Riding Conveyors Prohibited. Workers shall not be permitted to ride on any conveyor not especially designed for this purpose.

(21) Ramps, Skids, Rollways:

(a) Adequate means for slowing material being put down chutes, slides, or inclines shall be provided whenever excessive speed might create a hazard to workers;

(b) Where the person putting material down a chute, ramp, skid, or rollway does not have a clear view of a lower landing on which workers are employed, an adequate horn, bell or other warning device which is automatic in operation shall be provided and maintained in good condition at all times;

(c) The underside of all chutes, ramps, skids, rollways or landings shall be fenced off and marked with appropriate warning signs unless provided with other adequate means of protecting workers from falling material.

**NOTE:** Definitions for Aerial Cableways and Tramways are contained in OAR 437-002-0221(1).

(22) Cableway Carriage and Fall Rope Carriers:

(a) Cableway carriage and fall rope carriers shall be so constructed that no adjustments are required while cableway is in operation and that adjustments, when made, may be locked. Fall rope carriers are used to prevent the weight of the hauling rope itself causing sufficient tension to overhaul the load carrier or fall block. On spans of 600 feet or more, where the carriage works to the center of the span or beyond, slack carriers shall be provided to support the operating ropes. A button line or equivalent device shall be provided to space the carriers at approximate intervals along the span;

(b) Carriages shall have approved mesh guards for the operating sheaves and hand grips throughout the full length of the carriage. Footwalk and toeboards, for ready access to maintenance riggers and for inspection of the operating ropes, sheaves, becketts, and structural parts of the carriage;

(c) Sheaves carrying operating ropes should be as recommended by the rope manufacturer. In no case shall the pitch diameter of

sheaves be less than 42 times rope diameter for 6 x 7 rope, 30 times rope diameter for 6 x 19 rope, 18 times rope diameter for 6 x 37 rope, and 21 times rope diameter for 8 x 19 rope. The sheaves shall have "V" grooves and the radius of the groove shall be 55 percent of the rope diameter.

(23) Operating Ropes. Operating ropes shall be of wire rope construction suitable for the requirements of the cableway. End fastenings shall develop at least 89 percent of the ultimate strength of the rope. Rope ends shall be arranged for complete and easy inspection.

(24) Track Cable Systems. If the design requires that track cables be carried over saddles, care must be taken to see that the saddle radius, rope lubrication and inspection provisions conform to rope manufacturer's recommendations. Track cable connections shall be properly applied sockets using only pure zinc. Clamped ends develop only about 75 percent of the strength of the rope and therefore are not recommended. Supporting members carrying track cable tensions shall be forged steel or rolled steel carrying stress in the direction of rolling. These members shall be arranged so that loads are carried concentrically and so that no eccentric load can be applied to them or to the track cable connections by virtue of failure or non-operation of any joint baring in the track system.

(25) Backstay. Backstay carrying track cable tensions shall be designed to support the entire load disregarding any load carrying help from side guys.

(26) Side Guys. Side guys shall be so proportioned that no more than two are regarded as acting at the same time, unless equipped with an equalizing bar, sheave, or other approved device not subject to freezing temperatures. If a hydraulic or pneumatic equalizing device is used, provisions must be made to avoid or counteract the effect of loss of fluid in the system.

(27) Anchorages:

(a) Anchorages for track cable tensions shall be proportioned so that they are stable under the ultimate strength of the track cable or backstays. Steel rods, preferably embedded in concrete or block asphalt, should be used for the portion of the backstay where the anchorage tension is carried through earth. Wire rope guys shall never be used in contact with earth. Double the ultimate strength of the backstay shall be provided, together with anticorrosion protection in the form of grease, tar, etc.;

(b) Supporting structures, fixed towers, movable towers, etc., shall be designed to withstand full known loads plus allowance for impact with due regard for the nature of the structural elements, type of structure, and the manner of application and release of loads. Ladders, platforms and handholds shall be supplied to facilitate the inspection of towers, cableways parts attached to them, and the changing of lines and other maintenance work around them.

(28) Operation and Maintenance of Cableway:

(a) The cableway supervisor and operator shall be charged with the responsibility for allowing only authorized and properly qualified parties around the cableway rig;

(b) Inspection of the complete rig (track cables, carriage, operating ropes, structures, hoisting engine, electrical apparatus, and other operating parts) shall be made by the supervising safety engineer or other designated qualified person each day if the rig is operating 24 hour a day or at such other intervals as justified by lesser operating schedules for the rig.

**NOTE:** These inspections, at the discretion of the supervisor, may be made while the rig is in operation.

(c) During the required safety inspection, special attention shall be paid to:

(A) Operating ropes at the becket ends, overwraps on the drum or hoist and sheave points if pickups are made at the same point repeatedly;

(B) Track cable for broken wires near sockets and in the span under the pickup or unloading point and for broken wires and worn or faulty track cable socket bearings;

(C) Slack carriers for loose or broken parts, and to see that the carrier rollers turn freely and are well oiled;

(D) Electrical system, especially for faulty connection where the current might possibly go to ground through the earth rope, traveling towers, tracks, wheels, journals and tower moving apparatus.



(d) Operating ropes shall be re-becketed on a regular program. Re-becketing after 30 or more operating shifts is suggested. At least four rope lay lengths shall be cut off each time. Operating ropes shall be repaired or replaced in accordance with the recommendations of the wire rope manufacturer;

(e) The recommendations of the wire rope manufacturer shall be followed in re-socketing track cables in replacing regular strand, locked coil or other armored construction track cable;

(f) Hoist brakes and frictions shall be maintained in good condition at all times. Hoisting engine shall be located so that the operating ropes have the proper fleet angle to the nearest sheave which shall be oriented to lead to the center of the drum in the hoist. The hoist operator should be located so that he or she can see the hoist and working area of the cableway;

(g) Hook tenders serving the cableway will be permitted to "ride the hook" if the ground does not permit other access. Proper foot stands and hand holds shall be provided for two persons on the hook, fall block, safety belts and lifelines used; otherwise a manskip must be used. Signals for the operation of the rig may be given to a signaller or to the operator. Inexperienced hook tenders shall not ride the hook alone until they have had a period of 30 working shifts with an experienced cableway hook tender;

(h) Loads carried by cableways shall be secured by safety hooks, or shackles, in such a manner that they cannot shift or slip while suspended by the cableway. Load hooks shall be provided with safety shields to keep the load slings on the hook. Slings must be used in pairs so that the load will not untwist the lay of a single rope;

(i) If the cableway is not in use for a 24-hour period or more, an inspection of the hoist shall be made before the cableway is started;

(j) For use in controlling cableway operations, appropriate telephone or other signal system shall be provided;

(k) Suitable lighting shall be provided at critical points for night operation and repairs.

**(29) Aerial Tramway Truck Cables and Hauling Ropes:**

(a) Track cables and hauling ropes shall be of appropriate, construction and adequate capacity for the life, type and nature of the installation;

(b) Tail ropes shall be provided to avoid jerky operation and possible derailment;

(c) Suitable adjustment should be provided to maintain the original design relation of hauling rope and tail rope tensions. The vertical component of rope tensions should always be such that the rope never tends to lift out of the support sheaves;

(d) Carriage hauling rope grips shall be designed to supply the necessary pulling components without damage to the rope due to slippage or excessive grip pressures. Hauling rope down pull on carriers must be kept to a minimum to prevent damage to rope and to avoid damaging the bucket hangers.

**(30) Aerial Tramway Drives:**

(a) Tramway drives shall be equipped with a brake on the same shaft as the drive sheave. The brake system shall be adequate for stopping and holding the load at any point. The brake shall not be used for absorbing power developed by overhauling load during normal operation. Such developed power should be dissipated electrically, hydraulically or pneumatically. The main drive brake shall be applied automatically if electric power fails;

(b) The driving sheave control shall be such that reduction of velocity is automatic as the bucket(s) approaches the terminal station.

(31) Wire Rope Sockets on Aerial Tramways. Wire rope connections shall be properly applied sockets using only pure zinc or connections which provide 100 percent of the strength of the rope.

(32) Aerial Tramway Tower Saddles. Tower saddles for track cables shall have ample radii to minimize bending stress and thus prolong the life of the cables. Stationary curved saddles of long radius may be employed where the cable breakover angle exceeds that possible with a rocking saddle. The radius of the saddle shall be large enough to reduce the bearing pressure to a value which will permit the cable to slide in the saddle groove. All saddles must be lubricated at regular intervals.

(33) Aerial Tramway Supporting Structure. Supporting structures shall be designed to withstand the full known loads plus allowances for impact with due regard for the nature of the structural elements, the type of structure, and the manner of application and release of loads. Ladders, platforms and handholds shall be provided as necessary to facilitate the inspection of the structures and tramway parts.

(34) Aerial Tramway Crossing Guards. Crossing guards shall be provided where the tramways cross highway, railways, or other passageways. These guards shall be of adequate construction for the type of material being handled on the tramway.

**(35) Aerial Tramway Operation and Maintenance:**

(a) The tramway supervisor shall be charged with the responsibility for allowing only authorized and properly qualified parties around the tramway rig;

(b) Inspection of the complete rig, track cables, buckets, structures, drives, electrical apparatus, and other operating parts shall be made at regular intervals. Only the tramway supervisor and personnel designated by him or her shall be allowed to "ride" the buckets and then only in performance of a specific duty such as inspection of track cables;

(c) Grips on continuous tramways shall be inspected and adjusted at periodic intervals. Worn parts shall be replaced promptly;

(d) Lubrication of track cables, hauling rope bearings, rails and guides shall be performed at regular intervals.

**NOTE:** The lubrication of the hauling rope should preferably be continuous by means of a controlled drop feed from an oil reservoir at one or both ends of the line. This lubrication should not occur as the rope enters the driving sheave, but rather as the rope leaves the drive sheave and passes over a support sheave.

(e) Where counterweighted spans are used, the counterweight shall hang free when the cable is fully loaded. The deflection of anchored spans shall be adjusted by take-up means provided to keep the cable tension within the proper limits.

**(36) Aerial Tramway Traffic Control System:**

(a) There shall be at least three control systems, as the operation of an aerial tramway is dangerous without alternate communication systems.

**NOTE:** Recommended Communications Systems:

(1) A bell signal code and push button stations for warning of stop, start, slow speed, high speed, and reverse. Portable linesman sets should be provided for tapping along the line;

(2) An all metallic aerial wire circuit telephone with instruments at certain points along the line in addition to the terminal sets;

(3) A second telephone circuit which may be grounded if desired.

(b) Condensers for static elimination and lightning arrestors should be installed to protect instruments;

(c) Protection should be provided against short-circuiting of the telephone and bell circuits by water running down the line supports and diverting current to the towers and station steel;

(d) Suitable lighting shall be provided at critical points along the line for night operation and repairs;

(e) When vehicles are drawn up an incline by means of a cable, the cable shall be in alignment with the central line between the vehicle tread and the hoisting drum. A substantial bumper shall be installed at the foot of the incline, or if the vehicle travels beyond this point, at the end of its runway. Workers shall not ride on the vehicle nor remain in a position behind the vehicle when it is in motion.

**(37) Material Hoists — General Requirements:**

(a) All material hoist towers shall be designed, built, and tested under the direction of a licensed professional engineer;

(b) The employer shall comply with the manufacturer's specifications and limitations applicable to the operation of all hoists and elevators. Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a professional engineer competent in the field;

(c) Platforms of ample size and strength with standard railings shall be built at each level where persons work. See requirement in OAR chapter 437, division 2/D, Walking-Working Surfaces;

(d) Standard railings shall be placed on the open sides of runways connecting the tower to the structure with a gate provided at all openings into the tower;

(e) Rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posted on cars and platforms;

(f) Hoisting ropes shall be installed in accordance with the wire rope manufacturer's recommendations;

(g) Wire rope shall be removed from service when any of the following conditions exist:

(A) In hoisting ropes, six randomly distributed broken wires in one rope lay or three broken wires in one strand in one rope lay;

(B) Abrasion, scrubbing, flattening, or peening, causing loss of more than one-third of the original diameter of the outside wires;

(C) Evidence of any heat damage or any damage caused by contact with electrical wires;

(D) Reduction from nominal diameter of more than 3/64 inch for diameters up to and including 3/4 inch; 1/16 inch for diameters 7/8 to 1-1/8 inch; and 3/32 inch for diameters 1-1/4 to 1-1/2 inches.

(h) All welding on critically stressed members of hoisting devices shall be performed within the current standards of the American Welding Society and the welding performed by welders qualified to perform high quality welding;

(i) The installation of live booms on hoists is prohibited;

(j) Operating rules shall be established and posted at the operator's station of the hoist. Such rules including signal system and allowable speed for various loads shall be enforced. Rules and notices shall be posted on the car frame or crossheads in a conspicuous location, including the statement "No Riders Allowed";

(k) Hoisting machines, except those equipped with automatic controls, shall be operated by regularly assigned, trained operators;

(l) No person shall be allowed to ride on material hoists except for the purposes of inspection and maintenance. Such rides shall be made without material aboard except that necessary for the purpose of inspection and/or maintenance;

(m) All entrances of the hoistways shall be protected by substantial gates which shall guard the full width of the landing entrance. All hoistway entrance gates shall be painted with diagonal contrasting colors, such as black and yellow stripes;

(n) Gates shall be of not less than 2- by 4-inch wood or the equivalent, located no less than two feet from the hoistway line. Gates shall be no less than 42 inches high;

(o) Gates protecting the entrances to hoistways shall be equipped with a latching device;

(p) Overhead protective covering of 2-inch planking, 3/4-inch plywood, or other solid material of equivalent strength shall be provided on the top of every material hoist cage or platform;

(q) The operator's station of a hoisting machine shall be provided with overhead protection equivalent to tight planking not less than two inches thick. The support for the overhead protection shall be of equal or greater strength;

(r) When using a hoist for long material, the material shall be securely fastened to the hoist so that no part of the load can fall or project beyond the sides of the hoist;

(s) Blocking, tie-downs, or other effective means to secure loads or materials, when necessary, shall be provided at all hoist platforms;

(t) Hoist towers may be used with or without an enclosure on all sides. However, whichever alternative is chosen, the following applicable conditions shall be met:

(A) When a hoist tower is enclosed, it shall be enclosed on all sides for its entire height with a screen enclosure of 1/2-inch mesh, No. 18 U.S. gauge wire or equivalent, except for landing access;

(B) When a hoist tower is not enclosed, the hoist platform or car shall be totally enclosed (caged) on all sides for the full height between the floor and the overhead protective covering with 1/2-inch mesh of No. 14 U.S. gauge wire or equivalent. The hoist platform enclosure shall include the required gates for loading and unloading. A six-foot high enclosure shall be provided on the unused sides of the hoist tower at ground level.

(u) Car arresting devices shall be installed to function in case of rope failure.

(38) Automotive Hoists:

(a) Whenever automotive hoists are elevated with a load to a position which presents a hazard to employees, the lift shall be sup-

ported by a safety device capable of preventing descent should the lift fail in any manner;

(b) Lifts will be operated in accordance with the manufacturer's recommendations and those of ANSI B153.1-1990;

(c) Vehicles will be placed on lifts in accordance with manufacturers recommendations and in a manner to assure stability.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 7-1974, f. 3-19-74, ef. 4-15-74; WCB 30-1974, f. 7-5-74, ef. 9-1-74;

WCB 23-1976, f. 9-8-76, ef. 11-15-76; WCB 3-1977, f. 3-18-77, ef. 6-1-77; WCD

4-1979, f. 5-21-79, ef. 7-15-79; APD 12-1988, f. & ef. 7-22-88; OSHA 13-1993,

f. 8-20-93, cert. ef. 11-1-93; OSHA 1-1996, f. & cert. ef. 2-16-96

#### **437-002-0223**

##### **Oregon Rules for Commercial and Industrial Vehicles**

(1) Application. Roll-over protective structures (ROPS) shall be provided, installed and maintained on industrial vehicles which were manufactured after July 1, 1969. ROPS requirements apply to the following types of industrial vehicles and equipment: Rubber-tired self-propelled scrapers; front-end loaders and dozers; skid-steer equipment; wheel-type industrial tractors; crawler tractors; crawler-type loaders; and motor graders, with or without attachments, that are used in industrial work. This requirement does not apply to sideboom pipe laying tractors, or other vehicles whose structure prevents overturn, or to tractors used only in farming operations.

(2) ROPS — General Requirements.

(a) Roll-over protective structures and their supporting attachments to industrial vehicles shall be capable of supporting twice the weight of the vehicle, applied at the point of impact.

(b) The design objective for roll-over protective structures on industrial vehicles shall be to minimize the likelihood of a complete vehicle overturn, and to minimize the possibility of the operator being crushed.

(c) A vertical clearance of at least 52 inches between the work deck and the ROPS canopy is required for ingress and egress.

(d) ROPS which have been removed for any reason, shall be remounted with equal quality, or better, bolts or welding as required for the original mounting.

(3) Defects.

(a) Defects in ROPS shall be repaired by equal quality or better materials and welding as required for the original structure.

(b) Minimum performance criteria for roll-over protective structures for designated vehicles are contained in the following Society of Automotive Engineers (SAE) standards:

(A) Prime movers, for scrapers, water wagons, bottom dump wagons, side dump wagons, rear dump wagons, towed fifth wheel attachments. (SAE J320, September 1972)

(B) Wheeled front-end loaders and wheeled dozers. (SAE J394a, September 1972)

(C) Track-type tractors and front-end loaders. (SAE J395a, September 1972)

(D) Motor graders. (SAE J396a, September 1972)

(E) Wheel-type agricultural and industrial tractors. (SAE J167, 1971)

(F) Falling object protective structures (FOPS). (SAE J231, May 1971)

(4) Identification of ROPS. Each ROPS shall have the following information permanently affixed to the structure:

(a) Manufacturer or fabricator's name and address;

(b) ROPS model number, if any; and

(c) Machine make, model, or series number that the structure is designed to fit.

(5) Approved Structures. Any machine in use, equipped with roll-over protective structures, shall be deemed in compliance with OAR 437-002-0223(37) through (41) if it meets the roll-over protective structure requirements of the U. S. Army Corps of Engineers, or the Bureau of Reclamation of the U. S. Department of the Interior, in effect on April 5, 1972. The requirements in effect are:

(a) U. S. Army Corps of Engineers: General Safety Requirements, EM-385-1-1 (March 1967).

(b) Bureau of Reclamation, U. S. Department of the Interior: Safety and Health Regulations for Construction, Part II (September 1971).

(6) Roadways.

(a) Roadways shall be of sufficient width and evenness to ensure the safe operation of equipment.

(b) Sufficient turnouts shall be provided and a safe side clearance shall be maintained along roads and runways.

(c) Low clearance areas under conveyors which could present a hazard to mobile equipment operations shall be identified by a suitable means, such as signs, contrasting colors, or flags.

(d) Broken planking, deep holes, large rocks, logs or other dangerous surface defects shall be corrected before any equipment is used thereon.

(e) Obstructions to clear view at intersections or on sharp curves shall be removed or all reasonable precautions taken to relieve the hazards of these conditions.

(f) An ample supply of nonskid materials, such as coarse sand or finely crushed rock, shall be available and used on slippery surfaces.

(g) Road grades shall not be too steep for safe operation of vehicles which operate over them and shall not exceed 20 percent in any case unless an auxiliary means of lowering vehicles is provided or unless vehicles are specifically designed and approved for operation on grades in excess of 20 percent.

(7) Access Roadways, Grades.

(a) No employer shall move, or cause to be moved, vehicles upon any access roadway or grade unless the access roadway or grade is constructed and maintained to accommodate safely the movement of the equipment and vehicles involved.

(b) Every emergency access ramp and berm used by an employer shall be constructed to restrain and control runaway vehicles.

(c) Elevated bridges, runways or ramps and loading docks shall be constructed to safely support at least four times the weight of any load to which it may be subjected. Ramps shall be covered with a material which will minimize the danger of skidding.

(d) The maximum inclination of a ramp used for wheeled equipment shall not exceed 20 percent from horizontal.

(e) Elevated bridges, ramps or runways used for the travel of wheeled equipment shall have exposed sides guarded with a substantial bull rail or sheer rail of sufficient height to prevent wheeled equipment from going over the rail.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 30-1974, f. 7-5-74, ef. 9-1-74; WCB 23-1976, f. 9-8-76, ef. 11-15-76; WCB 3-1977, f. 3-18-77, ef. 6-1-77; WCD 7-1980, f. 6-20-80, ef. 7-1-80; WCD 15-1984, f. 10-25-84, ef. 11-1-84; WCD 3-1985, f. 2-22-85, ef. 3-1-85; APD 4-1988, f. & ef. 3-14-88; APD 2-1989, f. 3-1-89, ef. 3-1-89; OSHA 4-1990, f. & cert. ef. 1-23-90; OSHA 13-1993, f. 8-29-93, cert. ef. 11-1-93; OSHA 1-1996, f. & cert. ef. 2-16-96; OSHA 6-2000, f. & cert. ef. 6-26-00; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 2-2003, f. & cert. ef. 1-30-03; OSHA 6-2007, f. & cert. ef. 9-26-07

### **437-002-0227**

#### **Additional Oregon Rules for Powered Industrial Trucks**

(1) Overhead Guards.

(a) Where a rider type lift truck operator is exposed to hoisted objects that might fall, or stacked objects that might be dislodged and fall, the truck shall be equipped with an overhead guard. The guard shall be of sufficient strength to support impact load tests as specified in Table OR-N-1: [Table not included. See ED. NOTE.]

(b) Impact load tests shall be conducted with the guard in place on a vehicle for which it is designed or on a simulated mounting. Running gear need not be in place. The load shall be dropped in free fall from an appropriate height so that the impact is centered approximately above the driver's position. Test loads shall have a length equal to or greater than the width of the guard, and shall strike the canopy at right angles to the vehicle frame.

(c) Guards of a design which has been so tested shall be identified by a metal tag permanently attached to the canopy in a position where it may be easily read from the ground. This tag shall be permanently and clearly marked with the impact test load, expressed

in foot-pounds to which guards of the same design have been tested.

**NOTE:** Guards required by OAR 437-002-0227(1)(a) through (c), or by the rules following, are not intended to withstand the impact of a capacity load falling from any height.

(d) Guards which are not of a design which has been tested in accordance with OAR 437-002-0227(1)(a) through (c) of this rule, may be constructed of material as specified in Table OR-N-2 or material of equivalent strength: [Table not included. See ED. NOTE.]

(e) The construction of canopy guards are built in compliance with OAR 437-002-0227(1)(d) shall be based on the strength of four upright members. Guards constructed with less than four upright members shall be of equivalent strength.

(A) Canopy type overhead guard frames shall be braced to overhead members on each side of the frame to provide structural rigidity both longitudinally and transversely.

(B) All guard mountings or attaching brackets shall be constructed and secured to the vehicle in a manner to provide adequate support to the upright members of the canopy type overhead guard.

(C) Cantilever overhead guards shall be of equivalent strength.

(f) Guards shall be constructed in a manner that does not interfere with good visibility, but openings in the top shall not exceed 6 inches in one of the two dimensions, width or length. Guards shall be large enough to extend over the operator under all normal circumstances of operation, including forward tilt.

(A) Provisions shall be made so that failure of the mast-tilting mechanism will not allow the overhead guard to cause injury to the operator.

(B) Lift trucks operated by seated operators shall have not less than 39 inches of clear vertical space between the operator's seat when depressed and the underside of the guard. Lift trucks operated by standing operators shall have not less than 74 inches of clear vertical space between the platform and the underside of the guard.

**NOTE:** Where overall height of truck with forks in lowered position is limited by head room conditions and there is insufficient space for vertical clearance or for the operator to assume a normal driving position, normal overhead guard heights may be reduced, or the overhead guard may be omitted. The height and stability of stacks of piled material, the weight of individual units handled, and the operating space available shall be such as will provide reasonable safety for the operator if it is necessary to remove the overhead guard.

(2) Load Back Rest. Lift trucks which handle small objects or unbanded units shall be equipped with a vertical load back rest.

(a) It shall have height, width, strength, sufficient to prevent the load or any part of it from falling toward the operator.

(b) It shall be constructed in a manner that does not interfere with good visibility.

(c) Size of openings shall not exceed 6 inches in one dimension.

(3) Shear Point Guards. Shear points on forklift loaders and similar type vehicles shall be guarded as necessary to protect operators from hazardous exposure.

(4) Personnel Platforms. Whenever a lift truck is used for lifting personnel without controls at the platform, the following precautions shall be taken for the protection of personnel being elevated:

(a) A work platform equipped with standard guardrails or equivalent means, and firmly secured to the lifting carriage or forks, shall be used.

(b) The hydraulic system shall be so designed that the lift mechanism will not drop faster than 135 feet per minute in the event of a failure in any part of the system.

(c) An operator shall attend the lift equipment while workers are on the platform.

(d) The operator shall be in the normal operating position while raising or lowering the platform.

(e) The vehicle shall not travel from point to point with the work platform elevated at a height greater than 4 feet while workers are on the platform. When necessary at heights greater than 4 feet, inching may be permitted provided it is done at a very slow speed.

(f) If workers on the platform can contact the lift chains or other dangerous pinch or shear points on the mast or carriage, the platform must have a screen or guard that prevents contact.

(5) Equipment and attachments.



(a) Do not allow spinner knobs on vehicles without power steering. Spinner knobs must be on the inside of the steering wheel.

(b) All vehicles must have a working horn that can be heard above surrounding area noise.

**NOTE:** Paragraph (c) does not apply when the vehicle backs up with an observer or when the operator verifies that there is nobody behind the vehicle or when nobody may enter the danger area without the operator's knowledge.

(c) Vehicles with an obstructed view to the rear must have a backup alarm that can be heard over the surrounding noise. If surrounding noise prevents this or if there are so many vehicles using backup alarms that they cannot be distinguished from each other, flashing or strobe lights are acceptable.

(d) Vehicle brakes must be effective when the vehicle is fully loaded.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 6-2007, f. & cert. ef. 9-26-07

### **437-002-0228**

#### **Oregon General Requirements for Cranes**

##### **(1) General Requirements:**

(a) The user shall comply with the manufacturer's specifications and limitations applicable to the operation of any and all cranes and derricks;

(b) Where manufacturer's specifications are not available, the limitations assigned to the equipment shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately documented and recorded;

(c) Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer;

(d) No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the manufacturer's written approval. Cranes may be modified and rerated provided such modifications and the supporting structure are checked thoroughly for the new rated load by a qualified engineer or the equipment manufacturer;

(e) If such modifications or changes are made, the capacity, operation, and maintenance instruction plates, tags, or decals, shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced. Only the manufacturer or other competent shop with suitable equipment and with personnel trained for the work shall be permitted to perform welding or other repair work on cranes or derricks;

(f) Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, shall be conspicuously posted on all equipment;

(g) Instructional or warning signs shall be visible to the operator while he or she is at his or her control station;

(h) The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition;

(i) Any deficiencies shall be repaired, or defective parts replaced, before continued use;

(j) A thorough, annual inspection of all cranes shall be made by a competent person, or a government or private agency;

(k) The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment;

(l) An unimpaired horizontal clearance of not less than three feet shall be maintained between the rotating superstructure of any crane and any adjacent object or surface. If this clearance cannot be maintained, barricades shall be installed to isolate the hazardous area;

(m) All windows in cabs shall be of safety glass, or its equivalent, that introduces no visible distortion that will interfere with the safe operation of the machine;

(n) Cranes which operate at night shall have their load hooks and working areas adequately lighted;

(o) Sufficient light shall be provided in the operator's cage or cab to enable the operator to see clearly enough to perform his or her work;

(p) An accessible fire extinguisher of 10 BC rating, or higher, shall be available at all operator stations or cabs of equipment;

(q) Belts, gears, and other reciprocating, rotating, or moving parts or equipment shall be guarded as required in OAR chapter 437, division 2/O, Machinery and Machine Guarding.

##### **(2) Crane operator training requirements:**

(a) The employer shall establish written procedures for the safe operation of all cranes and derricks;

(b) The employer shall see that employees who operate cranes or derricks are properly trained, have sufficient practical experience, and follow operating procedures for the safe operation of the crane or derrick;

(c) The level of training and experience received by the employee to meet OAR 437-002-0228(2)(b) above shall be recorded in writing;

(d) The employer shall maintain all written records of crane or derrick operators' training and experience, and shall make such records available for review by the Oregon Occupational Safety and Health Division (OR-OSHA) upon request.

(3) Overhead Wires — Operating Near Electric Power Lines. A warning sign, legible at 12 feet, shall be posted and maintained in plain view of the operators of each crane, derrick, or power-shovel. The sign shall read, "UNLAWFUL TO OPERATE THIS EQUIPMENT WITHIN TEN FEET OF HIGH-VOLTAGE LINES."

**NOTE:** For operation near overhead electric lines see Division 2/S, Electrical, 1910.333(c)(3).

(4) Signals. Class "D" citizens band radio frequencies shall not be used for signalling crane operators.

(5) Hoisting Equipment and Tackle. Blocks, Sheaves, and Drums:

(a) Blocks, sheaves and drums and all parts thereof shall not be used for heavier strains or greater speeds than that for which they have been designed and constructed;

(b) Sheave and drum diameters shall be as recommended by the wire rope manufacturer for the size rope being used;

(c) All pins, including bearing and yoke pins, of all blocks shall be secured against accidental displacement;

(d) Shaves supporting boom lines shall not be carried on overhanging sheave pins unless equipped with substantial guards passing around the sheave pin and securely held from dislodgment from the pin;

(e) All blocks shall be fitted with line guards or shall be designed and set in a manner that prevents fouling;

(f) Where the slacking of cable around sheaves and idlers would result in injury to workers, line guards shall be provided;

(g) Working line blocks shall be kept in proper alignment;

(h) Snatch (gate) blocks shall be closed and hooked before being used.

(6) Drums. Ends of lines attached to drums shall be securely fastened by means of clamps, socketing, or other means furnishing equivalent strength. Not less than two wraps of line shall be maintained on drums.

##### **(7) Chains:**

(a) End fastenings shall be capable of sustaining loads up to the breaking strength of the hoisting chain with which they are used;

(b) Hoisting chains shall be repaired or removed from such service when the increase in length (stretch) of the measured section exceeds five percent; or when a link is bent, twisted, or otherwise damaged, or when raised scarfs or defective welds appear;

(c) Knots shall not be tied in chain in order to shorten its length.

(8) Hooks. When necessary to prevent lifting attachments from inadvertently lifting out of the hook, a safety type hook or other device or means shall be used.

##### **(9) Wire Rope:**

(a) Wire rope and replacement wire rope shall be of the same size, same or better grade, and same construction as originally furnished by the equipment manufacturer or contemplated in the design, unless otherwise recommended by the equipment or the wire rope manufacturer;

(b) Wire rope with an independent wire-rope center or other heat-resisting center shall be used as hoisting rope whenever exposed

to excessive temperatures such as ingot-pouring, ladle cranes, and similar operations;

(c) Running wire ropes shall be guarded if within seven feet of the floor or platform;

(d) Care shall be taken to prevent friction of ropes with other objects which will cause chafing or breaking of wires;

(e) Wire rope shall be taken out of service when any of the following conditions exist:

(A) In running ropes, six randomly distributed broken wire in one lay or three broken wires in one strand in one lay;

(B) Wear of one-third the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure;

(C) Evidence of any heat damage from any cause;

(D) Reductions from nominal diameter of more than 1/64-inch for diameters up to and including 5/16-inch, 1/32-inch for diameters 3/8-inch to and including 1/2-inch, 3/64-inch for diameters 9/16-inch to and including 3/4-inch, 1/16-inch for diameters 7/8 to 1-1/8 inches inclusive, 3/32-inch for diameters 1-1/4 to 1-1/2 inches inclusive;

(E) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection;

(F) Corroded, damaged, or improperly applied end connections.

(f) Wire rope safety factors shall be in accordance with American National Standards Institute B30.5-1989 or SAE-J959-1966, Lifting Crane, Wire-Rope Strength Factors.

**NOTE:** The margin of line to be used in making a long splice shall be indicated in the following table. The full length of the splice will be twice the length "to be unraveled."

Rope Diameter	To Be Unraveled	Rope Diameter	To Be Unraveled
1/4 inch	6 feet	1-1/4 inches	25 feet
1/2 inch	8 feet	1-1/2 inches	30 feet
3/4 inch	15 feet	1-3/4 inches	35 feet
1 inch	20 feet	2 inches	40 feet

(g) All cable shall be kept lubricated as conditions of use require;

(h) When U-bolt wire rope clips are used for form eyes, the following table shall be used to determine the number and spacing of clips:

NUMBER AND SPACING OF U-BOLT WIRE CLIPS

Improved Plow Steel Rope Diameter Inches	Number of Clips		Minimum Spacing (Inches)
	Drop Forged	Other Material	
1/2	3	4	3
5/8	3	4	3-3/4
3/4	4	5	4-1/2
7/8	4	5	5-1/4
1	5	6	6
1-1/8	6	6	6-3/4
1-1/4	6	7	7-1/2
1-3/8	7	7	8-1/4
1-1/2	7	8	9

(i) When used for eye splices, the U-bolt shall be applied so that the "U" section is in contact with the dead end of the rope;

(j) The use of cable clips or clamps may be accepted only when used in locations where they are readily accessible and subjected to frequent inspection. Clips and clamps when used shall be of the correct size and shall be properly applied. Allowance shall be made for the reduced strength of the line;

(k) The use of cable clips or clamps for joining lines is prohibited, except where used for transferring of slack lines from one place to another.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; WCB 1-1977, f. & ef. 1-4-77; WCB 7-1977, f. 5-20-77, ef. 6-15-77; OSHA 1-1989, f. 10-12-89, ef. 8-1-90; OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93

#### 437-002-0229

##### Additional Oregon Rules for Overhead and Gantry Cranes

(1) Definitions:

(a) "Authorized Person." An Authorized Person is one appointed or credentialed by a duly constituted administrative or regulatory authority;

(b) "Competent Person." A Competent Person is one who by knowledge, training and experience has demonstrated the ability to solve problems and perform functions relating to the subject matter and work;

(c) "Reach (of a cantilever gantry or bridge crane)." The maximum horizontal distance at which the hook may be operated outside the runway measured at right angles to the runway from the center of the hook or load to the center of the runway rail nearest the hook or load;

(d) "Reach (of a crane or derrick fitted with a boom)." The maximum horizontal distance the hook can be extended from the center of rotation (or if rotation is not possible) from the foot of the boom.

(2) Overhead and Gantry Cranes.

(a) Only competent personnel shall be permitted to operate a crane covered by OAR 437, division 2/N, 1910.179.

(b) Cages of bridge cranes which are not provided with a walkway the full length of the craneway or other safe means of egress shall be provided with a knotted rope, rope ladder or equally effective means to enable the operator to reach the ground in an emergency.

(c) A fire extinguisher with a minimum rating of 10BC, or equivalent, shall be maintained in the cab.

(d) Rated Load Test. Prior to initial use all new, extensively repaired and altered cranes shall be tested by or under the direction of a competent person, confirming the load rating of the crane.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; OSHA 13-1993, f. 8-20-93, ef. 11-1-93

#### 437-002-0230

##### Additional Oregon Rule for Crawler, Locomotive and Truck Cranes

(1) Definitions:

(a) An "Authorized Person" is one appointed or credentialed by a duly constituted administrative or regulatory authority;

(b) A "Competent Person" is one who by knowledge, training and experience has successfully demonstrated the ability to solve problems and perform functions relating to the subject matter and work.

(2) Load Ratings:

(a) A radius or boom angle indicator shall be provided where it is clearly visible to the operator in his or her normal operating position on cranes equipped with a movable working boom;

(b) A limiting device shall be installed and maintained to prevent the hook or other end fittings from contacting the upper sheaves.

(3) Booms. When sections of booms are added or removed, the full number of bolts or pins of the material and size recommended by the manufacturer, or bolts or pins furnishing equivalent strength, shall be used to secure the sections together.

(4) Hydraulic Cranes. Mobile hydraulic cranes shall be constructed, maintained, and used in accordance with the standard in PCSA Standard No. 2-1968, Mobile Hydraulic Crane Standards, published by the Power Crane and Shovel Association, Milwaukee, Wisconsin.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93

#### 437-002-0232

##### Additional Oregon Rule for Derricks

Rated Load Marking. A radius indicator or boom angle indicator, compatible with the load rating chart, shall be provided where it is clearly visible to the operator in his or her normal operating position on all derricks equipped with a movable working boom.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93

**437-002-0233**

**Oregon Rules for Hammerhead Cranes**

(1) Definition. "Hammerhead Crane" — Lifting machine consisting of a tower (mast) with an upperstructure that rotates and includes a load jib (boom) with trolley extending horizontally and a counterweight jib extending in the opposite direction, neither of which is arranged for luffing. The trolley on the load jib traverses the length of the jib and contains the sheaves and accessory parts that comprise the upper load block. The lower load block is suspended from the trolley.

(2) Hammerhead Cranes — General:

(a) Adequate clearance shall be maintained between moving and rotating structures of the crane and fixed objects to allow the passage of employees without harm;

(b) Employees required to perform duties on the horizontal boom of hammerhead tower cranes shall be protected against falling by guardrails or by safety belts and lanyards attached to lifelines in conformance with OAR chapter 437, division 2/I, Personal Protective Equipment;

(c) Buffers shall be provided at both ends of travel of the trolley;

(d) Cranes mounted on rail tracks shall be equipped with limit switches limiting the travel of the crane on the track and stops or buffers at each end of the tracks. Cranes with self-contained power plants shall be equipped with warning devices, and stops or buffers at each end of the track;

(e) All hammerhead cranes in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed by the manufacturer and to ensure compliance with the rules in this division;

(f) The employer shall provide a wind velocity device which will give a visible or audible alarm to the crane operator at a predetermined wind velocity; and

(g) The employer shall ensure that:

(A) The wind velocity device is compatible with the manufacturer's crane specifications; and

(B) The crane operators are fully instructed regarding the maximum permissible wind speeds during operation; and

(C) The load chart contains the wind velocity operating limits.

(3) Mobile Cranes Mounted on Barges:

(a) When a mobile crane is mounted on a barge, the rated load of the crane shall not exceed the original capacity specified by the manufacturer;

(b) A load rating chart, with clearly legible letters and figures, shall be provided with each crane, and securely fixed at a location easily visible to the operator;

(c) When load ratings are reduced to stay within the limits for list of the barge with a crane mounted on it, a new load rating chart shall be provided;

(d) Mobile cranes on barges shall be positively secured.

(e) Permanently Mounted Floating Cranes and Derricks:

(a) When cranes and derricks are permanently installed on a barge, the capacity and limitations of use shall be based on competent design criteria;

(b) A load rating chart with clearly legible letters and figures shall be provided and securely fixed at a location easily visible to the operator;

(c) Floating cranes and floating derricks in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, and operation as prescribed by the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; WCD 3-1981, f. 4-20-81, ef. 6-1-81; OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93

**437-002-0235**

**Additional Oregon Rule for Slings**

Chain Slings. When lifting with chain slings, use only alloy steel chain. Do not use proof coil or high test carbon steel. The only exception is for plating or dip work where the chemicals make alloy steel chain unsafe or otherwise unsuitable. In those cases, use chain appropriate for the work.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 11-1974, f. 3-20-74, ef. 4-15-74; WCB 16-1976, f. 7-6-76, ef. 8-1-76; WCB 1-1978, f. 2-16-78, ef. 3-15-78; WCD 8-1979, f. 10-19-79, ef. 2-1-80; OSHA 13-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 12-2001, f. & cert. ef. 10-26-01

**437-002-0240**

**Adoption by Reference**

In addition to and not in lieu of, any other health and safety codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910 in the Federal Register:

(1) 29 CFR 1910.211 Definitions; published 12/3/74, FR vol. 39, pp. 41846-41848; 3/14/88, FR vol. 53, p. 8353.

(2) 29 CFR 1910.212 General requirements for all machines; published 10/24/78, FR vol. 43, p. 49750.

(3) 29 CFR 1910.213 Woodworking machines; published 2/10/84., FR vol. 49, p. 5323.

(4) Reserved for 29 CFR 1910.214 Cooperage machinery.

(5) 29 CFR 1910.215 Abrasive wheel machinery; published 3/7/96, FR vol. 61, no. 46, p. 9240.

(6) 29 CFR 1910.216 Mills and calendars in the rubber and plastics industries; published 3/7/96, FR vol. 61, no. 46, p. 9240.

(7) 29 CFR 1910.217 Mechanical power presses; published 11/20/13, FR vol. 78, no. 224, p. 69543.

(8) 29 CFR 1910.218 Forging machines; published 3/7/96, FR vol. 61, no.46, p. 9240.

(9) 29 CFR 1910.219 Mechanical power-transmission apparatus; published 6/8/04, FR vol. 69, p. 31880-31882.

NOTE: These standards are available from the Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services; and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 22-1988, f. 12-30-88, ef. 1-1-89; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 4-2004, f. & cert. ef. 9-15-04; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 1-2014, f. & cert. ef. 5-14-14

**437-002-0242**

**Oregon Rules for Machinery and Machine Guarding**

(1) Definition of Gate or Movable Barrier:

(a) Type A gate or movable barrier — Protects the operator by enclosing the point-of-operation before a press stroke can be initiated, and maintaining this closed condition until the motion of the slide has ceased;

(b) Type B gate or movable barrier — Protects the operator by enclosing the point-of-operation before a press stroke can be initiated, so as to prevent an operation from reaching into the point-of-operation prior to die closure or prior to cessation of slide motion during the downward stroke.

(2) Reciprocating Shear Lines. Platform hoists, scissor lifts, and other reciprocating mechanisms shall be guarded or arranged so that there are no exposed shear lines.

(3) Saw Guard. Where it is possible to walk behind the saw, the saw shall be completely guarded when in its rest position.

(4) Radial Saws. Radial saws shall be equipped with upper and lower guards as follows:

(a) By device or devices, including jigs, work holders, guides, stops or other engineering controls which provide protection equal to that of the device described in 1910.213(h)(1);

(b) A stop shall be provided to prevent the leading edge of the saw from passing the front edge of the table or roll case, or the table widened to obtain equal results.

(5) Use of Gloves:

(a) If gloves are used in conjunction with a pull-out device, the gloves shall be worn outside the operator's hand attachments;

(b) If gloves are used in conjunction with a holdout or restraint device, the gloves shall be worn outside the operator's hand attachments.

(6) Effective Dates:

(a) Effective dates for amendments to 1910.211 and 1910.217 printed in the **Federal Register**, Vol. 53, No. 49, p. 8352-8365 on March 14, 1988, are 90 days after adoption of these rules; except



Appendix C of 1910.217 becomes effective 30 days after the final adoption of these rules;

(b) All other rules are effective upon date of adoption.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 22-1988, f. 12-30-88, ef. 1-1-89; OSHA 2-1990, f. 1-19-90, cert. ef. 3-1-90; OSHA 5-1990, f. & cert. ef. 2-9-90; OSHA 6-1994, f. & cert. ef. 9-30-94, (1) Renumbered to 437-002-0256

#### **437-002-0256**

##### **Stationary Compactors, Self-Contained Compactors, and Balers**

This applies to all stationary compactors, self-contained compactors, and balers.

You must comply with:

Subdivision 2/D Walking/Working Surfaces, for ladders, stairs and other walking/working surfaces.

Subdivision 2/J 1910.147, Control of Hazardous Energy, for maintenance, servicing, and repair activities.

Subdivision 2/J 437-002-0146 Confined Spaces for confined space hazards.

Subdivision 2/O Machine Guarding for any guarding hazard not covered in these rules.

##### **YOUR RESPONSIBILITY:**

To protect employees from hazards associated with stationary compactors, self-contained compactors, and balers.

Operators and other employees

##### **(1) You must:**

Train and supervise equipment operators. Training must include information from the operation manual, when available, and these rules.

Document the name(s) of the trainer and trainees along with the date of the training.

Provide supervision to ensure employees follow correct operating procedures.

Instruct all employees how to identify and report exposure to hazards.

Prohibit wearing loose clothing, jewelry, or long loose hair that can become entangled in the equipment.

Installation, inspection and maintenance

##### **(2) You must:**

Install the equipment according to the manufacturer's instructions.

Keep the equipment in safe working order.

Maintain the equipment according to manufacturer's recommendations when available.

Follow the manufacturer's recommendations for inspecting and testing. If there are no manufacturer's recommendations available, inspect and test annually.

Keep a record of inspections for a minimum of two years.

Make sure that modifications do not diminish the original level of safety.

Add safety precautions, resulting from modifications, to the operation manual, when available, and to the training information.

Not allow the use of damaged, malfunctioning, or defective equipment.

Ensure only qualified employees, trained and authorized by your management, or authorized service technicians are allowed to maintain and repair the equipment. Qualified employees must demonstrate a proficiency in maintaining and repairing the equipment.

Guard moving parts

##### **(3) You must:**

Have guards that prevent body parts from getting caught by moving parts during the equipment's cycle.

Use sustained manual pressure controls when not using point of operation guarding.

Make certain the point of operation is visible to the operator when using sustained manual pressure controls.

Make sure the equipment manufactured with interlocks will not function with the gate or door open.

Controls

##### **(4) You must:**

Clearly label the function of each control.

Make sure controls are not subject to unintentional activation.

Have stop controls that are red, a different size than other controls, and not recessed.

Keep emergency stop controls readily accessible to the operator, or within 3 feet of the operating feed area or chute opening at equipment location. Provide a way to stop the complete operation of the baler or compactor at any point in the cycle.

Require horizontal balers equipped with an automatic start, to have a minimum 5-second audible and visual warning when the startup control is activated. Before the main motor starts, there must be visual warning lasting for not less than 10 additional seconds.

No alarm or delay is required when the horizontal baler is restarting from sleep mode.

Access points for Maintenance or Repairs

##### **(5) You must:**

Make sure access covers

Have functional interlocks or locks that require hand tools for removal.

Have warning signs on compactors that read:

Restricted Area, Authorized Employees Only,

Warning – Stand Clear When Tailgate or Container is in Motion and During Loading and Unloading,

Warning – This Compactor Starts Automatically,

Warning – Gate Must Be Closed Before Operating This Compactor.

Have warning signs on balers that read:

CAUTION – Stand clear When Bale is Ejected,

WARNING – This Baler Starts Automatically,

DANGER – High Voltage,

DANGER – Disconnect and Lock Out Power Before Opening This Panel

Replace missing or defaced signs.

Note: Additional sign requirements are in ANSI Z245-2-1997 7.10 compactors and ANSI Z245.5 –1997 5.1.6. balers.

Immediate work area

##### **(6) You must:**

Not allow clutter or waste material that causes a safety hazard or obstructs safe operation to accumulate around the operator station.

Include warning signs at all loading points and the point of operation on automatic cycling equipment indicating that the baler or compactor starts automatically.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 22-1988, f. 12-30-88, cert. ef. 1-1-89; OSHA 6-1994, f. & cert. ef. 9-30-94, Renumbered from 437-002-0242(1); OSHA 7-2009, f. 7-7-09, cert. ef. 7-21-09; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13

#### **437-002-0260**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal rules as printed in the Code of Federal Regulations, 29 CFR 1910, revised as of 7/1/96, and any subsequent amendments published in the Federal Register as listed below:

(1) 29 CFR 1910.241 Definitions, published 6/27/74, Federal Register, vol. 39, p. 23502; amended 10/24/78, FR vol. 43, p. 49750.

(2) 29 CFR 1910.242 Hand and portable powered tools and equipment, general, published 6/27/74, Federal Register, vol. 39, p. 23502.

(3) 29 CFR 1910.243 Guarding of portable powered tools, published 6/27/74, Federal Register, vol. 39, p. 23502; amended 10/24/78, FR vol. 43, p. 49750; 2/10/84, FR vol. 49, p. 5323; 2/1/85, FR vol. 50, p. 4649; 3/7/96, FR vol. 61, no. 46, p. 9240; 9/13/05, FR vol. 70, no. 176, p. 53925; 12/14/07, FR vol. 72, no. 240, p. 71061.

(4) 29 CFR 1910.244 Other portable tools and equipment, published 6/27/74, Federal Register, vol. 39, p. 23502; amended 2/10/84, FR vol. 49, p. 5323.

These rules are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 4-2005, f. & cert. ef. 12-14-05; OSHA 7-2008, f. & cert. ef. 5-30-08

#### **437-002-0262**

##### **Additional Definitions in Oregon**

(1) "Angle Control" A safety feature designed to prevent a tool from operating when tilted beyond a predetermined angle.

(2) "Cased Power Load" A power load with the propellant contained in a closed case.

(3) "Caseless Power Load" A power load with the propellant in solid form not requiring containment.

(4) "Direct-Acting Tool" A tool in which the expanding gas of the power load acts directly on the fastener to be driven.

(5) "Fixture" A special shield which provides equivalent protection where the standard shield cannot be used.

(6) "Head" That portion of a fastener which extends above work surface after being properly driven.

(7) "Indirect-Acting Tool" A tool in which the expanding gas of the power load acts directly on a captive piston which in turn drives the fastener.

(8) "Misfire" A condition in which the powder load fails to ignite after the tool has been operated.

(9) "Powder-Actuated Fastening System" A method comprising the use of a powder-actuated tool, a power load, and a fastener.

(10) "Powder-Actuated Tool," also known as "Tool" A tool that utilizes the expanding gases from a power load to drive a fastener.

(11) "Test Velocity" A series of deliberately free-flighted fasteners whose velocities are measured 6-1/2 feet from the muzzle end of the tool using accepted ballistic test methods.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 1-1974, f. 1-16-74, ef. 2-15-74; WCD 23-1984, f. 12-28-84, ef. 1-1-85; OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93

#### **437-002-0264**

##### **Additional General Requirements for Hand Tools**

(1) Defective tools shall be removed from service.

(2) When not in use, tools shall be placed where they will not create a hazard.

(3) Flexible cords with damaged insulation or defective parts shall not be used.

(4) Handles of all tools shall be smooth, without sharp edges or splinters, and shall be firmly attached to the tool. Wooden handles of tools shall be of firm straight grained stock.

(5) Heads of shock tools (such as hammers, sledges, and cold chisels) shall be dressed or ground as they begin to mushroom or crack. When such tools show a tendency to chip, they shall be immediately removed from service.

(6) The cutting edges of tools shall be maintained in a uniformly sharp condition to eliminate the additional hazard resulting from the erratic resistance of the dulled edges.

(7) Heavy leather holsters, guards, or equivalent protection shall be used for sharp-edged or sharp-pointed tools carried on the worker's person.

(8) Workers who use sharp-edged cutting tools shall use appropriate protective equipment such as gloves, aprons, and leg guards to protect against accidental cuts.

(9) Hand tools provided for use in explosive or flammable atmospheres shall be of the spark-resisting type.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA WCB 12-1974, f. 4-1-74, ef. 4-30-74; 10-1993, f. 7-29-93, cert. ef. 9-15-93; OSHA 1-1996, f. & cert. ef. 2-16-96

#### **437-002-0266**

##### **Additional Oregon Rules for Guarding Portable Powered Tools**

(1) Lower Guard. In addition to the provisions in 1910.243(a)(1)(i), the lower guard shall be equipped with a lug or lever, remote from the blade teeth, that will permit the operator to safely shift the guard for starting unusual cuts.

(2) Power Chain Saws:

(a) In addition to the provisions of 1910.243(a)(2)(i), all power chain saws shall meet all applicable requirements of the ANSI B175.1-1985, Safety Code for Power Chain Saws;

(b) Power saws shall be inspected daily when in use and kept in good repair at all times. Saws with cracked or loose handle bars or defective vital parts shall not be used;

(c) Power chain saw engines shall be stopped while being fueled;

(d) Power chain saws shall have an operable chain brake if originally designed and equipped with a chain brake;

(e) Chain brakes, and other manufacturer's safety features shall remain operational at all times.

(3) Pneumatic-Powered Tools:

(a) A shut-off valve shall be installed at the manifold or permanent pipe outlet of the compressed air supply;

(b) Workers shall not couple or uncouple hose without first shutting off the compressed air supply except when using couplers which are equipped with check valves which automatically shut off the compressed air supply;

(c) Workers shall remain in the clear when turning on air supply at a valve;

(d) Driving pistons in pneumatic tools shall be constructed so that they cannot fly out of the tool;

(e) Pneumatic fastener-driving tools and other power-driven fastener tools, except as allowed in subsection (f) of this section, shall be equipped with a safety device to prevent ejection of nails or staples when the tool is not in firm contact with the work;

(f) Power-driven fastener-driving tools may be used without the safety device only when using staples with a diameter of .0475 inch (18 gauge A.W.G.) or less and the tool operator and all workers within 15 feet are wearing suitable eye protection;

(g) The provisions of subsection (f) of this section do not apply to office stapling machines;

(h) Oxygen or combustible gases shall not be used to drive pneumatic tools;

(i) The exhaust from pneumatic power tools shall be deflected away from the operator.

(4) Internal Combustion Engine-Driven Tools:

(a) Internal combustion engine-driven tools shall be equipped with a positive on and off ignition switch that will remain in either position;

(b) Internal combustion engine-driven tools shall be equipped with effective means to control power except those which are designed to operate at constant speed. Throttle controls shall return the engine to idling speed when released;

(c) Internal combustion engine-driven tools shall be equipped with a self-rewinding starting device, or be designed to furnish equivalent safety;

(d) Exhaust ports on internal combustion engine-driven tools shall be equipped with mufflers and shall be constructed and maintained to deflect exhaust fumes away from the operator when the tool is being used in its normal starting position;

(e) Internal combustion engine-driven tools shall be stopped while being fueled;

(f) Sling-carried tools which are powered by attached portable internal combustion engines shall be capable of quick removal;

(g) The fuel system of sling-carried tools shall be inspected before each use, and any defect shall be repaired immediately.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 1-1974, f. 1-16-74, ef. 2-15-74; WCD 23-1984, f. 12-28-84, ef. 1-1-85; OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93

#### **437-002-0268**

##### **Oregon Rules for Hand-Powered Equipment**

(1) Hand Powered Equipment:

(a) Each hand-powered hoist shall be equipped with an effective brake of equivalent and in addition shall be equipped with a ratchet and pawl of sufficient strength to hold the maximum load in any position;

(b) Means shall be provided to prevent hand crank handles from working loose from the drive shaft.

(2) Wheelbarrows, Hand Trucks, Dollies, Pallet Jacks:

(a) Wheelbarrows, hand trucks, floor trucks, dollies, and pallet jacks shall be selected for the specific work to be done and shall not be loaded beyond safe capacity. Bodies and frames shall be made of metal or strong wood and rigidly constructed and braced to withstand severe handling and the loads to be carried;

(b) Wheelbarrows, hand trucks, floor trucks, dollies, and pallet jacks shall be kept in good repair at all times;

(c) Wheelbarrows, hand trucks, floor trucks, dollies, and pallet jacks when not in use, must be properly stored and shall not be left in such a position that they can tip, fall or roll.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 1-1974, f. 1-16-74, ef. 2-15-74; WCB 7-1974, f. 3-19-74, ef. 4-15-74; OSHA 10-1993, f. 7-29-93, cert. ef. 9-15-93

#### **437-002-0280**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.251 Definitions. Repealed. Oregon OSHA Admin. Order 6-2014, f. 10/28/14, ef. 5/1/15. In Oregon, OAR 473-002-2253 applies.

(2) 29 CFR 1910.252 General Requirements, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(3) 29 CFR 1910.253 Oxygen-Fuel Gas Welding and Cutting. Repealed. Oregon OSHA Admin. Order 6-2014, f. 10/28/14, ef. 5/1/15. In Oregon, OAR 473-002-2253 applies.

(4) 29 CFR 1910.254 Arc Welding and Cutting, published 9/13/05, FR vol. 70, no. 176, p. 53925.

(5) 29 CFR 1910.255 Resistance Welding, published 4/11/90, Federal Register, vol. 55, no. 70, pp. 13710-13711.

These rules are on file with the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 4-2005, f. & cert. ef. 12-14-05; OSHA 7-2008, f. & cert. ef. 5-30-08; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15

#### **437-002-0282**

##### **Job Planning and Layout**

(1) Before operations are started, portable equipment shall be securely blocked to prevent accidental movement.

(2) Tanks, boilers, drums and similar containers shall be equipped with ladders for the welders and other workers whenever conditions require their use for safe access and egress.

(3) No welding equipment shall be allowed on elevated structures unless such structure is designed and built to support all loads imposed on the structure.

(4) Work areas shall be designed, laid-out and operated in a manner to prevent welding hose and cable from creating a tripping hazard.

(5) When welding or cutting is being performed in any confined space, the gas cylinders and/or welding machines shall be left on the outside.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0283**

##### **Eye Protection and Protective Clothing**

(1) Easily ignited, highly flammable clothing, such as is made from synthetic materials, shall not be worn.

(2) Flash goggles with side shields (Shade No. 2, Style Nos. 2 or 3) shall be worn under the welding helmet or hand shield.

(3) The skin shall be covered completely, by a double layer of clothing or equivalent, to prevent burns or other damage by ultraviolet light.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0284**

##### **Specifications for Protectors**

(1) Where the “lift front” welder’s helmet is used, there shall be a stationary safety glass on the inside of the frame next to the eyes to protect welder against flying particles when the front is lifted. Where lens containers will not permit use of such safety glass, safety goggles shall be worn.

(2) Where the “lift front” helmet with three glasses is not used, or the flat type helmet is used, the welders shall wear other spectacle-type safety goggles in addition to the filter lens and cover glass.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0285**

##### **Special Precautions**

Before welding or cutting on walls, floors or ceilings, an inspection shall be made to see that no combustible material is present on the hidden side.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0286**

##### **Preservative Coatings**

(1) Before welding, cutting or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a competent person to determine its flammability.

(2) Precautions shall be taken to prevent ignition of highly flammable hardened preservative coatings. When coatings are determined to be highly flammable, they shall be stripped from the area to be heated to prevent ignition.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0287**

##### **Toxic Preservative Coatings**

(1) In enclosed spaces, all surfaces covered with toxic preservative shall be stripped of all toxic coatings for a distance of at least four inches from the area of heat application, or the employees shall be protected by a respirator against hazards from breathing toxic vapors in accordance with occupational health regulations.

(2) The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be cleaned.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

#### **437-002-0288**

##### **Health Protection and Ventilation — General**

(1) When welding or cutting operations are being performed on the following materials (Table OR Q 1), the protective measures indicated are required unless atmospheric samples taken in the welder’s breathing zone indicate that the concentration does not exceed the limits specified in Division 2/Z, OAR 437-002-0382, Oregon Rules for Air Contaminants.

(2) Nearby workers shall be afforded equivalent, effective, protection from these dangerous fumes. Table.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 5-2012, f. & cert. ef. 9-25-12

#### **437-002-0297**

##### **Welding or Cutting Containers**

(1) No welding, torch or abrasive cutting, or other hot work shall be performed on drums, barrels, tanks or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, surface coatings or other materials which when subjected to heat, might produce flammable or toxic vapors. Any pipe lines or connections to the drum or vessel shall be disconnected or blanked.

(2) In order to meet the “absolutely certain” test required in section (1) of this rule, appropriate testing equipment shall be used prior to and frequently during the welding, torch or abrasive cutting or other hot work operation to insure that the container is free and remains free of flammable or toxic vapors.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

**NOTE:** §1910.252(c)(4)(iii) was not adopted by the Department. In Oregon OAR 437-002-0298 applies:

#### **437-002-0298**

##### **Self-Contained Units**

In areas immediately hazardous to life, self-contained breathing equipment shall be used. The breathing equipment shall be



approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 232-1990, f. 9-28-90, cert. ef. 12-1-90

### **437-002-0300**

#### **Adoption by Reference**

In addition to and not in lieu of, any other health and safety codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) Reserved for 29 CFR 1910.261 Pulp, Paper, and Paperboard Mills

(2) 29 CFR 1910.262 Textiles, published 6/18/98, FR vol. 63, no. 117, p. 33467.

(3) 29 CFR 1910.263 Bakery Equipment, published 3/7/96, FR vol. 61, no. 46, p. 9241.

(4) 29 CFR 1910.264 Laundry Machinery and Operations, published 11/7/78, FR vol. 43, p. 51760.

(5) 29 CFR 1910.265 Sawmills, published 9/13/05, FR vol. 70, no. 176, p. 53925.

(6) Reserved for 29 CFR 1910.266 Pulpwood Logging.

**NOTE:** In Oregon, Pulpwood Logging rules are Oregon-initiated rules provided in Division 7, Forest Activities.

(7) Reserved for 29 CFR 1910.267 Agricultural Operations

(8) 29 CFR 1910.268 Telecommunications, published 6/18/98, FR vol. 63, no. 117, p. 33467.

(9) 29 CFR 1910.269 Electric power generation, transmission and distribution. Repealed with Oregon OSHA Admin. Order 3-2015, f. 10/9/15, ef. 1/1/16. In Oregon, Division 2/RR applies.

(10) 29 CFR 1910.272 Grain Handling Facilities, and Appendices A, B and C, published 3/7/96, FR vol. 61, no. 46, p. 9242.

(11) 29 CFR 1910.274 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9242.

(12) 29 CFR 1910.275 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9242.

**NOTE:** These standards are available from the Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services; and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 10-1988, f. & ef. 7-7-88; OSHA 23-1990, f. 9-28-90, ef. 12-1-90; OSHA 27-1990, f. 12-12-90, ef. 2-1-91; OSHA 14-1991, f. 10-10-91, cert. ef. 11-1-91; OSHA 7-1993, f. 6-8-93, cert. ef. 8-1-93; OSHA 11-1993, f. 8-4-93, cert. ef. 10-1-93; OSHA 3-1994, f. & cert. ef. 8-1-94; OSHA 6-1995, f. 4-18-95, cert. ef. 6-1-95; OSHA 3-1996, f. & cert. ef. 7-22-96; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 3-1999, f. & cert. ef. 4-30-99; OSHA 5-2001, f. & cert. ef. 4-6-01; OSHA 4-2004, f. & cert. ef. 9-15-04; OSHA 4-2005, f. & cert. ef. 12-14-05; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-0301**

#### **Scope and Application**

(1) These rules set minimum safety requirements for tree and shrub trimming, pruning, bracing, removal, and surgery. These rules shall apply to all tree and shrub services.

(2) These rules do not apply to agricultural crops or crop services, or to tree trimming operations within 10 feet of any high voltage (600 v) power lines or equipment. Tree trimming operations around power lines are covered under Division 2/RR.

(3) If a specific type of equipment, process or practice is not limited to the tree and shrub service industry, the provisions contained in other divisions of OAR 437, Oregon Occupational Safety and Health Code, shall apply.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 3-1994, f. & cert. ef. 8-1-94; OSHA 1-1996, f. & cert. ef. 2-16-96; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-0302**

#### **Definitions**

“Qualified Tree Worker” — A worker who through related training and on-the-job experience is familiar with the techniques and

hazards of tree pruning, trimming, repairing, or removal, and the equipment used in such operations.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 1-1996, f. & cert. ef. 2-16-96

### **437-002-0303**

#### **Training and Work Planning**

Employers shall instruct their employees in the proper use of all equipment provided for them and shall require that safe working practices be observed. A job safety briefing with all crew members shall be held and all work procedures and assignments shall be worked out carefully before any tree job is begun.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 1-1996, f. & cert. ef. 2-16-96

### **437-002-0304**

#### **First Aid Requirements**

(1) First aid care and supplies shall be provided as required by OAR 437-002-0161, in division 2/K, Medical Services and First Aid;

(2) Personnel shall be able to render cardio-pulmonary resuscitation (CPR); and

(3) Be trained in tree top rescue.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91

### **437-002-0305**

#### **Traffic Control**

Effective means for control of pedestrian and vehicular traffic shall be instituted on every jobsite on or adjacent to a highway, street or railway. Traffic controls shall conform to the American National Standards Institute (ANSI) D6.1e-1989, Manual on Uniform Traffic Control Devices for Streets and Highways.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91

### **437-002-0306**

#### **Electrical Hazards**

(1) General:

(a) The employer shall ensure that a close inspection is made by the employee and by the foreman or supervisor in charge before climbing, entering or working around any tree, to determine whether an electrical power conductor passes through the tree, or passes within reaching distance of an employee working in the tree. If any of these conditions exist either directly or indirectly, an electrical hazard shall be considered to exist unless the system operator/owner has caused the hazard to be removed by deenergizing the lines, or installing protective equipment;

(2) Unqualified persons. When an unqualified person is working near overhead lines, the location shall be such that the person and the longest conductive object he or she may contact cannot come closer to any unguarded, energized overhead line than the following distances:

(a) For voltages to ground 50kV or below — 10 ft. (305 cm);

(b) For voltages to ground over 50kV — 10 ft. (305 cm) plus 4 in. (10 cm) for every 10kV over 50kV.

(3) Electrical Safety-Related Work Practices. The employer shall assure that 29 CFR 1910.331 through 1910.335, Electrical Safety-Related Work Practices, in Division 2/S, are complied with for all electrical hazards, EXCEPT as provided for in 29 CFR 1910.331(c).

(4) Notification to Power Company. The power company shall be notified when working within ten (10) feet of a power line or when a tree may fall within ten (10) feet of a power line.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 1-1996, f. & cert. ef. 2-16-96

**437-002-0307****Personal Protective Equipment**

(1) Personal protective equipment shall be provided and used as required by OAR 437, division 2/I, Personal Protective Equipment.

(2) Safety belts or tree-trimming saddle belts shall conform to ANSI A10.14-1975, Requirements for Safety Belts, Harnesses, Lanyards, Lifelines, and Drop Lines for Construction and Industrial Use. Safety belts, tree trimming saddles, or a saddle formed by a double bowline shall be worn to protect workers when working aloft.

(3) Saddle belts or safety belts used for climbing operations shall have forged support rings. Snaps used in climbing ropes or in safety straps, for attachment to the forged support ring, shall be of a self-closing safety type. Forged support rings shall be designed so that the snaps will not become disengaged (roll off) accidentally.

(4) Saddle belts or safety belts shall not be spliced or weakened by punching extra holes in them.

(5) All employees using chain saws shall wear flexible ballistic nylon pads or other equivalent protection sewn or otherwise fastened to the trousers, which will protect the legs from the thigh to below the knee.

(6) Eye or face protection shall be provided and used where chips, sawdust or flying particles present a hazard.

(7) When operating chain saws or other noisy equipment, employees must wear hearing protection that complies with Subdivision 2/G, Occupational Noise Exposure.

(a) The employer must provide hearing protection at no cost to employees and must allow them to choose from a variety of suitable devices.

(b) The employer must train the employees in the proper use and care of the hearing protection.

(c) The employer must assure that the workers use the hearing protection properly and that it fits correctly.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 1-1996, f. & cert. ef. 2-16-96; OSHA 12-2001, f. & cert. ef. 10-26-01

**437-002-0308****Portable Power Tools**

(1) Electric tools. All portable electric hand tools shall:

(a) Be equipped with three-wire cord having the ground wire permanently connected to the tool frame and means for grounding the other end; or

(b) Be of the double insulated type and permanently labeled as "Double Insulated";

(c) Extension cords shall be maintained in safe condition. Exposed metal sockets shall not be used;

(d) Tool operators shall:

(A) Use electric hand tools in accordance with the manufacturer's instructions;

(B) Prevent cords from becoming entangled, damaged, or cut by blades and bits;

(C) Avoid laying extension cord in water;

(D) Support an electrical tool and its power supply cord by a line, independent of the worker when the tool is used aloft.

(2) Gasoline-Driven Power Saws:

(a) Power saws shall not be used when employees are supported by a single climbing belt or rope;

(b) When working aloft using power saws, employees shall be supported by their climbing belt or rope and by a safety line to a crotch in the tree higher than the climber's waistline. The safety line shall be secured to a separate point on the climber's body belt and kept snug at all times;

(c) The manufacturer's operating and safety instructions shall be followed unless modified by this rule;

(d) Power saws weighing more than 15 pounds (service weight) used in trees shall be supported by a separate line, except when used from an aerial-lift device;

(e) Where there are no lateral branches on which to crotch a separate line for power saws weighing over 15 pounds, a false crotch

shall be used. A false crotch is one that can hold power-saw lines without slipping or coming untied;

(f) The operator shall have secure footing when starting the saw. Power saws weighing less than 15 pounds (service weight) may be drop started. Drop starting of saws over 15 pounds is permitted outside of the basket of an aerial lift only after ensuring that the area below the aerial lift is clear of personnel;

(g) The engine shall be started and operated only when all other workers are clear of the saw;

(h) The engine shall be stopped when power saws are being carried. The saw need not be stopped between cuts during consecutive felling, bucking, or limbing or cutting operations on reasonably level ground. The chain shall not be turning and the operator's hand shall be off the throttle lever while moving between work locations. Single person saws shall be carried by the worker on his/her side with the guide bar of the saw pointed to the rear;

(i) The engine shall be stopped for all cleaning, refueling, adjustments, and repairs to the motor;

(j) The saw muffler shall be maintained in good condition;

(k) The saw shall be clean of sawdust and flammable material;

(l) Power chain saws shall be equipped with an automatic throttle control which will return the engine to idling speed upon release of the throttle. "Idling" is when the chain is not moving while the engine is running;

(m) Power saws shall meet all applicable requirements of ANSI B175.1-1985, Safety Requirements for Gasoline-Powered Chain Saws.

(3) Backpack power units:

(a) The manufacturer's operating safety instructions shall be followed unless modified by these rules;

(b) No one except the operator shall be within ten feet of the cutting head of a brush saw;

(c) The power unit shall be equipped with a quick shutoff switch readily accessible to the operator;

(d) The operator shall observe the position of all personnel while the unit is running;

(e) The engine shall be stopped for all cleaning, refueling, adjustments, and repair to the saw or motor where practical, except where manufacturer's procedures require otherwise.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91

**437-002-0309****Hand Tools**

(1) General:

(a) The correct tool shall be selected for the job;

(b) Tools that have been made unsafe by damage or defect shall not be used;

(c) When climbing a tree, workers shall not carry tools in their hands other than tools that are used to assist them in climbing;

(d) Workers shall maintain a safe working distance from other workers when using hand tools;

(e) Tools shall be properly stored or placed in plain sight out of the immediate work area when not in use;

(f) Workers shall not throw or drop tools from trees unless warning has been given and the ground area is clear, and the act of dropping will not endanger personnel.

(2) Pruners and hand saws:

(a) Pole pruners, pole saws, and other similar tools shall be equipped with wood or nonmetallic poles. Actuating cord shall be of nonconducting material;

(b) When inserting a blade in a bow-saw frame, workers shall keep their hands and fingers in the clear when the tension lever snaps into or against the saw frame. When removing a bow-saw blade from the frame, the operator shall stay clear of the blade.

(3) Chopping tools — Axes, brush hooks, machetes, and others:

(a) Chopping tools that have loose or cracked heads or splintered handles shall not be used;

(b) Chopping tools shall never be used while working aloft;

(c) Chopping tools shall be swung away from the feet, legs, and body, using the minimum power practical for control;

(d) Chopping tools shall not be driven as wedges or used to drive metal wedges.

(4) Injector tools for applying herbicides:

(a) The bit of injector tools shall be covered with a shield when not in use;

(b) Injectors shall be laid flat on the ground when not in use;

(c) The injector shall not be carried on the shoulders but shall be carried by the loop handle on the downhill side, with the bit properly shielded and facing to the rear.

(5) Grub hoes, mattocks and picks:

(a) The blade eye shall be tight-fitting and wedged so that it cannot slide down the handle;

(b) When swinging grub hoes, mattocks, and picks, the worker shall have a secure grip and firm footing.

(6) Cant hooks, cant dogs, longs, and carrying bars:

(a) Hooks shall be firmly set before applying pressure;

(b) Tools with cracked, splintered, or weakened handles shall not be used;

(c) Workers shall be warned and shall be in the clear before logs are moved;

(d) The points of hooks shall be at least two inches long and kept sharp;

(e) Workers shall stand to the rear and uphill when rolling logs.

(7) Wedges, chisels, and gouges:

(a) Wedges, chisels, and gouges shall be inspected for cracks and flaws before use;

(b) Wedges and chisels shall be properly pointed and tempered. Tools with mushroomed heads shall not be used;

(c) Only wood, plastic, or soft-metal wedges shall be used with power saws;

(d) Wood-handled chisels shall be protected with a ferrule on the striking end.

(8) Hammers, mauls, and sledges. Wood, rubber or high-impact plastic mauls, sledges, or hammers shall be used when striking wood-handled chisels or gouges.

(9) Ropes:

(a) Climbing ropes shall be used when working aloft in trees. Climbing ropes shall have a minimum diameter of 1/2-inch and be a three- or four-strand first-grade manila with a nominal breaking strength of 2,385 pounds or its equivalent in strength and durability. Synthetic rope shall have a maximum elasticity of not more than seven percent;

(b) Rope made unsafe by damage or defect, or for any other reason, shall not be used;

(c) Rope shall be stored away from all cutting edges and sharp tools. Corrosive chemicals, gas, and oil shall be kept away from rope;

(d) Climbing ropes and safety lines shall not be used to lower limbs or other parts of trees or to raise or lower equipment;

(e) When stored, rope shall be coiled and piled, or suspended, so that air can circulate through the coils;

(f) Rope ends shall be secured to prevent unraveling;

(g) Climbing and safety rope shall not be spliced to effect repair;

(h) Safety snaps shall be rotated from one end of the rope to the other, as needed, and the worn end cut off;

(i) A handline shall be used for raising or lowering tools and limbs.

(10) Tackle blocks and pulleys. Tackle blocks and pulleys shall be inspected immediately before use and shall be condemned if defective, in accordance with procedures given in ANSI/ASME B30.9-1984, B30.9a-1985, and B30.9b-1987, Safety Standard for Slings.

(11) Ladders:

(a) When using portable ladders to climb trees, the ladder shall be tied to the tree or supported by another worker. When working from a ladder during cutting operations, the ladder shall be securely tied or braced, and the worker tied in as required by OAR 437-002-0310(1)(a);

(b) Ladders, platforms, and aerial devices, including insulated aerial devices, shall not be placed in a position where they could con-

tact an electrical conductor. Reliance shall not be placed on their dielectric capabilities;

(c) Ladders made of metal or other conductive material shall not be used where an electrical hazard exists. Only approved wood ladders constructed in accordance with ANSI A14.1-1982, Safety Requirements for Portable Wood Ladders, or nonconductive ladders made of synthetic material equal to or exceeding the strength of approved wood ladders, shall be used;

(d) Metal ladders used where no electrical hazard exists shall conform to ANSI A14.2-1982, Safety Requirements for Portable Metal Ladders;

(e) All ladders shall be inspected daily before use. Unsafe ladders shall not be used;

(f) The attaching of cleats, metal points, and safety feet; lashing; or other effective means of securing the ladder shall be used if there is danger of its slipping;

(g) Ladders shall be supported while in storage so they will not sag. Except when on mobile equipment, ladders shall be stored under suitable cover, protected from the weather, and kept in a dry location away from excessive heat;

(h) Ladders shall not be used as bridges or inclined planes to load or handle logs or other material.

(12) Climbing spurs. Climbing spurs shall be of the tree-climbing type and have gaffs suitable for the tree being climbed.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 1-1996, f. & cert. ef. 2-16-96

#### **437-002-0310**

##### **Work Procedures**

(1) Climbing.

(a) A tree worker shall be tied in with an approved type of climbing rope and safety saddle when working 10 feet above the ground. The climbing rope shall always be used even when working from a ladder or scaffold and the employee is 10 feet or more above the adjacent ground line. A safety strap or rope with snaps may be used for additional protection.

(b) Limbs shall be inspected, while climbing, before applying weight. The climber shall not trust the capability of a dead branch to support his/her weight. Dead branches shall be broken off on the way up, if possible. Hands and feet shall be placed on separate limbs, if possible.

(c) The climbing rope shall be passed around the trunk of the tree as high as possible using branches with a wide crotch to prevent any binding of the safety rope. The crotch selected for tying in shall be over the work area as much as possible, but located in such a way that a slip or fall would swing the worker away from any electrical conductor. The rope shall also be passed around the main leader or an upright branch, using the limb as a stop. Feet, hands, and ropes shall be kept out of tight V-shaped crotches.

(d) The location of all electrical conductors shall be noted in relation to work procedures. The worker shall climb on the side of the tree that is away from electrical conductors, if possible.

(e) A figure-eight knot shall be tied in the end of the rope, particularly in the case of high trees. This will prevent pulling the rope accidentally through the taut line-hitch and possible serious injury from a fall.

(f) The climbing line shall be crotched as soon as practical after the worker is aloft, and a taut line-hitch tied and checked.

(g) The worker shall be completely secured with the climbing line before starting operations.

(h) The worker shall remain tied in until the work is completed and the worker has returned to the ground. If it is necessary to recrotch the rope in the tree, the worker shall retie the rope or use the safety strap before releasing the previous tie.

(2) Pruning and Trimming.

(a) Pole pruners and pole saws shall be hung securely in a vertical position to prevent dislodging. Pole pruners or pole saws shall not be hung on utility wires or cables, or left in the tree overnight.



Pole saws shall be hung so that the sharp edge is away from the worker.

(b) A scabbard or sheath shall be hooked to the belt or safety saddle to carry the handsaw when not in use.

(c) Warnings, when necessary, shall be given by the worker in the tree before a limb is dropped.

(d) A separate line shall be attached to limbs which cannot be dropped or are too heavy to be controlled by hand. The line shall be held by workers on the ground end of the rope. Use of the same crotch for both safety rope and work rope shall be avoided.

(e) Cut branches shall not be left in trees overnight.

(f) A climbing rope shall never be left in a tree overnight. A service line shall be put up for overnight or longer.

(g) The climber shall inspect the rope for cuts or abrasions before starting work. If any cuts or serious abrasions are found, the rope shall be discarded, used for some other purpose, or the defective section cut off.

(h) During all tree working operations aloft, there shall be a second worker in the vicinity. This shall not apply to utility workers engaged in tree trimming incidental to their normal occupation, or to one-man service crews.

(3) Cabling.

(a) In cabling operations, branches which are to be cabled shall be brought together to the proper distance by means of a block and tackle, a hand winch, a rope, or a rope with a come-along.

(b) Not more than two persons shall be in the tree working at opposite ends during cabling installation.

(c) When releasing the block and tackle, workers in trees shall be off to one side in case the lag hooks pull out under strain.

(d) Ground workers shall not stand under the tree when cable is being installed.

(e) Tools used for cabling, bark tracing, cavity work, etc., shall be carried in a bag or belt designed to hold tools, not put in the pocket or stuck in the top of a boot.

(4) Topping.

(a) Workers doing topping shall make sure the trees are able to stand the strain of a topping procedure. If not, some other means of lowering the branches shall be provided, such as a tree crane.

(b) If large limbs are lowered in sections, the worker in the tree shall be above the limb being lowered.

(c) Guidelines, handlines, or tag lines shall be used when conditions warrant their use.

(5) Felling.

(a) Before beginning any felling operation, a safety plan shall be developed which shall consider:

(A) The tree and the surrounding area for anything that may create a hazard when the tree falls;

(B) The shape of the tree;

(C) The lean of the tree;

(D) Wind force and direction;

(E) Decayed or other weak spots; and

(F) The location of other persons or structures.

(b) The work area shall be cleared to permit safe working conditions, and an escape route shall be planned before any cutting is started.

(c) Each tree worker shall be instructed as to exactly what is to be done during the felling operation. All workers not directly involved shall be at least two tree lengths away from the tree being felled.

(d) A notch and backcut shall be used in felling trees over 5 inches diameter breast high. No tree shall be felled by "ripping" or "slicing" cuts.

(e) The depth or penetration of the notch shall be approximately one-third the diameter of the tree.

(f) The opening or height of the notch shall be approximately 2-1/2 inches for each foot in diameter of the tree.

(g) The backcut shall be made higher than the point or apex of the notch to prevent kickback.

(h) Just before the tree is ready to fall, an audible warning shall be given to those in the area.

(i) If there is danger that the tree being felled may fall the wrong way or damage property; wedges, block and tackle, rope, or wire cable (except where an electrical hazard exists) shall be used. All limbs shall be removed from trees to a height and width sufficient to allow the tree to fall clear of any wires and other objects in the vicinity.

(j) Special precautions in roping rotten or split trees shall be taken to prevent the tree from falling in an unexpected direction even though the cut is made on the proper side.

(k) The faller shall retreat to a safe location when a tree is committed to fall.

(6) Chipper equipment and operation.

(a) Enclose chipper rotating components in a housing capable of retaining broken chipper knives or foreign material.

(b) Chipper feed chutes and side members must be designed to prevent operator contact with rotating blades during normal operation.

(c) Chippers without a mechanical infeed system must have:

(A) An infeed hopper that measures at least 85 inches from the blades or knives to ground level at the centerline of the hopper.

(B) A flexible antikickback device in the feed hopper. This device must protect the operator and other persons in the area from flying chips and debris.

(C) A shut-off switch within convenient reach of the worker feeding the chipper.

(d) Chippers with a mechanical infeed system must have a quick stop reversing device on the infeed. The quick stop reversing device control lever must be across the top and along each side of the hopper, as close to the feed end of the hopper as practicable within easy reach of the operator.

(e) Employees in the immediate area of an operating chipper must wear personal protective equipment as required by Subdivision I of this Division.

(f) Workers feeding chippers must not wear loose clothing, gauntlet-type gloves, rings or watches.

(g) Prevent accidental restart of equipment shut down for adjustment or repair as required by Division 2/J, 1910.147, Lock-out/Tagout.

(h) Guard exposed adjacent blades when replacing chipper blades.

(i) Close and secure all access panels before operating the chipper.

(j) The chipper operator must have a coworker in the immediate vicinity when feeding chipper.

(k) Do not feed foreign objects into chipper.

(l) Feed chippers from the side of the centerline. The operator must immediately turn away from the feed table as brush is drawn into the rotor. Feed chippers from curbside whenever practical.

(m) Feed and discharge chutes must be in place to prevent contact with rotating blades during chipper operation.

(n) Chipper operators must be familiar with the manufacturer's operating instructions, maintenance and safe work practices.

(o) When trailer chippers are detached from trucks they must be chocked or otherwise secured.

(p) Before towing chipper, cross safety chains under the tongue of the chipper and attach them to the towing vehicle.

(7) Limbing and bucking.

(a) The tree worker shall work on the side opposite the side on which the limb is being cut.

(b) The tree worker shall stand on the uphill side of the work.

(c) Branches bent under tension shall be considered hazardous.

(d) The tree worker shall block the log to prevent rolling, when necessary.

(e) When bucking up trunks of trees, wedges shall be used as necessary to prevent binding of the guide bar or chain.

(8) Storm work and emergency conditions.

(a) Since storm work and emergency conditions create special hazards, only authorized representatives of the electric utility system operator/owner may perform tree work in these situations where energized electrical power conductors are involved.

(b) When an emergency condition develops due to tree operations, work shall be suspended and the system operator/owner shall be notified immediately.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 5-2001, f. & cert. ef. 4-6-01

**437-002-0311****Mobile Equipment**

(1) All vehicles shall comply with OAR 437-002-0223 in division 2/N, Material Handling and Storage.

(2) All aerial lifts shall comply with division 2/F, 1910.67, Vehicle-Mounted Elevating and Rotating Work Platforms.

(3) When an aerial lift device contacts an electrical conductor, the truck supporting the aerial lift device shall be considered as energized.

(4) Sprayers and related equipment:

(a) Working and walking surfaces of all sprayers and related equipment shall be covered with slip-resistant material;

(b) Equipment on which workers stand and spray while the vehicle is in motion shall be equipped with guardrailing around the working area. The guardrailings shall be constructed in accordance with OAR 437-002-1910.23(e), Railing, Toeboards, and Cover Specifications in division 2/D.

(5) Stump cutters:

(a) Stump cutters shall be equipped with enclosures or guards that effectively protect the operator;

(b) The operator and workers in the immediate area shall wear eye protection.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91

**437-002-0312****Oregon Rules for Pulp, Paper and Paperboard Mills**

(1) General Requirements.

(a) Application. This section applies to establishments where pulp, paper, and paperboard are manufactured or converted. This section does not apply to logging and the transportation of logs to pulp, paper, and paperboard mills.

(b) Standards incorporated by reference. Standards covering issues of occupational safety and health which have general application without regard to any specific industry are incorporated by reference in sections (2) through (14) of this rule and in subsections (c) and (d) of this rule and made applicable under this rule. Such standards shall be construed according to the rules set forth in §1910.5, Applicability of Standards, in Subdivision A.

(c) General incorporation of standards. Establishments subject to this section shall comply with the following standards of the American National Standards Institute:

(A) Safety Requirements for Floor and Wall Openings, Railings, and Toeboards, A10.18-1983.

(B) Scheme for the Identification of Piping Systems, A13.1-1981 (R1993).

(C) Safety Code for Portable Wood Ladders, A14.1-1990.

(D) Safety Code for Portable Metal Ladders, A14.2-1990.

(E) Safety Code for Fixed Ladders, A14.3-1990.

(F) Safety Code for Cranes, Derricks, and Hoists, B30.2-1990.

(G) Overhead and Gantry Cranes, B30.17-1992.

(H) Crawler, Locomotive, and Truck Cranes, B30.8-1993.

(I) Safety Code for Woodworking Machinery, ANSI O1.1-1992.

(J) Method of Measurement of Real-Ear Protection of Hearing Protectors — Physical Attenuation of Ear Muffs, ANSI S3.19-1974 (R1990).

(K) Practice for Occupational and Educational Eye and Face Protection, ANSI Z87.1-1989.

(L) Requirements for Sanitation in Places of Employment, ANSI Z4.1-1986.

(M) Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1979 (R 1991).

(N) Practices for Respiratory Protection, ANSI Z88.2-1992.

(O) Safety Requirements for Industrial Head Protection, ANSI Z89.1-1986.

(P) Safety Color Code, ANSI Z535.1-1991.

(Q) Practice for the Inspection of Elevators (Inspector's Manual), ANSI/ASME A17.2-1988.

(R) Safety Code for Elevators, Dumbwaiters, and Moving Walks, ANSI/ASME A17.1-1990.

(S) Safety Code for Mechanical Power-Transmission Apparatus, ANSI/ASME B15.1-1992.

(T) Safety Code for Conveyors, Cableways, and Related Equipment, ANSI/ASME B20.1-1993.

(U) Power Piping, ANSI/ASME B31.1-1992.

(V) Safety Code for Powered Industrial Trucks, ANSI/ASME B56.1.

(W) Practice for Industrial Lighting, ANSI/IES RP-990.

(X) Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, ANSI/NFPA 91-1992.

(Y) Fire Department Self-Contained Breathing Apparatus Program, ANSI/NFPA 1404-1989.

(Z) Safety Code for Ventilation and Operation of Open-Surface Tanks, ANSI/UL 641-1985.

(d) Other standards. The following standards shall be considered standards under this section:

(A) ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels 1992, including addenda.

(B) Building Exits Code for Life Safety from Fire, NFPA 101-1991.

(C) NFPA Code for Prevention of Sulfur Fires and Explosions, NFPA 655-1993.

(D) Safety in the Transportation, Storage, Handling and Use of Explosives, IME Pamphlet No. 17, March 1987, Institute of Makers of Explosives.

(2) Employee Training.

(a) Employees shall not be permitted to operate any machine or equipment until they have received proper training and are familiar with safe operating procedures.

(b) Employees shall be trained in proper lifting or moving techniques and methods. Mechanical devices should be used or employees should ask for assistance in lifting or moving heavy objects.

(c) In each area where hazardous substances may be encountered, personnel shall be trained to cope with emergencies arising from breaks, ruptures, or spills which would create a hazardous condition.

(d) Any faulty equipment or hazardous condition shall be promptly reported to the person in charge.

(e) When an employee is assigned to work alone in a remote or isolated area, a system shall be instituted whereby such employee reports to someone or a designated person shall check on his or her safety. The procedure shall designate the method of contact and the frequency. All persons will be trained on the procedures.

(3) Safe Practices.

(a) Guards. All driving mechanisms, power transmission apparatus, and prime movers shall be constructed, guarded, and used in conformity with Subdivision O, Machinery and Machine Guarding.

(b) Inspection of controls and safety devices. Brakes, back stops, antirunaway devices, overload releases, and other safety devices shall be inspected and tested frequently to insure that all are operative and maintained in good repair.

(c) Personal protective clothing and equipment. Personal protective clothing and equipment shall be provided and worn in accordance with Subdivision I, Personal Protective Equipment. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(d) Floors and platforms. Floors, platforms, and work surfaces shall be guarded and maintained in accordance with §1910.23, in Subdivision D, Walking-Working Surfaces.

(e) Lockouts. Lockout/tagout shall be in accordance with the requirements of §1910.147, in Subdivision J, with the exception that:

(A) There will be no tagouts allowed in lieu of lockout for that which can be locked out. Tags are provided for identification and information purposes only.

(B) Persons engaged in repair, inspection, maintenance, or clean-up shall lockout the affected equipment, retain possession of the keys to the locks, and personally remove the lock and tag upon completion of the work.

(C) Group lockout. (See Appendices A and B.)

(i) When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout device.

(ii) Group lockout devices shall be used in accordance with the procedures required by §1910.147(c)(4) including, but not necessarily limited to, the following specific requirements.

(I) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout device (such as an operations lock);

(II) Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout of the machine or equipment; and

(III) When more than one crew, craft, department, etc. is involved, assignment or overall job-associated lockout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(IV) Each authorized employee shall affix a personal lockout device to the group lock-out device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained; and

(V) Any person involved in the lockout process shall have the right to place their own lock at each lockout location where group lockout procedures have been allowed.

(f) Confined space entry. Confined space entry shall be in accordance with 437-002-0146 Confined Spaces, in Subdivision J.

(g) Industrial power trucks.

(A) All industrial power trucks and operations shall conform to §1910.178, Powered Industrial Trucks, Subdivision N, Material Handling and Storage. All forklift trucks shall be provided with overhead guards. Design requirements shall provide protection for the liquid petroleum gas tank. All guards shall be designed in compliance with §1910.178, Powered Industrial Trucks, in Subdivision N.

(B) Mirrors or other methods to ensure visibility shall be installed at blind corners or intersections which will allow operators to observe oncoming traffic.

(C) Every power truck operated from an end platform or standing position shall be equipped with a platform extending beyond the operator's position, strong enough to withstand a compression load equal to the weight of the loaded vehicle applied along the longitudinal axis of the truck with the outermost projection of the platform against the flat vertical surface.

(D) Pushing of vehicles or rail cars with the forks or clamps of a lift truck is prohibited.

(h) Emergency lighting.

(A) Emergency lighting shall be provided wherever it is necessary for employees to remain at their machines or stations to shut down equipment in case of power failure. Emergency lighting shall be provided at stairways and passageways or aisles used by employees for emergency exit in case of power failure. Emergency lighting shall be provided in all plant first aid and medical facilities.

(B) Emergency lighting shall be maintained in accordance with the manufacturer or engineering specifications, and shall be checked at least every 30 days for defects.

(i) Electrical equipment. All electrical installations and electrical utilization equipment shall comply with the National Electrical Code requirements and the provisions of Subdivision S, Electrical.

(4) Handling and Storage of Pulpwood and Pulp Chips.

(a) Handling pulpwood with forklift trucks. Where large forklift trucks, or lift trucks with clam-jaws, are used in the yard, the operator's enclosed cab shall be provided with an escape hatch, whenever the hydraulic arm blocks escape through the side doors.

(b) Handling pulpwood with cranes or stackers.

(A) Where locomotive cranes are used for loading or unloading pulpwood, the pulpwood shall be piled so as to allow a clearance of not less than 24 inches between the pile and the end of the cab of any locomotive crane in use, when the cab is turned in any working position.

(B) The minimum distance of the pulpwood pile from the centerline of a standard-gage track shall be maintained at not less than 8-1/2 feet.

(C) Logs shall be piled in an orderly and stable manner, with no projection into walkways or roadways.

(D) Rail cars shall not be spotted on tracks adjacent to the locomotive cranes unless a 24 inch clearance is maintained, as required in section (4)(b)(A) of this rule.

(E) The handling and storage of other materials shall conform to sections (4)(b)(A) and (B) of this rule with respect to clearance.

(F) Equipment and practices shall conform to American National Standards B30.2-1990 and B30.2.0-1967.

(G) Personal protective equipment for such uses as foot, head, and eye protection shall be required for workers on a job basis.

(H) No person shall be permitted to walk beneath a suspended load, bucket, or hook.

(c) Pulpwood storage and handling.

(A) Unauthorized vehicles and unauthorized foot traffic shall not be allowed in any active sorting, storing, loading, or unloading areas.

(B) Unloading lines shall be so arranged that it is not necessary for the workers to attach them on the pond or dump side of the load.

(C) Jackets or vests of fluorescent or other high visibility material shall be worn by persons working on dry land log storage.

(D) Wire rope doglines used for towing or rafting shall not be used when:

(i) They acquire jaggars to the extent that they present a hazard to the workers handling them; or

(ii) When they are weakened to the extent that they are hazardous.

(E) Boom sticks shall be capable of safely supporting the weight imposed upon them.

(F) Stiff booms shall be made by fastening not less than two boom sticks together. The width of the stiff boom shall be not less than 36 inches measured from outside to outside of the outer logs. The boom sticks shall be fastened together with not less than 4-inch by 6-inch cross ties or cable lashing properly recessed into notches in the boom sticks and secured.

(G) Pike poles shall be kept in good repair. Conductive pike poles shall not be used where it is possible that they may come in contact with electrical conductors.

(H) All log dumps shall be periodically cleared of bark and other debris.

(I) When cutting bands on bundled logs, workers shall position themselves in a safe location. Double-bitted axes shall not be used for cutting bands. Caution shall be used to prevent being struck by ends of bands being cut and, if needed, personal protective equipment shall be worn.

(J) Storing or sorting on water, or any boom work other than boom boat operations, shall require a minimum of two persons.

(d) Handling pulpwood from ships.

(A) Ladders and gangplanks with railings to boat docks shall meet the requirements of American National Standards A10.18-1983, A14.1-1990, A14.2-1990, and A14.3-1990, and shall be securely fastened in place.

(B) The hatch tender shall be required to signal the hoisting engineer to move the load only after the employees working in the hold are in the clear.

(C) The air in the ship's hold, tanks, or closed vessels shall be tested for oxygen deficiency and for toxic, explosive and combustible gases and vapors.

(e) Handling pulpwood from flatcars and all other rail cars.

(A) Railroad flatcars for the conveyance of pulpwood loaded parallel to the length of the car shall be equipped with safety-stake pockets.



(B) Where pulpwood is loaded crosswise on a flatcar sufficient stakes of sizes not smaller than 4 by 4 inches shall be used to prevent the load from shifting.

(C) When it is necessary to cut stakes, those on the unloading side should be partially cut through first, and then the binder wires cut on the opposite side. Wire cutters equipped with long extension handles shall be used. No person shall be permitted along the dumping side of the car after the stakes have been cut.

(D) When steel straps without stakes are used, the steel straps shall be cut from a safe area to prevent employees from being struck by the falling logs.

(E) Flatcars and all other cars shall be chocked during unloading. Where equipment is not provided with hand brakes, rail clamping chocks shall be used.

(F) A derail shall be used to prevent movement of other rail equipment into cars where persons are working.

(f) Handling pulpwood from trucks.

(A) Cutting of stakes and binder wires shall be done in accordance with section (4)(e)(C) of this rule.

(B) Where binder chain and steel stakes are used, the binder chains shall be released and the stakes tripped from the opposite side of the load spillage.

(C) Where binder chains and crane slings are used, the crane slings shall be attached and taut before the binder chains are released. The hooker shall see that the helper is clear before signaling for the movement of the load.

(D) The truck driver shall leave the truck cab and be in the clear, in a designated area, and shall be in clear view of the unloading equipment operator while the unloader is approaching the loaded truck.

(E) The truck driver shall remain outside the cab and clear of the load while logs are being unloaded except that, after a complete load is lifted as a unit and held stationary, the driver may enter the cab and drive forward from under the suspended load.

(F) Log unloaders shall not be moved about the premises with loads raised higher than absolutely necessary.

(g) Handling pulp chips from rail cars.

(A) All cars shall be securely fastened in place and all employees in the clear before dumping is started.

(B) Personal protective equipment for such uses as foot, head, and eye protection shall be provided, and employees shall wear the equipment when working in the woodyard. Ear protection shall be provided when the noise level may be harmful.

(C) When a rollover-type unloading device is used for removing chips from cars, the cars shall be properly secured in place, and all employees shall be in the clear before dumping operation is started.

(h) Handling pulp chips and hog fuel from trucks and trailers.

(A) All trucks and trailers shall be secure and all employees in the clear before dumping is started.

(B) Personal protective equipment necessary to protect workers from hazards shall be provided and worn.

(C) Elevating platform-type or cable-lift type unloading devices shall have adequate back bumper stops.

(D) Side rails or other positive means to prevent the truck and/or trailer from falling shall be used while unloading the single trailer units.

(E) All persons shall be clear of all hoisting or elevating mechanisms before dumping commences.

(F) No person shall remain in any truck while the truck is being elevated.

(G) A safe area and suitable device shall be provided for the chip tester to use while taking chip samples.

(H) Rolled chip nets shall not be positioned where they cover the ladders on rail cars or trucks.

(I) Chip and hog fuel storage.

(i) When mobile equipment is used on top of hog fuel or chip piles, a roll-over protection system shall be installed on the equipment. If the cab is of the enclosed type, windshield wipers shall be installed.

(ii) Hog fuel bins shall be provided with standard railed platform or walkways near the top or other equally effective means shall be provided for use by employees engaged in dislodging hog fuel.

(iii) Extreme care shall be taken to prevent chips or hog fuel from creating an overhang or bridging.

(iv) Employees shall be prohibited from working under overhangs or bridges.

(J) Chip and sawdust bins. Steam or compressed-air lances, or other facilities, shall be used for breaking down the arches caused by jamming in chip lofts. No worker shall be permitted to enter a bin unless done in accordance with 437-002-0146 Confined Spaces, in Subdivision J.

(i) Crane operations.

(A) Crane boom and load capacities as specified by the manufacturer shall be posted in the cab of the crane in accordance with §1910.180, Crawler, Locomotive and Truck Cranes, in Subdivision N, Material Handling and Storage.

(B) A safety device such as a heavy chain or cable at least equal in strength to the lifting cables shall be fastened to the boom and to the frame of the boom crane (if it is other than locomotive) at the base. Alternatively, a telescoping safety device shall be fastened to the boom and to the cab frame, so as to prevent the boom from snapping back over the cab in the event of lifting cable breakage.

(C) A crane shall not be operated where any part thereof may come within 10 feet of overhead powerlines (or other overhead obstructions) unless the powerlines have been de-energerized, or clearances are maintained as specified in §1910.303, General Requirements, in Subdivision S, Electrical.

(D) Standard signals for the operation of cranes shall be established for all movements of the crane, in accordance with American National Standards B30.2-1990 and B30.8-1988.

(E) Only one member of the crew shall be authorized to give signals to the crane operator.

(F) All cranes shall be equipped with a suitable warning device such as a horn or whistle.

(G) A sheave guard shall be provided beneath the head sheave of the boom.

(H) Grapples, tongs, and buckets shall not be left suspended when not in use.

(j) Traffic warning signs or signals.

(A) A flagger shall direct the movement of cranes or locomotives being moved across railroad tracks or roads, and at any points where the vision of the operator is restricted. The flagger must always remain in sight of the operator when the crane or locomotive is in motion. The blue flag policy shall be used to mark stationary cars day and night. This policy shall include marking the track in advance of the spotted cars (flag for daytime, light for darkness).

(B) After cars are spotted for loading or unloading, warning flags or signs shall be placed in the center of the track at least 50 feet away from the cars and a derail set to protect workers in or on the car.

(k) Rail car operations and railroad warning devices.

(A) On a dead end spur, a blue signal may be displayed adjacent to the switch opening while cars are being loaded or unloaded. When such warning devices are displayed, the equipment shall not be coupled to or moved.

(B) Equipment which would obscure the blue signal shall not be placed on the track.

(C) Each maintenance crew shall display and remove its own set of blue signals.

(D) A flashing warning light or other device shall be installed near any opening which leads to a passageway crossing railroad tracks adjacent to the building. Such light or device shall be activated prior to any switching or movement of railroad equipment to warn workers of the dangerous condition in the area.

(E) Workers shall not crawl under or pass between coupled rail cars to cross tracks.

(F) An audible whistle, horn, or bell shall be sounded by the locomotive engineer to give adequate warning prior to switching across any road crossing.

(G) When switching railroad equipment in congested areas or across roadways or walkways, “flying switches” shall be prohibited.

(H) All freight car doors shall be inspected before workers open or close them. A safe method shall be used to open or close the door.

(I) Illumination. Artificial illumination shall be provided when loading or unloading is performed after dark, in accordance with American National Standard ANSI/IES-RP-1990, Practice for Industrial Lighting.

(m) Bridge or dock plates.

(A) The construction and use of bridge or dock plates shall conform to requirements of §1910.30(a), Walking-Working Surfaces, in Subdivision D.

(B) The sides of bridge or dock plates shall have an upturn or lip of at least 4 inches covering the area between the edge of the loading dock and edge of car or truck floor whenever the distance exceeds 18 inches to prevent wheeled equipment from running off the sides.

(C) Bridge or dock plates shall have at least 6 inches bearing surface on the loading dock.

(D) Bridge or dock plates intended to be moved by mechanized equipment shall be designed for this purpose or attachments for safe handling shall be used.

(n) Hand tools. Handles of wood hooks shall be locked to the shank to prevent them from rotating.

(o) Removal of pulpwood.

(A) The ends of a woodpile shall be properly sloped and cross-tied into the pile. Upright poles shall not be used at the ends of woodpiles. To knock down wood from the woodpile, mechanical equipment shall be used to permit employees to keep in the clear of loosened wood.

(B) If dynamite is used to loosen the pile, only authorized personnel shall be permitted to handle and discharge the explosive. An electric detonator is preferable for firing; if a fuse is used, it shall be an approved safety fuse with a burning rate of not less than 120 seconds per yard and a minimum length of 3 feet, in accordance with “Safety in the Transportation, Storage, Handling and Use of Explosives”, IME Pamphlet No. 17, March 1987.

(p) Log hauls, slips and carriages.

(A) Controls shall be arranged to operate from a position where the operator will at all times be in the clear of logs, machinery, lines, and rigging.

(B) Controls shall be marked to indicate their function.

(C) An effective method of disengaging the head rig saws from the power unit shall be installed on all head rigs where the power unit is not directly controlled by the sawyer. The saws shall be disengaged from the source of power which shall be locked out before repairs or changes are made.

(D) When needed for protection of personnel, an automatic stop or interlocking device shall be installed on log hauls or slips.

(E) A barricade or other positive stop of adequate strength shall be provided to protect the sawyer from rolling logs.

(F) A guard shall be provided to prevent logs from rolling off the log deck into the well.

(G) The sawyer shall be safeguarded either by his or her location or by use of substantial screens or approved safety glass.

(H) A substantial stop or bumper shall be installed at each end of the carriage run.

(I) Canting gear or other equipment shall not be allowed to hang over the log deck in such a manner as to endanger employees.

(J) Canting gear controls shall be marked to indicate their function.

(K) The sawyer shall be primarily responsible for the safety of the carriage crew and off-bearers. He or she shall exercise due care in the operation of the carriage and log turning devices.

(L) A control device shall be provided so that the sawyer may stop the head rig section of the mill without leaving his or her stand.

(M) The feed control lever of friction or belt-driven carriage feed works shall be designed to operate away from the saws or carriage track.

(N) Feed works and log turning control levers shall be so arranged that they may be secured when not in use and shall be adequately guarded against accidental activation.

(O) Carriages upon which persons are required to work shall be solidly decked over and the employees properly protected.

(P) Substantial sweeps shall be installed in front of each carriage wheel. Such sweeps shall extend to within 1/4 inch of the rails.

(Q) Where power-operated log turners are used, carriage knees shall be provided with goosenecks or other substantial means of protecting the carriage crew.

(q) Belt conveyors.

(A) The sides of the conveyor shall be constructed so that the pulpwood will not fall off.

(B) Where conveyors cross passageways or roadways, a horizontal platform shall be provided under the conveyor extending out from the sides of the conveyor a distance equal to 1 1/2 times the length of the wood handled. The platform shall extend the width of the road plus 2 feet on each side and shall be kept free of wood and rubbish. The edges of the platform shall be provided with toeboards or other protection to prevent wood from falling, in accordance with American National Standard A10.18-1983.

(C) All conveyors for pulpwood shall have the in-running nips between chain and sprockets guarded; also, turning drums shall be guarded.

(D) Every belt conveyor shall have an emergency stop cable extending the length of the conveyor so that it may be stopped from any location along the line, or conveniently located stop buttons within 10 feet of each work station, in accordance with American National Standard ANSI/ASME B20.1-1993.

(r) Signs. Where conveyors cross walkways or roadways in the yards, signs reading “Danger — Overhead Conveyor” or an equivalent warning shall be erected, in accordance with American National Standard for Safety Color Code, ANSI Z535.1-1991 or ANSI Z535.2-2011.

(5) Handling and Storage of Raw Materials Other Than Pulpwood or Pulp Chips.

(a) Personal protective equipment.

(A) Whenever possible, all dust, fumes, and gases incident to handling materials shall be controlled at the source, in accordance with OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z. Where control at the source is not possible, respirators with goggles or protective masks shall be provided, and employees shall wear them when handling alum, clay, soda ash, lime, bleach powder, sulfur, chlorine, and similar materials, and when opening rag bales.

(B) When handling liquid acid or alkali, workers shall be provided with approved eye and face protection and protective clothing, in accordance with Subdivision I, Personal Protective Equipment.

(b) Clearance.

(A) When materials are being piled inside a building and upon platforms, an aisle clearance at least 3 feet greater than the widest truck in use shall be provided.

(B) Baled paper and rags stored inside a building shall not be piled closer than 18 inches to walls, partitions, or sprinkler heads.

(c) Piling and unpling pulp.

(A) Piles of wet lap pulp (unless palletized) shall be stepped back one-half the width of the sheet for each 8 feet of pile height. Sheets of pulp shall be interlapped to make the pile secure. Pulp shall not be piled over pipelines to jeopardize pipes, or so as to cause overloading of floors, or to within 18 inches below sprinkler heads.

(B) Piles of pulp shall not be undermined when being unplied.

(C) Floor capacities shall be clearly marked on all floors.

(d) Chocking rolls.

(A) Where rolls are pyramided two or more high, chocks shall be installed between each roll on the floor and at every row. Where pulp and paper rolls are stored on smooth floors in processing areas, rubber chocks with wooden core shall be used.

(B) When rolls are decked two or more high, the bottom rolls shall be chocked on each side to prevent shifting in either direction.

(6) Preparing Pulpwood.

(a) Gang and slasher saws. A guard shall be provided in front of all gang and slasher saws to protect workers from wood thrown by saws. A guard shall be placed over tail sprockets.

(b) Slasher tables. Saws shall be stopped and power switches shall be locked out and tagged whenever it is necessary for any person to be on the slasher table.

(c) Slasher drive belts, pulleys, and shafts. All belts, pulleys, and shafts shall be guarded in accordance with American National Standard ANSI/ASME B15.1-1992.

(d) Runway to the jack ladder. The runway from the pond or unloading dock to the table shall be protected with standard handrails and toeboards. Inclined portions shall have cleats or equivalent non-slip surfacing, in accordance with Subdivision D, Walking-Working Surfaces. Protective equipment shall be provided for persons working over water.

(e) Guards below table. Where not protected by the frame of the machine, the underside of the slasher saws shall be enclosed with guards.

(f) Conveyors. The requirements of section (4)(q) of this rule shall apply.

(g) Circular saws (not slasher saws). Saws shall be provided with standard guards, in accordance with American National Standard ANSI O1.1-1992.

(h) Fixed chain saws, circular cut-off saws, drag and swing saws.

(A) Saws shall be so arranged that they will not project into any passageway when in an idle or working position. When existing conditions do not leave clear passage the saws shall be fenced off in order to make it impossible for anyone to walk into them.

(B) Drag saws and fixed chain saws shall be equipped with a device that will safely lock them in an "UP" position.

(C) All persons shall be in the clear before starting operations of a drag, chain, or swing saw.

(D) Log decks shall be equipped with a device to hold the material stable while being cut.

(i) Barker feed. Each barker shall be equipped with a feed and turnover device which will make it unnecessary for the operator to hold a bolt or log by hand during the barking operation. Eye, ear, and head protection shall be provided for the operator, in accordance with section (3)(c) of this rule.

(j) Guards. A guard shall be installed around barkers to confine flying particles, in accordance with ANSI/ASME B15.1-1992.

(k) Stops. All control devices shall be locked out and tagged when knives are being changed.

(l) Speed governor. Water wheels, when directly connected to barker disks or grinders, shall be provided with speed governors, if operated with gate wide open.

(m) Continuous barking drums.

(A) When platforms or floors allow access to the sides of the drums, a standard railing shall be constructed around the drums. When two or more drums are arranged side by side, proper walkways with standard handrails shall be provided between each set, in accordance with section (3)(d) of this rule.

(B) Sprockets and chains, gears, and trunnions shall have standard guards, in accordance with section (3)(a) of this rule.

(C) Whenever it becomes necessary for a worker to go within a drum, the driving mechanism shall be locked and tagged, at the main disconnect switch, in accordance with section (3)(e) of this rule.

(D) This subsection (m) also applies to barking drums employed in the yard.

(n) Intermittent barking drums. In addition to motor switch, clutch, belt shifter, or other power disconnecting device, intermittent barking drums shall be equipped with a device which may be locked to prevent the drum from moving while it is being emptied or filled.

(o) Hydraulic barkers.

(A) Hydraulic barkers shall be enclosed with strong baffles at the inlet and the outlet. The operator shall be protected by at least five-ply laminated glass.

(B) The high pressure hoses of hydraulic barkers shall be secured in such a manner that the hose connection ends will be restrained if a hose connection fails.

(p) Splitter block. The block upon or against which the wood is rested shall have a corrugated surface or other means provided that the wood will not slip. Wood to be split, and also the splitting block, shall be free of ice, snow, or chips. The operator shall be provided with eye and foot protection. A clear and unobstructed view shall be maintained between equipment and workers around the block and the workers' help area.

(q) Power control. Power for the operation of the splitter shall be controlled by a clutch or equivalent device.

(r) Knot cleaners. The operators of knot cleaners of the wood-pecker type shall wear eye protection equipment.

(s) Chipper spout. The feed system to the chipper spout shall be arranged in such a way that the operator does not stand in a direct line with the chipper spout. All chipper spouts shall be enclosed to a height of at least 42 inches from the floor or operator's platform. When other protection is not sufficient, the operator shall be protected from falling into the chipper by the use of a safety belt and lanyard. Ear protection equipment shall be worn by the operator and others in the immediate area if there is any possibility that the noise level may be harmful (see §1910.95, Occupational Noise Exposure, in Subdivision G).

(t) Feeding material/clearing jams in machines. Appropriate safety belts and lanyards and face protection shall be used by employees who manually feed material or clear jams in machines unless other provisions are made which will protect the employees.

(u) Carriers for knives. Carriers shall be provided and used for transportation of knives.

(7) Rag and Old Paper Preparation.

(a) Ripping and trimming tools.

(A) Hand knives and scissors shall have blunt points, shall be fastened to the table with chain or thong, and shall not be carried on the person but placed safely in racks or sheaths when not in use.

(B) Hand knives and sharpening steels shall be provided with guards at the junction of the handle and the blade. Utility knives with blade exposure of 2-1/2 inches or less are exempted from this requirement.

(b) Shredders, cutters, and dusters.

(A) Rotating heads or cylinders shall be completely enclosed except for an opening at the feed side sufficient to permit only the entry of stock. The enclosure shall extend over the top of the feed rolls. It shall be constructed either of solid material or with mesh or openings not exceeding 1/2-inch and substantial enough to contain flying particles and prevent accidental contact with moving parts. The enclosure shall be bolted or locked into place.

(B) A smooth-pivoted idler roll resting on the stock or feed table shall be provided in front of feed rolls except when arrangements prevent the operator from standing closer than 36 inches to any part of the feed rolls.

(C) Any manually fed cutter, shredder, or duster shall be provided with an idler roll as per section (7)(b)(B) of this rule or the operator shall use special hand-feeding tools.

(D) Hoods of cutters, shredders, and dusters shall have exhaust ventilation, in accordance with §1910.94, Ventilation, in Subdivision G.

(c) Blowers.

(A) Blowers used for transporting rags shall be provided with feed hoppers having outer edges located not less than 48 inches from the fan.

(B) The arrangement of the blower discharge outlets and work areas shall be such as to prevent material from falling on workers.

(d) Conveyors. Conveyors and conveyor drive belts and pulleys shall be fully enclosed or, if open and within 7 feet of the floor, shall be constructed and guarded in accordance with section (4)(q) of this rule, and Subdivision N, Material Handling and Storage.

(e) Guarding requirements.

(A) Traveling sections of conveyors and other equipment with wheels which run on rails or guides shall be guarded by sweep guards, installed in front of the traveling wheels in all areas where workers may be exposed to contact. Sweep guards shall have not greater than 1/4 inch clearance above the rail or guide.



(B) When using mechanical equipment to elevate the front end of the chip containers for dumping into a hopper, the shear area between the floor and the elevated section shall be safeguarded.

(f) Dust. Measures for the control of dust shall be provided, in accordance with American National Standard ANSI/NFPA 91-1992 and Subdivision I, Personal Protective Equipment.

(g) Rag cookers.

(A) When cleaning, inspection, or other work requires that persons enter rag cookers, all steam and water valves, or other control devices, shall be locked and tagged in the closed or "off" position. Blank flanging of pipelines is acceptable in place of closed and locked valves.

(B) When cleaning, inspection, or other work requires that persons must enter the cooker, one person shall be stationed outside in a position to observe and assist in case of emergency, in accordance with section (3)(f) of this rule.

(C) Rag cookers shall be provided with safety valves in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels – 1992.

(8) Chemical Processes of Making Pulp.

(a) Industrial kiln guns and ammunition. Management shall develop written instructions, including safety procedures, for storing and operating industrial kiln guns and ammunition. All persons working with this equipment shall be instructed in these procedures and shall follow them.

(b) Sulfur burners.

(A) Sulfur-burner houses shall be safely and adequately ventilated, and every precaution shall be taken to guard against dust explosion hazards and fires, in accordance with American National Standard Z9.2-1979 (R1991), and NFPA 655-1993.

(B) Nonsparking tools and equipment shall be used in handling dry sulfur.

(C) Sulfur storage bins shall be kept free of sulfur dust accumulation, in accordance with American National Standard ANSI Z9.2-1979 (R1991).

(D) Electric equipment shall be of the explosion-proof type, in accordance with the requirements of Subdivision S, Electrical.

(E) Sulfur-melting equipment shall not be located in the burner room.

(c) Protection for employees (acid plants).

(A) Gas masks, fitted with canisters containing absorbents for the particular acids, gases, or mists involved, shall be provided for employees of the acid department.

(B) Supplied air respirators shall be strategically located for emergency and rescue use.

(C) During inspection, repairs, or maintenance of acid towers, the worker shall be provided with eye protection, a supplied air respirator, a safety belt, and an attached lifeline. The line shall be extended to an attendant stationed outside the tower opening.

(d) Acid tower structure. Outside elevators shall be inspected daily during winter months when ice materially affects safety. Elevators, runways, stairs, etc., for the acid tower shall be inspected monthly for defects that may occur because of exposure to acid or corrosive gases.

(e) Tanks (acid). Entering acid tanks shall be in accordance with 437-002-0146 Confined Spaces, in Subdivision J.

(f) Clothing. Where lime slaking takes place, employees shall be provided with rubber boots, rubber gloves, protective aprons, and eye protection. A deluge shower and eye fountain shall be provided to flush the skin and eyes to counteract lime or acid burns.

(g) Lead burning. When lead burning is being done within tanks, fresh air shall be forced into the tanks so that fresh air will reach the face of the worker first and the direction of the current will never be from the source of the fumes toward the face of the workers. Supplied air respirators (constant-flow type) shall be provided.

**NOTE:** (For specifics refer to Subdivision Q, Welding, Cutting and Brazing; and §1910.1025, Lead, in Subdivision Z.)

(h) Hoops for acid storage tanks. Hoops of tanks shall be made of rods rather than flat strips and shall be safely maintained by scheduled inspections.

(i) Quicklime stoppages. Water shall not be used to unplug quicklime stops or plugs in pipes or confined spaces.

(j) Digester building exits. At least one unobstructed exit at each end of the room shall be provided on each floor of a digester building.

(k) Digester building escape respirators. Escape respirators shall be available for escape purposes only. These respirators shall meet the requirements of §1910.134 in Subdivision I, including the requirement to be inspected at frequent intervals, not to exceed one month.

(l) Elevators.

(A) Elevators shall be constructed in accordance with American National Standard A17.1-1990.

(B) Elevators shall be equipped with escape respirators for the maximum number of passengers.

(C) Elevators shall be equipped with an alarm system to advise of failure.

(m) Blowoff valves and piping.

(A) The blowoff valve of a digester shall be arranged so as to be operated from another room, remote from safety valves.

(B) All fasteners used to secure digester piping shall conform to ANSI/ASME B31.1-1992.

(C) Digester blow valves shall be pinned or locked in closed position throughout the entire cooking period. This rule applies only to manually operated valves in batch digestors.

(n) Blow lines.

(A) When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank being inspected or repaired shall be locked and tagged out, or the line shall be disconnected and blocked off.

(B) Test holes in piping systems. Test holes in blow lines of piping systems shall not be covered with insulation or other materials.

(o) Inspection and repair of tanks. All piping leading to tanks shall be blanked off or valved and locked in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(p) Blow pits and blow tanks.

(A) Blow-pit openings shall be preferably on the side of the pit instead of on top. When located on top, openings shall be as small as possible and shall be provided with railings, in accordance with Subdivision D, Walking-Working Surfaces.

(B) Entrance into blow pits must be done in accordance with 437-002-0146, Subdivision J.

(C) A signaling device shall be installed in the digester and blow-pit rooms and chip bins to be operated as a warning before and while digesters are being blown.

(D) Blow-pit hoops shall be maintained in a safe condition.

(q) Blowing batch digester.

(A) Blowoff valves shall be opened slowly.

(B) After the digester has started to be blown, the blowoff valve shall be left open, and the hand plate shall not be removed until the digester cook signals the blowpit person that the blow is completed. Whenever it becomes necessary to remove the hand plate to clear stock, operators shall wear eye protection equipment and protective clothing to guard against burns from hot stock.

(C) Means shall be provided whereby the digester cook shall signal the person in the chip bin before starting to load the digester.

(r) Inspecting and repairing digester.

(A) Valves controlling lines leading into a digester shall be locked out and tagged in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(B) Sources of energy associated with a digester shall be isolated in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(C) Entry into the digester shall be in accordance with 437-002-0146 Confined Spaces, in Subdivision J.

(D) The concentration of lead in the air shall not exceed the limits specified in §1910.1025, Lead, Subdivision Z.

(E) All employees entering digesters for inspection or repair work shall be provided with protective headgear.

(F) Eye protection and dust respirators shall be provided to workers while the old brick lining is being removed, in accordance with Subdivision I, Personal Protective Equipment.

(G) Sanitary facilities shall be provided as specified in §1910.141, Sanitation, in Subdivision J.

(s) Pressure tanks-accumulators (acid).

(A) Safety regulations governing inspection and repairing of pressure tanks-accumulators (acid) shall be the same as those specified in section (8)(t) of this rule.

(B) The pressure tanks-accumulators shall be inspected twice annually and more frequently if required by the manufacturer or engineer's recommendations. (Refer to Boiler and Pressure Vessel Safety Laws of the State Building Codes Division, Department of Consumer and Business Services.)

(t) Pressure vessels (safety devices).

(A) Each unfired pressure vessel shall have a pressure relieving device or devices installed and operated in accordance with ASME Boiler and Pressure Vessel Code, Section VIII (Unfired Pressure Vessels – 1992). In the case of batch digesters with safety pressure relieving devices installed directly to the pressure vessel, means shall be devised to verify regularly that the safety devices have not become plugged or corroded to the point of being inoperative.

(B) All safety devices shall conform to Paragraph U-2 in the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels – 1992.

(u) Miscellaneous. Insofar as the processes of the sulfate and soda operations are similar to those of the sulfite processes, sections (8)(a) through (t) of this rule shall apply.

(A) Quick operating showers, bubblers, etc., shall be available for emergency use in case of caustic soda burns.

(B) Rotary tenders, smelter operators, and those cleaning smelt spouts shall be provided with eye protection equipment (fitted with lenses that filter out the harmful rays emanating from the light source) when actively engaged in their duties, in accordance with §1910.132, in Subdivision I.

(C) Piping, valves and fittings between the digester, blowpit, and blow tanks shall be in accordance with ANSI/ASME B31.1-1992. These shall be inspected at least semi-annually to determine the degree of deterioration and repaired or replaced when necessary, in accordance with American National Standards ANSI/ASME B31.1-1992.

(v) Welding. Welding on blow tanks, accumulator tanks, or any other vessels where turpentine vapor or other combustible vapor could gather shall be done only after the vessel has been completely purged of fumes. Fresh air shall be supplied workers inside of vessels.

**NOTE:** See Subdivision Q, Welding, Cutting and Brazing, for additional welding requirements.

(w) Turpentine systems and storage tanks. Nonsparking tools and ground hose shall be used when pumping out the tank. The tank shall be surrounded by a berm or moat.

(x) Recovery furnace area.

(A) An audible warning system shall be installed in kraft and soda base sulfite recovery furnace areas and shall be activated whenever an emergency exists.

(B) All personnel working in recovery furnace areas shall be instructed on procedures to be followed when emergency warning systems are activated.

(C) Emergency warning systems in the recovery furnace areas shall be kept in proper working condition and shall be tested or checked weekly.

(D) Workers shall stand to the side while opening a furnace or boiler firebox door.

(E) Smelt-dissolving tanks shall be covered and the cover kept closed, except when samples are being taken.

(F) Smelt tanks shall be provided with vent stacks and explosion doors, in accordance with American National Standard ANSI/UL 641-1985.

(G) An emergency shutdown procedure as currently recommended by the boiler manufacturer shall be implemented and used when an emergency shutdown is required. Both normal and emergency shutdown procedures shall be posted.

(H) Recovery furnaces and power boilers are to be constructed, maintained, and serviced as required by the State Building Codes Division of the Department of Consumer and Business Services.

(I) Open pipes shall not be used as punch bars if the use would create a hazard.

(J) Furnace room. Exhaust ventilation shall be provided where niter cake is fed into a rotary furnace and shall be so designed and maintained as to keep the concentration of hydrogen sulfide gas below the limits listed in OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z.

(9) Bleaching.

(a) Bleaching containers. Bleaching containers, such as cells, towers (bleaching engines), etc., except the Bellmer type, shall be completely covered on the top, with the exception of one small opening large enough to allow filling but too small to admit a person. Platforms leading from one engine to another shall have standard guardrails, in accordance with Subdivision D, Walking-Working Surfaces.

(b) Bleach plant alarm system. An audible alarm system shall be installed and it shall be activated whenever a serious leak or break develops in the bleach plant area which creates a health or fire hazard.

(c) Bleach mixing rooms.

(A) Areas where dry bleach powder is mixed shall be provided with adequate exhaust ventilation, located at the floor level, in accordance with ANSI/UL 641-1985.

(B) Respiratory protection shall be provided for emergency use, in accordance with American National Standards ANSI/NFPA 1404-1989, and Z88.2-1980. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(C) For emergency and rescue work, self-contained air masks or supplied air equipment shall be provided in accordance with American National Standards Z88.2-1980. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(d) Liquid chlorine.

(A) Tanks of liquid chlorine shall be stored in an adequately ventilated unoccupied room, where their possible leakage cannot affect workers.

(B) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

(C) For emergency and rescue work, independent self-contained breathing apparatus or supplied air equipment shall be provided.

(D) At least two exits, remote from each other, shall be provided for all rooms in which chlorine is stored.

(E) Spur tracks upon which tank cars containing chlorine and caustic are spotted and connected to pipelines shall be protected by means of a derail in front of the cars.

(F) All chlorine, caustic, and acid lines shall be marked for positive identification, in accordance with American National Standard A13.1-1981 (R 1985).

(e) Handling chlorine dioxide.

(A) Chlorine dioxide generating and storage facilities shall be placed in areas which are adequately ventilated and are easily kept clean of wood, paper, pulp, etc., to avoid contamination which might cause a reaction. This can be accomplished by placing these facilities in a separate room or in a designated outside space.

(B) Safety showers and/or jump tanks and eyewash fountains shall be provided for persons working around sodium chlorate and the other hazardous chemicals involved in this process.

(C) Water hoses for flushing spills shall be adequate in size and located where needed.

(D) The generating area shall have signs in accordance with Subdivision J, General Environmental Controls, warning of the hazard and restricting entrance to authorized personnel only.

(E) Facilities handling sodium chlorate and chlorine dioxide shall be declared "No Smoking" areas and shall have signs posted accordingly.

(F) All equipment involved in the chlorine dioxide process where pressure may be generated shall be provided with adequate pressure relief devices.

(G) Respiratory protective equipment approved for use in exposures to chlorine and chlorine dioxide gases shall be provided.

(H) Management shall be responsible for developing written instructions including safety procedures for operating and maintaining the generator and associated equipment. All personnel working on this equipment shall be thoroughly trained in these procedures and shall follow them.

(I) Only authorized personnel shall be allowed in close proximity to the chlorine dioxide generating equipment.

(J) When reasonably possible, the sample station should be located on the outside of the generating room. Goggles must be worn when taking samples.

(K) Welding or burning shall not be performed on the generator system while it is operating. Immediately before maintenance can be performed on the inside of any of this equipment, it shall be thoroughly flushed with water and purged of hazardous gases.

(L) Chlorine and chlorine dioxide gas shall be carried away from the work place and breathing area by an exhaust system. The gas shall be rendered neutral or harmless before being discharged into the atmosphere. The requirements of American National Standard Z9.2-1979 (R1991) shall apply to this subdivision.

(f) Handling sodium chlorate.

(A) Workers handling and working with sodium chlorate shall be thoroughly trained in precautions to be used in handling and special work habits.

(B) Workers exposed to direct contact with sodium chlorate shall wear appropriate personal protective equipment.

(C) Facilities for storage and handling of sodium chlorate shall be constructed so as to eliminate possible contact of dry or evaporated sodium chlorate with wood or other material which could cause a fire or explosion.

(D) Chlorine gas shall be carried away from the work place and breathing area by an exhaust system. The gas shall be rendered neutral or harmless before being discharged into the atmosphere. The requirements of American National Standard Z9.2-1979 (R1991) shall apply to this subdivision.

(E) Sodium chlorate facilities shall be constructed with a minimum of packing glands, stuffing boxes, etc.

(g) Bagged or drummed chemicals. Bagged or drummed chemicals require efficient handling to prevent damage and spillage. Certain oxidizing chemicals used in bleaching pulp and also in some sanitizing work require added precautions for safety in storage and handling. In storage, these chemicals shall be isolated from combustible materials and other chemicals with which they will react such as acids. They shall also be kept dry, clean and uncontaminated.

(10) Mechanical Pulp Process.

(a) Pulp grinders.

(A) Water wheels directly connected to pulp grinders shall be provided with speed governors limiting the peripheral speed of the grinder to that recommended by the manufacturer.

(B) Doors of pocket grinders shall be arranged so as to keep them from closing accidentally.

(b) Butting saws. Hood guards shall be provided on butting saws, in accordance with American National Standard ANSI O1.1-1992.

(c) Floors and platforms. The requirements of section (3)(d) of this rule shall apply.

(d) Personal protection. Persons exposed to falling material shall wear eye, head, foot, and shin protection equipment, in accordance with Subdivision I, Personal Protective Equipment.

(11) Stock Preparation.

(a) Pulp shredders.

(A) Cutting heads shall be completely enclosed except for an opening at the feed side sufficient to permit only entry of stock. The enclosure shall be bolted or locked in place. The enclosure shall be of solid material or with mesh or other openings not exceeding 1/2-inch.

(B) Either a slanting feed table with its outer edge not less than 36 inches from the cutting head or an automatic feeding device shall be provided.

(C) Repairs for cleaning of blockage shall be done only when the shredder is shutdown and control devices locked.

(D) All power-driven mechanisms shall be guarded in accordance with section (3)(a) of this rule.

(b) Pulp conveyors. Pulp conveyors and conveyor drive belts and pulleys shall be fully enclosed, or if open and within 7 feet of the floor, shall be constructed and guarded in accordance with Subdivision N, Material Handling and Storage, and Subdivision O, Machinery and Machine Guarding.

(c) Floors, steps, and platforms. The requirements of section (3)(d) of this rule shall apply.

(d) Beaters.

(A) Beater rolls shall be provided with covers.

(B) Guardrails 42 inches high shall be provided around beaters where tub tops are less than 42 inches from the floor, in accordance with section (3)(d) of this rule and Subdivision D, Walking-Working Surfaces.

(C) When cleaning, inspecting, or other work requires that persons enter the beaters, all control devices shall be locked and tagged out, in accordance with §1910.147, Lockout, in Subdivision J.

(D) When beaters are fed from the floor above, the chute opening, if less than 42 inches from the floor, shall be provided with a complete rail or other enclosure. Openings for manual feeding shall be sufficient only for entry of stock and shall be provided with at least two permanently secured crossrails, in accordance with Subdivision D, Walking-Working Surfaces.

(E) Floors around beaters shall be provided with sufficient drainage to remove wastes.

(e) Pulpers.

(A) All pulpers having the top or any other opening of the vessel less than 42 inches from the floor or work platform shall have such openings guarded by railed or other enclosures. For manual charging, openings shall be sufficient only to permit the entry of stock and shall be provided with at least two permanently secured crossrails, in accordance with §1910.23, Guarding Floor and Wall Openings and Holes, in Subdivision D.

(B) When cleaning, inspecting or other work requires persons to enter the pulpers it shall be in accordance with 437-002-0146 Confined Spaces, in Subdivision J. All power mechanisms shall be guarded as required in Subdivision O, Machinery and Machine Guarding.

(C) Cleaning or inspecting pulpers or other work, including work above the pulper in a dangerous position, shall be in accordance with §1910.147, Lockout, in Subdivision J.

(D) All power mechanisms shall be guarded in accordance with Subdivision O, Machinery and Machine Guarding.

(f) Pulping devices. Emergency stop controls shall be provided at the feed point when pulping devices are fed manually from the floor above.

(g) Guillotine-type roll splitters. Rolls shall be centered and in a horizontal position directly below the guillotine-type blade while being split. No part of the body shall be under the guillotine-type blade.

(h) Stock chests and tanks.

(A) All control devices shall be locked when persons enter stock chests, in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(B) All power mechanisms shall be guarded in accordance with Subdivision O, Machinery and Machine Guarding.

(C) When cleaning, inspecting, or other work requires that persons enter stock chests, they shall be provided with a low-voltage extension light.

(12) Machine Room.

(a) Controls and safety devices.

(A) Electrically or manually operated power disconnecting devices for all power-operated equipment shall be provided within easy reach of the operator while in his or her normal operating position. If necessary for safety of the operation, the machine shall be so equipped that retarding or braking action can be applied at the time of or after the source of power is deactivated.

(B) Pulp and paper machines shall be equipped with stopping devices. The devices shall be located where they can be used readily to stop the machines or sections of the machine. Power disconnect devices and retarding or braking controls provided for in sec-



tion (12)(a)(A) of this rule are required for the safe operation of a pulp and paper machine.

(C) Brakes, back stops, antirunaway devices, overload releases, and other safety devices shall be inspected and tested frequently to insure that all are operative and maintained in good repair.

(D) An audible alarm shall be sounded prior to starting up any section of a pulp or paper machine. Sufficient time shall be allowed between activation of the alarm system and start-up of the equipment to allow any persons to clear the hazardous area.

(E) In starting up a dryer section, dryers shall be preheated and steam for heating the drums shall be introduced slowly, while the drums are revolving.

(F) Employees shall not attempt to remove a broken carrier rope from a dryer while the section is running at operating speed.

(G) Employees shall not feed a stack with any hand-held device which is capable of going through the nip.

(H) Employees shall stop dryer to remove a wrap except in cases where it can be safely removed by using air or other safe means.

(I) Special protective gloves shall be provided and shall be worn by employees when filing or handling sharp-edged doctor blades.

(J) Employees shall not place their hands between the sharp edge of an unloaded doctor blade and the roll while cleaning the doctor blade.

(K) The crane operator shall ascertain that reels are properly seated at winder stand or at reel arms before he or she disengages the hooks.

(L) Shaftless winders shall be provided with a barrier guard of sufficient strength and size to confine the rolls in the event they become dislodged while running.

(M) Employees shall keep clear of hazardous areas around the lowerator, especially all lowerator openings in a floor and where roll is being discharged.

(N) If a powered roll ejector is used it should be interlocked to prevent accidental actuation until the receiving platform or roll lowering table is in position to receive the roll.

(O) Provision shall be made to hold the rider roll when in a raised position unless counter-balancing eliminates the hazard.

(b) Drives.

(A) All drives, pulleys, couplings, and shafts on equipment requiring service while operating shall have standard guards in accordance with section (3)(a) of this rule.

(B) All drives shall be provided with lockout devices at the power switch which interrupts the flow of current to the unit.

(C) All ends of rotating shafts including dryer drum shafts shall be completely guarded.

(D) All accessible disengaged doctor blades should be covered.

(E) All exposed shafts shall be guarded. Crossovers shall be provided.

(F) Oil cups and grease fittings shall be placed in a safe area remote from nip and heat hazards.

(c) Protective equipment. Face shields, aprons and rubber gloves shall be provided for workers handling acids in accordance with sections (3)(c) and (5)(a) of this rule.

(d) Walkways. Steps and footwalks along the fourdrinier and press section shall have nonslip surfacing and be complete with standard handrails, when practical, in accordance with §1910.23, in Subdivision D, Walking-Working Surfaces.

(e) Steps. Steps of uniform rise and tread with nonslip surfaces shall be provided at each press in accordance with Subdivision D, Walking-Working Surfaces.

(f) Plank walkways. A removable plank shall be provided along each press, with standard guardrails installed. The planks shall have nonslip surfaces in accordance with Subdivision D, Walking-Working Surfaces.

(g) Dryer lubrication. If a gear bearing must be oiled while the machine is in operation, an automatic oiling device to protect the oiler shall be provided, or oil cups and grease fittings shall be placed along the walkways out of reach of hot pipes and dryer gears.

(h) Levers. All levers carrying weights shall be constructed so that weights will not slip or fall off.

(i) First dryer. Either a permanent guardrail or apron guard or both shall be installed in front of the first dryer in each section in accordance with Subdivision O, Machinery and Machine Guarding.

(j) Steam and hot-water pipes. All exposed steam and hot-water pipes within 7 feet of the floor or working platform or within 15 inches measured horizontally from stairways, ramps, or fixed ladders shall be covered with an insulating material, or guarded in such manner as to prevent contact.

(k) Dryer gears. Dryer gears shall be guarded except where the oilers' walkway is removed out of reach of the gears' nips and spokes and hot pipes in accordance with Subdivision O, Machinery and Machine Guarding.

(l) Broke hole.

(A) A guardrail shall be provided at broke holes in accordance with Subdivision D, Walking-Working Surfaces.

(B) Where pulpers are located directly below the broke hole on a paper machine and where the broke hole opening is large enough to permit a worker to fall through, any employee pushing broke down the hole shall wear a safety belt and lanyard. The lanyard shall be fastened in such a manner that it is impossible for the person to fall into the pulper.

(C) An alarm bell or a flashing light shall be actuated before dropping material through the broke hole.

(m) Feeder belt. A feeder belt or other effective device shall be provided for starting paper through the calender stack.

(n) Steps. Steps or ladders of uniform rise and tread with nonslip surfaces shall be provided at each calender stack. Handrails and hand grips shall be provided at each calender stack in accordance with Subdivision D, Walking-Working Surfaces.

(o) Grounding. All calender stacks and spreader bars shall be grounded in accordance with Subdivision S, Electrical, as protection against shock induced by static electricity.

(p) Sole plates. All exposed sole plates between dryers, calenders, reels, and rewinders shall have a nonskid surface.

(q) Nip points. The hazard of the nip points on all calender rolls shall be eliminated or minimized by means of an effective barrier device, or by feeding the paper into the rolls by means of a rope carrier, air jets, or hand feeding devices.

(r) Scrapers. Alloy steel scrapers with pullthrough blades approximately 3 by 5 inches in size shall be used to remove "scabs" from calender rolls.

(s) Illumination. Permanent lighting shall be installed in all areas where employees are required to make machine adjustments and sheet transfers in accordance with American National Standard ANSI/IES RP-1990.

(t) Control panels. All control panel handles and buttons shall be protected from accidental contact.

(u) Lifting reels.

(A) The reels shall stop rotating before being lifted from bearings.

(B) All lifting equipment (clamps, cables, and slings) shall be maintained in a safe condition and inspected regularly.

(C) Reel shafts with square block ends shall be guarded.

(v) Feeder belts. Feeder belts, carrier ropes, air carriage, or other equally effective means shall be provided for starting paper into the nip or drum-type reels.

(w) In-running nip.

(A) Where the nipping points of all drum winders and rewinders is on the operator's side, it shall be guarded by barrier guards interlocked with the drive mechanism.

(B) A zero speed switch or locking device shall be installed to prevent the guard from being raised, lowered, or removed while the roll is turning.

(x) Core collars. Set screws for securing core collars to winding and unwinding shafts shall not protrude above the face of the collar. All edges of the collar with which an operator's hand comes in contact shall be beveled to remove all sharp corners.

(y) Slitter knives. Slitter knives shall be guarded so as to prevent accidental contact. Carriers shall be provided and used for transportation of slitter knives.

(z) Winder shaft. The winder shall have a guide rail to align the shaft for easy entrance into the opened rewind shaft bearing housings.

(aa) Handling rolls, winders and core shafts. Mechanical handling equipment shall be provided for handling rolls, winder shafts, and core shafts that are too heavy for safe manual handling based on the NIOSH Work Practice Guide for Manual Lifting – 1981.

(bb) Winder area. A nonskid surface shall be provided in front of the winder to prevent accidental slipping.

(cc) Radiation. Special standards regarding the use of radiation equipment shall be posted and followed as required by §1910.1096, Ionizing Radiation, in Subdivision Z.

**(13) Finishing Room.**

(a) Cleaning rolls. Rolls shall be cleaned only on the outrunning side.

(b) Emergency stops. Electrically or manually operated quick power disconnecting devices, interlocked with braking action, shall be provided on all operating sides of the machine within easy reach of all employees. These devices shall be tested by making use of them when stopping the machine.

(c) Core collars. The requirements of section (12)(x) of this rule, and the requirements in Subdivision O, Machinery and Machine Guarding, shall apply.

(d) Elevators. These shall be in accordance with American National Standard ANSI/ASME A17.1-1990.

(e) Control panels. The requirements of section (12)(t) of this rule shall apply.

**(f) Guillotine-type cutters.**

(A) Each guillotine-type cutter shall be equipped with a control which requires the operator and helper, if any, to use both hands to engage the clutch when operated from within reach of blade.

(B) Each guillotine-type cutter shall be equipped with a non-repeat device.

(C) Carriers shall be provided and used for transportation of guillotine-type cutter knives.

**(g) Rotary cutter.**

(A) On single-knife machines a guard shall be provided at a point of contact to the knife.

(B) On duplex cutters the protection required for single-knife machines shall be provided for the first knife, and a hood shall be provided for the second knife.

(C) Safe access shall be provided to the knives of a rotary cutter by means of catwalks with nonslip surfaces, railings, and toeboards in accordance with Subdivision D, Walking-Working Surfaces.

(D) A guard shall be provided for the spreader or squeeze roll at the nip side on sheet cutters.

(E) Electrically or manually operated quick power disconnecting devices with adequate braking action shall be provided on all operating sides of the machine within easy reach of all operators.

**(F) The outside slitters shall be guarded.**

**(h) Platers.**

(A) A guard shall be arranged across the face of the rolls to serve as a warning that the operator's hand is approaching the danger zone.

(B) A quick power disconnecting device shall be installed on each machine within easy reach of the operator.

**(i) Finishing room rewinders.**

(A) The nipping points of all drum winders and rewinders located on the operator's side shall be guarded by either automatic or manually operated barrier guards of sufficient height to protect fully anyone working around them. The barrier guard shall be interlocked with the drive mechanism to prevent operating above jog speed without the guard in place. A zero speed switch should be installed to prevent the guard from being raised while the roll is turning.

(B) A nonskid surface shall be provided in front of the rewinder to prevent an employee from slipping in accordance with section (3)(d) of this rule.

(C) Mechanical lifting devices shall be provided for placing and removing rolls from the machine.

(j) Control panels. The requirements of section (12)(t) of this rule shall apply.

(k) Roll-type embosser. The nipping point located on the operator's side shall be guarded by either automatic or manually operated barrier guards interlocked with the drive.

**(l) Converting machines.**

(A) When using a crane or hoist to place rolls into a backstand and the operator cannot see both ends of the backstand, appropriate means will be implemented to eliminate hazards involved. The operator shall ascertain that rolls are properly seated at winder stand or at roll arms before he or she disengages the hooks.

(B) All power closing sections shall be equipped with an audible warning system which will be activated when closing the sections.

(C) Slitters, slotters, and scorers not in use shall be properly stored so as not to create a hazard.

(D) Mechanical handling equipment shall be provided for handling rolls or devices that are too heavy for safe manual handling based on the NIOSH Work Practice Guide for Manual Lifting – 1981.

(E) Shear and pinch points. Shear and pinch points at the feed mechanism shall be color-coded orange and/or identified by signs in accordance with Subdivision J, General Environmental Controls.

**(m) Sorting and counting tables.**

(A) Tables shall be smooth and free from splinters, with edges and corners rounded.

(B) Paddles shall be smooth and free from splinters.

(n) Roll splitters. The nip point and cutter knife shall be guarded by either automatic or manually operated barrier guards.

**(o) Corrugators.**

(A) Rails of rail-mounted devices such as roll stands shall be flush with the adjacent floor, and so installed to provide a minimum of 18 inches clearance between the equipment and walls or other fixed objects.

(B) All corrugating and pressure rolls shall be equipped with appropriately designed and installed threading guides so as to prevent contact with the infeed nip of the various rolls by the operator.

(C) Lower elevating conveyor belt rolls on the single facer bridge shall have a minimum nip clearance of 4 inches.

(D) Web shears at the discharge end of the double facer shall be equipped with barrier-type guards.

(E) Slitter stations not in use shall be disconnected from the power source by positive means.

(F) The adhesive system shall be so designed and installed as to keep fumes and airborne dust within limits in accordance with OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z.

**(14) Materials Handling.**

(a) Hand trucks. No person shall be permitted to ride on a powered hand truck unless it is so designed by the manufacturer. A limit switch shall be on operating handle – 30° each way from a 45° angle up and down.

(b) Power trucks. Power trucks shall comply with Subdivision N, Material Handling and Storage. Adequate ventilation shall be provided and the trucks properly maintained, so that dangerous concentrations of carbon monoxide cannot be generated, especially in warehouses or other isolated areas of a plant.

(c) Carton-stitching machine. The carton-stitching machine shall be guarded to prevent the operator from coming in contact with the stitching head.

(d) Banding of skids, cartons, cases, etc. Banders and helpers shall wear eye protection equipment in accordance with section (3)(c) of this rule.

**(e) Unloading cars or trucks.**

(A) Loading and unloading materials. Platforms with ladders or stairways shall be installed or alternative methods made available when needed so that workers may safely gain access to and perform work on the top of rail cars or trucks when ladders are not installed on such equipment.

(B) Where steel bands or wires are used in boxcars or trucks, all loaders and helpers shall wear eye protection in accordance with Subdivision I, Personal Protective Equipment.

(C) The construction and use of bridge or dock plates shall conform to the requirements of American National Standard B56.1-1988.

(D) Flag signals, derails, or other protective devices shall be used to protect workers during switching operations. The blue flag policy shall be invoked according to section (4)(j) of this rule.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-1994, f. & cert. ef. 11-4-94; OSHA 3-1998, f. & cert. ef. 7-7-98;

OSHA 2-2001, f. & cert. ef. 2-5-01; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 7-2013, f. & cert. ef. 12-12-13

### **437-002-0313**

#### **Additional Oregon Rules for Sawmills**

(1) Application. This section includes safety requirements for sawmill operations including, but not limited to, log and lumber handling, sawing, trimming, and planing; waste disposal; operation of dry kilns; finishing; shipping; storage; yard and equipment; and for power tools and affiliated equipment used in connection with such operations.

(2) Conveyors. Feed conveyors for chippers, hogs, burners, and other dangerous machines shall be fully guarded to prevent workers from falling into the conveyor. Where a part of the guard must be omitted to permit workers to feed the conveyor, they shall be provided with and shall wear a safety belt and lanyard tied off to a life line.

(3) Unloading Equipment:

(a) The tile and overarm grapple of all hydraulically operated log handling machines shall be equipped with a means for preventing the release of the tilt and/or grapple devices in case of a failure in the hydraulic system;

(b) A-frames and similar log unloading devices shall be guyed and braced to provide stability and prevent tipping.

**NOTE:** Pond Boats. Small pond boats which are not designed to transport more than one person are exempt from the life-ring requirement.

(4) Transfers and Tracks:

(a) Guardrails and handrails shall be installed on and about transfers and transfer tracks wherever necessary for the safety of workers;

(b) Cars shall not be moved while workers are in the bight of tow lines;

(c) Tracks shall be clear of obstructions before rail cars are moved.

(5) Green Chains and Sorting Tables:

(a) Green chains and similar equipment shall be provided with a stopping device which is readily accessible to one or more persons working on the chain;

(b) A toe board not less than six inches in height of nominal two by six inch material shall be installed on the vertical face of all green chain and sorting tables;

(c) The flow of lumber or other materials on sorting tables and green chain shall be regulated as evenly as possible.

(d) Rollers or other devices shall be provided for removing heavy material from the chain or table.

(e) Workers shall not cross over operating conveyors, rolls, or belts unless elevated cross-overs are provided for this purpose.

(6) Transfer Rolls:

(a) Power driven rolls shall be operated in a manner to prevent end collisions;

(b) The space between live rolls, for a distance of at least one roll on either side of cross-overs or walkways, shall be filled in with substantial material;

(c) Live roll sprockets, chains, gears and drive shafts shall be guarded wherever exposed to contact;

(d) Live rolls shall be replaced when a hole (sufficient to impair its strength, or catch clothing) has developed.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-1993, f. 6-8-93, cert. ef. 8-1-93; OSHA 3-1996, f. & cert. ef. 7-22-96

### **437-002-0314**

#### **Veneer and Plywood Machinery**

**NOTE:** 1910.265(c) and (d) also apply to Veneer and Plywood Machinery. See OAR 437-002-0313(1).

(1) Purpose. The purpose of this rule is to prescribe minimum requirements for veneer and plywood operations.

(2) Veneer Lathe:

(a) A mechanical lock shall be provided to prevent the back-up roll from closing until activated by the operator;

(b) A guard or positive interlock and necessary hydraulic or air controls shall be provided to prevent forward movement of the charger, if such movement may be hazardous;

(c) Positive means shall be provided to hold the head in the open position while servicing the knife;

(d) A protective device for the knife edge shall be provided for use when transporting the knife;

(e) Where there is a hazard from "exploding" logs, both lathe operator's and charger operator's stations shall be protected against flying slabs and chips;

(f) Means shall be provided in the knife grinding area to drain cleaning or cooling liquids from the work station;

(g) Knives and other cutting equipment shall be stored in planned storage areas;

(h) The area under the elevating ramp (tipple) from the lathe to the stock trays shall be guarded to prevent entrance while the lathe is in operation.

(3) Veneer Slicer. The veneer slicer knife shall be guarded at front and rear to prevent accidental contact with the knife edge.

(4) Veneer Clipper:

(a) Clippers shall be provided with a guard on both in-feed and out-feed sides to protect the employees;

(b) Each operating treadle for veneer clippers shall be covered by a device which is adequate to avoid accidental activation or tripping.

(5) Veneer Cutter:

(a) Power-driven guillotine veneer cutters (except continuous feed trimmers) shall be equipped with the following:

(A) A starting device which requires the simultaneous action of both hands to start the cutting motion, and at least one hand on a control during the complete stroke of the knife; or

(B) An automatic device which will remove the hands of the operator from the danger zone at every descent of the blade used in conjunction with one-hand starting devices which require two distinct movements of the device to start the cutting motion.

(b) All power-driven veneer cutters shall be so designed that the knife positively returns to the starting position after each complete cycle of the knife;

(c) Where two or more workers are employed at the same time on the same power-driven guillotine veneer cutter equipped with two-hand control, the device shall be so arranged that each worker shall be required to use both hands simultaneously on the controls to start the cutting motion, and at least one hand on a control to complete the cut.

**NOTE:** The controls should be of a type that cannot be defeated by tying down one of them.

(d) In addition to the brake or other stopping mechanism, a non-repeat device shall be provided which will prevent the machine from operating in the event of a mechanical failure;

(e) Where no other device serves as protection, a guard running the length of the knife shall be installed on the in-feed side;

(f) A protective device, such as side shields, shall be provided on the out-feed side;

(g) A protective device for the knife edge shall be provided for use when transporting the knife;

(h) Positive means of opening and locking the control circuit and supporting the mechanism in the "up" position shall be provided for use during knife changes;

(i) When the hold-down clamp and knife are in their uppermost positions, the knife edge shall not extend below the lower edge of the hold-down clamp.

(6) Tray System:

(a) The tray system shall be equipped with controls at each end so that the system cannot be operated unless both switches are in the "on" position;



(b) A walkway shall be constructed the entire length of the trays so that the top tray can be reached in the event of a “plug-up” without having to climb up the frames.

**(7) Veneer Dryer:**

(a) A standard stairway and catwalk across the tray lines shall be constructed to provide safe access in the event of a “plug-up” and dryer feed controls, including a positive lock out, shall be provided at the feeders’ station;

(b) Steam lines outside the dryer which may be contacted by personnel shall be insulated or enclosed;

(c) Suitable gloves and aprons shall be worn by workers off-bearing veneer from chain or table;

(d) Where a band saw is used to trim panel core, it shall be guarded in accordance with 1910.265(e)(2)(ii)(c).

**(8) Hot Press or Veneer Press:**

(a) Steam lines which may be contacted by personnel shall be insulated or enclosed;

(b) Standard guard rails shall be provided on the ends of loading and unloading elevators or hoist platforms or both. (See OAR chapter 437, division 2/D, 1910.23(e)(1));

(c) Hot-press hoists shall be provided with a braking and holding mechanism which will operate automatically in case of failure of lifting chains or cables;

(d) On a hot-press equipped with an automatic charger, an electrically interlocked gate or chain shall be provided across the opening between the charger and the press which, when opened, will open the circuit to prevent the charger from moving;

(e) Where two workers are employed in loading the press, closing control devices shall be provided within reach of each work station, so interconnected as to require activation of both controls to operate the press, and a quick opening device shall be provided at each station on the press hoist platform;

(f) Floor openings on non-working sides of press and pit shall be protected with standard guard rails. (See OAR chapter 437, division 2/D 1910.23(a)(8));

(g) Means shall be provided for safe access into the press pit, the top of the press, and each side, and a positive means of blocking up the hoist platform.

**(9) Stripsaw and Patch Machine:**

(a) An anti-kickback device and hood guard shall be provided on the veneer stripsaw;

(b) The patch machine shall be guarded to prevent operator’s hands from entering the punch area, and the foot treadle shall be guarded.

**(10) Veneer Chipper and Hogs:**

(a) The top feed roll shall be equipped with a guard and a shield or panel shall be provided on the operator’s side to prevent operator from reaching the roll;

(b) Chippers and hogs shall be guarded in accordance with 1910.265(c)(20)(i) through (c)(21)(ii)(c). Feed conveyors to chippers and hogs shall be guarded in accordance with OAR 437-002-0313(1).

**(11) Electronic Laminating Press and Edge Gluer:**

(a) Interlocked gates shall be provided on in-feed and out-feed sides of batch-type presses which are interlocked to prevent power being activated until gates are completely lowered;

(b) Shielding shall be provided to protect against harmful exposure to radiation that may be emitted;

(c) All screens and filters shall be equipped with interlocks which will shut off all power in the event they are removed.

**(12) Edge Gluer Jointer:**

(a) A barrier shall be installed at the end of the travel of the head to prevent flying splinters from injuring personnel;

(b) A gate shall be installed to prevent access between the edge gluer jointer and the grasshopper, so arranged that when the gate is opened, all electricity, air, and hydraulic lines will be shut off and the cylinders bled;

(c) A device should be positioned across the front of the in-feed nip point, so arranged as to shut off the equipment if contact is made with it.

(13) Wide Belt Sanders. Wide-belt sanders shall be equipped with non-kickback fingers and a barrier at the in-feed side adjusted to prevent more than one panel entering the sander at a time.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-1993, f. 6-8-93, cert. ef. 8-1-93

**437-002-0315**

**Shake and Shingle Machinery**

**NOTE:** 1910.265(c) and (d) also apply to Shake and Shingle Machinery. (See OAR 437-002-0313(1).)

(1) Purpose. The purpose of this rule is to prescribe minimum requirements for shake and shingle manufacturing operations.

(2) Definitions applicable to shake and shingle machinery:

(a) “Blocks” shall mean those sections of a log cut in various lengths;

(b) “Blocks” and “Bolts” may be considered to be synonymous;

(c) “Clipper Saw” shall mean a circular saw used to trim manufactured shingles;

(d) “Groover” shall mean a cylinder-type knife (knives) similar to a planer knife (knives), used to cut grooves into the face surface on the side edge of shakes or shingles;

(f) “Johnson Bar” shall mean a shaft used to control the feed of the carriage;

(g) “Knee Bolter Circular Saw” shall mean a stationary circular saw used to trim and debark blocks (the blocks are manually maneuvered onto a carriage and fed into a saw);

(h) “Log Haul” shall mean a power conveyor used to move logs into position to cut into blocks;

(i) “Packers” shall mean employees who pack the manufactured shakes or shingles into bundles;

(j) “Pantograph Power Splitter” shall mean a hydraulically operated wedge, manually positioned into place, used to split blocks;

(k) “Power Saw Splitter” shall mean a stationary circular saw used to split (saw) blocks, (the blocks are manually maneuvered onto a carriage and fed into the saw);

(l) “Set Works” shall mean a component of the shingle machine, located on the machine frame, used to control the thickness of each shingle being manufactured;

(m) “Shake Machine” shall mean a band saw used to cut shake blanks into manufactured shakes;

(n) “Shake Splitter” shall mean a stationary hydraulically operated wedge, manually controlled, used to split shake blocks into shake blanks;

(o) “Shim Saw” shall mean a circular saw used to re-cut manufactured shingles into narrow widths;

(p) “Shingle Machine” shall mean a machine used to manufacture shingles; composed of a feed, set works, and carriage system, all functioning in relation to a circular saw;

(q) “Shingle Saw” shall mean a circular saw used to cut shingles from blocks;

(r) “Spault” shall mean the first and last section(s) of block as it is cut into shingles;

(s) “Spault Catcher” shall mean a device located on the shingle machine next to the solid feed rolls, used to hold the last section of each block being cut (called a spault), in place;

(t) “Track or Swing Cut Off Saw” shall mean a circular saw used to cut blocks from a log.

**(3) Track or Swing Cut Off Circular Saw:**

(a) A power operated track or swing cut off circular saw shall have controls so arranged that operators are not positioned directly in front of the saw while making a cut;

(b) All track or swing cut off circular saws shall be completely encased or guarded when the saw is in the retract position, except for that portion of the guard that must be left open for the operation of the saw;

(c) Track or swing cut off circular saw guards shall be constructed of sheet metal not less than 1/8-inch thick, or a wood guard of not less than nominal two-inch thick wood material, or equivalent;

**NOTE:** Hinged or removable doors or gates will be permitted where necessary to permit adjusting and oiling.

(d) The driving belts on the track or swing cut off circular saw shall be guarded;

(e) A safety catch shall be provided to prevent the track cut off saw from leaving the track.

(4) Overhead Deck Splitter — Pantograph:

(a) Pantograph splitters shall have a shroud incorporated on the upper pressure plate to eliminate the possibility of the splitter moving from the operating are. This shroud shall be constructed of substantial design with a minimum width of three inches and a minimum thickness of 3/8-inch;

(b) Mechanically operated overhead splitters shall have handles moving opposite the stroke of the piston;

(c) When the leading edge of the pantograph splitter is completely extended, the minimum clearance from the deck to the splitting edge shall be two inches.

(5) Power Splitter Saw. Power splitters shall have spreaders behind the saw to prevent materials from squeezing the saw or being thrown back on the operator. The top of the saw shall be completely covered.

(6) Knee Bolter Circular Saw:

(a) A safety catch shall be provided to prevent the bolter carriage from leaving the track;

(b) Bolter saws shall be provided with a canopy guard of sheet metal not less than 1/8-inch thick, or cast iron guard not less than 3/16-inch thick or a wood guard of not less than nominal two-inch thick wood material or equivalent;

(A) Such guard shall completely enclose the rear portion of the saw;

(B) It shall be so arranged and adjusted as to cover the front of the saw; not to exceed 20 inches from the top of the carriage to the bottom of the guard on 16-inch and 18-inch blocks and 26 inches on 24-inch blocks, or the material being cut.

(c) Knee bolter saws shall be provided with wipers of belting or other suitable material. These wipers shall be installed on both sides of the saw in such a manner as to deflect knots, chips, slivers, etc., that are carried by the saw;

(d) A positive device shall be provided and used to manually lock and hold the feed table of knee bolter saws in the neutral position when not in use;

(e) That portion of all saws which is below and behind the saw table shall be effectively guarded by the exhaust hood of other device;

(f) Hinged or removable doors or gates will be permitted where necessary to permit adjusting and oiling.

(7) Shake Machinery:

(a) Shake Splitters:

(A) A positive de-energizing device shall be provided within ready reach of each shake splitter operator;

(B) Each shake splitter shall be provided with an adjustable stroke limiter to eliminate the splitting blade from striking the table;

(C) All splitters shall have a minimum clearance of four inches, from the splitting edge to the table surface, when the splitter is in the extended position;

(D) All splitter tables shall have a friction surface to reduce kick out of the material being split;

(E) Shake splitters shall not be operated at a speed that would cause chunks to be thrown in such a manner as to create a hazard to the operator;

(F) The use of foot pedal (treadle) mechanisms shall be provided with protection to prevent unintended operation from falling or moving objects or by accidental stepping onto the pedal:

(i) The pedal shall have a nonslip surface;

(ii) The pedal return spring shall be of the compression type, operating on a rod or guided within a hole or tube, or designed to prevent interleaving of spring coils in event of breakage;

(iii) If pedal counterweights are provided, the path of the travel of the weight shall be enclosed.

(b) Shake Saw Guards:

(A) Every shake band saw shall be equipped with a saw guard on both sides of the blade down to the top side of the guide;

(B) The outside saw guard shall extend a minimum of 3-1/2 inches below the bottom edge of the saw guide;

(C) The maximum opening between the saw guide and table rolls shall be 15 inches.

(c) Shake Saw Band Wheel Guards:

(A) The band wheels on all shake band saws shall be completely encased or guarded on both sides;

(B) The guards shall be constructed of not less than No. 14 U.S. gauge metal or material equal in strength;

(C) The metal doors, on such guards, shall have a wood liner of a minimum thickness of 1/2 inch.

(d) Shake Saw Band Wheels Speed and Maintenance:

(A) No band wheel shall be run at a peripheral speed in excess of that recommended by the manufacturer;

(B) Each band wheel shall be carefully inspected at least once a month by management;

(C) Any band wheel in which a crack is found in the rim or in a spoke shall be immediately discontinued from service until properly repaired;

(D) Each band saw frame shall be provided with a tension indicator.

(8) Upright Shingle Machine:

(a) Upright Shingle Saw Guards:

(A) Every shingle machine carriage shall be equipped with a hand guard which:

(i) Projects at least one inch beyond the cutting edge of the saw;

(ii) Shall be located not more than 1/2-inch from the side of the saw blade.

(B) Shingle saw guards shall have a rim guard so designed and installed as to prevent chips and knots from flying from the saws. Such guards shall cover the edge of the saw to at least the depth of the teeth, except such part of the cutting edge as is essential for sawing the material;

(C) Saws, arbors, and couplings shall be guarded;

(D) Every part of a clipper saw, except that part which is exposed to trim shingles, shall be enclosed by a guard, so designed and installed to prevent contact with the clipper saw. An additional guard shall be installed not more than four inches above the clipper board and not more than 1/2-inch from the vertical plane of the saw;

(E) The underside of clipper saw boards shall be equipped with a substantial finger guard to effectively protect the operator's fingers. The guard shall be a minimum of five inches long and 1-1/4 inches deep.

(b) Upright Carriage Guards:

(A) Automatic revolving cam set works and rocker arms, on machine frame, shall be guarded where exposed to contact;

(B) The spauld catchers shall be not less than 3/16-inch thick and kept sharp at all times. Missing teeth shall be replaced.

(c) Carriage Feed Works:

(A) The pinion gear, bull wheel and Johnson bar operating the same carriage, shall be guarded where exposed to contact;

(B) Each shingle machine clutch treadle shall be arranged so that it is necessary to manually operate the treadle to start the machine:

(i) The use of devices to permit the automatic starting of the machine when the jaw treadle is released is prohibited;

(ii) The carriage shall have a brake to hold it in a neutral position.

(C) Carriage speed shall not exceed 34 strokes per minute.

(9) Related Shake and Shingle Sawing Machinery:

(a) Flat or Taper Saw. A wood or metal guard or its equivalent shall be secured to the sliding table at the side nearest the sawyer to protect him/her from contact with the cutting edge of the saw when a block is not in the cut;

(b) Hip and Ridge Saws:

(A) The hip and ridge saws shall be guarded with a hood-like device;

(B) This guard shall cover that portion of the saw not needed to cut the material, located above the cutting table;

(C) The remaining portion of the saw, located below the table, shall be effectively guarded.

**NOTE:** The above subsection is applicable to both shake and shingle hip and ridge saws.

(c) Shim Stock Saws. The top ends and sides of the shim stock saws shall be guarded;

(d) Shake or Shingle Groover. The top ends and sides of the groover, to include the press rolls, shall be guarded;

(e) Mechanical Power Transmission Machinery. All mechanical power transmission equipment shall be guarded in accordance with the requirements of Division 2, Subdivision O, Machinery and Machine Guarding.

(10) Circular Saws, Speeds, and Repairs:

(a) Maximum Allowable Speeds:

(A) No circular saw shall be run at a speed in excess of that recommended by the manufacturer;

(B) The manufacturer's recommended speed shall be etched or otherwise permanently marked on the blade, and that speed shall not be exceeded.

(b) Repairs and Reconditioning:

(A) Shingle saws when reduced in size to less than 40 inches in diameter shall be discontinued from service as shingle saws on upright or vertical machines;

(B) Shingle saws may be reconditioned for use as clipper saws, provided the surfaces are reground and the proper balance attained;

(C) Shingle saws may be used to no less than 36 inches on flat or taper saw machines.

(c) Operations:

(A) Workers shall not leave shingle machines unattended while the carriage is in motion:

(i) Chunks may be placed horizontally one tier high on top of shingle blocks;

(ii) Shingle blocks shall be piled in a stable manner, not more than 72 inches high, within the immediate working area of the shingle sawyer or the area shall be barricaded.

(B) Provisions shall be made to prevent blocks from falling into the packing area;

(C) On each machine operated by electric motors, positive means shall be provided for rendering such controls or devices inoperative while repairs or adjustments are being made to the machines they control;

(D) Workers shall not stand on top of blocks while in the process of splitting such blocks into bolts.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 7-1993, f. 6-8-93, cert. ef. 8-1-93

**NOTE:** Federal rule 1910.268(a)(1), was NOT adopted by OR-OSHA.

Instead, OAR 437-002-0316(1) applies:

#### **437-002-0316**

##### **Oregon Rules for Telecommunications**

(1) Application. This division sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations, and processes performed at telephone, TV cable, and other signaling equipment centers and installations, and at field installations used to transmit or control communication or other signals of the service supplier and may be located outdoors or in building spaces used for such field installations. "Center" work includes the installation, operation, maintenance, rearrangement, and removal of communications equipment and other associated equipment in telecommunications switching centers. "Field" work includes the installation, operation, maintenance, rearrangement, and removal of conductors and other equipment used for signal or communication service, and of their supporting or containing structures, overhead or underground on public or private rights of way, including buildings or other structures.

(2) Employee protection in public work areas.

(a) Before work is begun in the vicinity of vehicular or pedestrian traffic which may endanger employees, pedestrian and traffic control devices shall be provided for all operations on or adjacent to streets, alleys and walkways. The traffic control shall conform to the American National Standards Institute (ANSI) D6.1e-1989 Manual on Uniform Traffic Control Devices for Streets and Highways and the Oregon Department of Transportation's Short Term Work Zones Manual. Where further protection is needed, barriers shall be utilized.

At night, warning lights shall be prominently displayed, and excavated areas shall be enclosed with protective barricades.

(b) Once a work area has been established, it shall be the employer's responsibility to provide adequate supervision and periodic surveillance to assure that the above requirements are met.

(3) Before work is performed on overhead lines, underground (such as in manholes), or in buried plants, the employer or designated representative shall make a complete evaluation of the work location to determine if a hazard exists or could be created in the performance of the work. The employer or designated representative shall determine from this evaluation, a safe procedure for performing the work and those means or methods shall be implemented before the work proceeds. Examples of possible worksite conditions that may be hazardous include, but are not limited to:

(a) Manhole, pit, and pole locations, street intersections, alleys and isolated areas;

(b) Weather and road conditions (such as ice, snow, and rain);

(c) Visibility;

(d) Time of day;

(e) Manhole atmosphere conditions (such as explosive gases, exhaust fumes, and oxygen deficiency);

(f) Jointly occupied manholes with foreign utilities; and

(g) Power hazards.

(4) All equipment, tools, and safety devices shall be installed, used and operated in accordance with the manufacturer's recommendations and operating instructions and its listing or labeling.

(5) Rubber insulating equipment.

(a) Rubber insulating equipment designed for the voltage levels to be encountered shall be provided and the employer shall ensure that they are used by employees as required by OAR 437, Division 2/R, 1910.268, Telecommunications.

(b) Rubber insulating equipment shall meet the electrical and physical requirements contained in ASTM Standard D-120-87, "Standard Specifications for Rubber Insulating Gloves," and ASTM Standard D 1048-88(a), "Standard Specifications for Rubber Insulating Blankets," with the exception that:

(A) The maximum proof test current for a 14-inch Class I glove shall be no more than 14 mA; and with the further exception that:

(B) Existing 14-inch Class I rubber gloves that meet a maximum proof test current of 16 mA and a minimum breakdown voltage of 17,000 volts (RMS) acquired prior to July 1, 1975 may be used as long as these gloves comply with the retest requirements of paragraph (f)(5) of 1910.268.

(c) Patching rubber goods is prohibited; rubber protective equipment shall not be vulcanized or patched.

(d) Rubber gloves for workers. A pair of approved rubber gloves and bag shall be assigned to each worker when workers are required to work on or be exposed to energized parts.

(6) Equipment.

(a) Ladder hooks. When ladder hooks are engaged the safety straps shall be lashed around the top rung and strand or otherwise secured to the strand.

(b) Chain saw usage.

(A) Chain saws shall be inspected prior to use and kept in good repair at all times. Saws with defective parts shall not be used.

(B) Chain saw engines shall be shut off while being fueled.

(C) Chain saws shall be equipped with an automatic throttle control which will return the engine to idling speed upon release of the throttle.

(D) All employees using chain saws shall wear flexible ballistic nylon pads or other equivalent protection sewn or otherwise fastened to the trousers, which will protect the legs from the thigh to below the knee, except when working from an aerial lift device.

(E) Chain saws shall not be brought into a bucket or work platform of an aerial lift device. Saws shall be carried on the outside of the aerial lift device. Chain saws shall be started and used only outside of the aerial lift device.

(7) Training. The employer shall see that employees who operate derricks and cranes are properly trained as required in OAR 437, Division 2/N, OAR 437-002-0229(2), Crane Operator Training Requirements.



(8) Handling poles near energized power conductors.

(a) Insulating gloves shall be worn when handling the pole with either hands or tools, when there exists a possibility that the pole may contact a power conductor. Where the voltage to the ground of the power conductor exceeds 15kV to ground, Class II gloves (as defined in ASTM D1048-88a) shall be used. For voltages not exceeding 15kV to ground, insulating gloves shall have a breakdown voltage of at least 17kV.

(b) The guard or insulating material used to protect the pole shall meet the appropriate 3 minute proof test voltage requirements contained in ASTM D 1048-88a.

(9) Fiber optic/lightwave transmission.

(a) Only qualified employees shall install, service, maintain or use lightwave test equipment.

(b) Employees shall avoid eye exposure to emissions from unterminated energized optical connectors.

(c) Employees shall not look into vacant regenerator slots with an optical instrument.

(d) Employees should not examine or look into broken, severed, or disconnected fiber optic cables.

(e) Lightwave emissions may only be viewed with an indirect image converting device.

(f) Microscopes, magnifying glasses and eye loupes shall not be used to examine energized fiber optic cables.

(g) Lightguide terminals must be tagged "Do Not Energize" when splicing technicians are restoring a damaged system.

(10) Reserved.

(11) Additional definitions in Oregon.

(a) "Clearance:"

(A) For working on, means the certification by the property authority that a specified line or piece of equipment is deenergized; that the proper precautionary measures have been taken and that the line or equipment is being turned over to the workers.

(B) From hazard, means adequate separation or protection by the use of protective devices to prevent accidental contact by persons or objects on approach to a point of danger.

(b) "Climbing space" — The vertical space reserved along the side of poles or structures to permit ready access for linemen to equipment and conductors located on poles or structures.

(c) "Communication plant" — The conductors and their associated equipment required to provide public or private signals or communicative service.

(d) "Competent or qualified person" — A person who is familiar with the construction of, or operation of, such lines and/or equipment that concerns his or her position and who is fully aware of the hazards connected therewith or one who has passed a journeyman's examination for the particular branch of the trades with which he or she may be connected.

(e) "Emergency" — When an unusual condition exists that endangers life and/or property.

(f) "Foreman or Person-in-charge" — That person directly in charge of workers doing the work regardless of title.

(g) "Grounding" — The act of placing shorts and grounds on conductors and equipment for the purpose of protecting workers from dangerous voltages while working on such lines or equipment.

(h) "Guard or guarded" — Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, platforms, or warning signs or devices which are suitable to remove the possibility of dangerous contact on approach by other persons or objects to a point of danger.

(i) "Manlift equipment" — Such types of portable truck-mounted equipment as mechanical, electric or hydraulic ladders and boom-mounted buckets or cages.

(j) "Protection from hazardous voltage" — The isolation from or deenergizing of equipment to prevent accidental contact by persons or objects on approach to point of danger.

(k) "Protective devices" — Those devices such as rubber gloves, rubber blankets, line hose, rubber hoods or other insulating devices, which are specially designed for the protection of workers.

(l) "Public highway" — Land, road, street, boulevard, and every way or place in the state open as matter of right to public vehicular travel, both inside and outside the limit of cities and towns.

(m) "Sheath" — As applied to sharp tools, a case that effectively covers the tool.

(n) "Voltage communications" — Voltage used for electronic communications equipment to which workers or protective equipment may be subjected.

(A) "High" — Over 600 volts to ground — RMS AC or DC or over 1,000 volts RMS across bare parts.

(B) "Medium high" — 151 to 600 volts to ground — RMS AC or DC or 301 to 1,000 volts RMS AC across any bare parts.

(o) "Voltage electric supply" — The maximum effective line voltage to which the workers or protective equipment may be subjected.

(A) "Low" — Includes voltages from 100 to 600 volts.

(B) "High" — Those voltages in excess of 600 volts.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 11-1993, f. 8-4-93, cert. ef. 10-1-93; OSHA 1-1996, f. & cert. ef. 2-16-96; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 3-1999, f. & cert. ef. 4-30-99

### 437-002-0320

#### Adoption by Reference.

In addition to, and not in lieu of, any other health and safety codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

(1) 29 CFR 1910.301 Introduction; published 8/7/81, FR vol. 46, p. 40185.

Design Safety Standards for Electrical Systems

(2) 29 CFR 1910.302 Electrical utilization systems; published 2/14/07, FR vol. 72, no. 30, p. 7136.

(3) 29 CFR 1910.303 General requirements; published 10/29/08, FR vol. 73, no. 210, p. 64202.

(4) 29 CFR 1910.304 Wiring design and protection; published 10/29/08, FR vol. 73, no. 210, p. 64202.

(5) 29 CFR 1910.305 Wiring methods, components and equipment for general use; published 2/14/07, FR vol. 72, no. 30, p. 7136.

(6) 29 CFR 1910.306 Specific purpose equipment and installations; published 2/14/07, FR vol. 72, no. 30, p. 7136.

(7) 29 CFR 1910.307 Hazardous (classified) locations; published 2/14/07, FR vol. 72, no. 30, p. 7136.

(8) 29 CFR 1910.308 Special systems; published 2/14/07, FR vol. 72, no. 30, p. 7136.

(9) (Reserved for 1910.309–.330)

(10) 29 CFR 1910.331 Scope; published 4/11/14, FR vol. 79, no. 70, p. 20316; 10/5/15, FR vol. 80, no. 192, p. 60033.

(11) 29 CFR 1910.332 Training; published 8/6/90, Federal Register vol. 55, no. 151, pp. 32016-32020.

(12) 29 CFR 1910.333 Selection and use of work practices; published 1/31/94, FR vol. 59, no. 20, pp. 4475-6; amended with OR-OSHA AO 4-2007, filed and effective 8/15/07.

(13) 29 CFR 1910.334 Use of equipment; published 11/1/90, FR vol. 55, no. 212, pp. 46052-46054.

(14) 29 CFR 1910.335 Safeguards for personnel protection; published 8/6/90, Federal Register vol. 55, no. 151, pp. 32016-32020.

(15) (Reserved for 1910.336–.360)

Safety-Related Maintenance Requirements

(16) (Reserved for 1910.361–.380)

Safety Requirements for Special Equipment

(17) (Reserved for 1910.381–.398)

(18) 29 CFR 1910.399 Definitions Applicable to this Subdivision; published 4/11/14, FR vol. 79, no. 70, p. 20316.

(19) Appendices. Appendix A — Reference Documents. These standards are available at the Oregon Occupational Safety and Health Division (OR-OSHA), Department of Consumer and Business Services; and the United States Government Printing Office.

**NOTE:** The rule adopts by reference the federal Electrical Standard.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1991, f. 2-4-91, cert. ef. 4-1-91; OSHA 3-1994, f. & cert. ef. 8-1-94; OSHA 4-2007, f. & cert. ef. 8-15-07; OSHA 3-2009, f. 4-6-09, cert. ef. 4-17-09; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-0340**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

- (1) 29 CFR 1910.401 Scope and application, published 2/17/04, FR vol. 69, p. 7351.
- (2) 29 CFR 1910.402 Definitions, published 2/17/04, FR vol. 69, p. 7351.
- (3) 29 CFR 1910.410 Qualification of dive team, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (4) 29 CFR 1910.420 Safe practices manual, published 4/30/84, FR vol. 49, p. 18295.
- (5) 29 CFR 1910.421 Pre-dive procedures, published 6/7/89, FR vol. 54, p. 24334.
- (6) 29 CFR 1910.422 Procedures during dive, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (7) 29 CFR 1910.423 Post-dive procedures, published 4/30/84, FR vol. 49, p. 18295.
- (8) 29 CFR 1910.424 SCUBA diving, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (9) 29 CFR 1910.425 Surface-supplied air diving, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (10) 29 CFR 1910.426 Mixed-gas diving, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (11) 29 CFR 1910.427 Liveboating, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (12) 29 CFR 1910.430 Equipment, published 9/18/88, FR, vol. 51, p. 33033.
- (13) 29 CFR 1910.440 Recordkeeping requirements, published 12/27/11, FR vol. 76, no. 248, p. 80735.
- (14) 29 CFR 1910.441 Effective date, published 4/3/06, FR vol. 71, no. 63, p. 16669.
- (15) 29 CFR 1910, Appendix A to Subdivision T, Examples of conditions which may restrict or limit exposures to hyperbaric conditions, published 7/22/77, Federal Register, vol. 42, p. 37668.
- (16) 29 CFR 1910, Appendix B to Subdivision T, Guidelines for scientific diving, published 1/9/85, Federal Register, vol. 50, p. 1050.
- (17) 29 CFR 1910, Appendix C to Subdivision T, Alternative Conditions under §1910.401(a)(3) for Recreational Diving Instructors and Diving Guides (Mandatory), published 2/17/04, Federal Register, vol. 69, p. 7351.

**NOTE:** These standards are on file at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-1993, f. 5-3-93, cert. ef. 6-1-93; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 2-2004, f. & cert. ef. 5-20-04; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 1-2012, f. & cert. ef. 4-10-12

#### **437-002-0342**

##### **Additional Oregon Definition**

**"Depth"** The actual depth of the dive measured in feet below the water's surface. For purposes of determining pressure equivalents, these measurements are assumed to be salt water at 0.445 pounds per square inch per foot of depth (0.445 psi/ft depth). Fresh water equals 0.432 psi/ft depth.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-1993, f. 5-3-93, cert. ef. 6-1-93

#### **437-002-0345**

##### **Inland Emergency Aid**

If conducting inland dive operation, the telephone or call numbers of the nearest local sheriff's office shall be included on the "Emergency Aid" list.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-1993, f. 5-3-93, cert. ef. 6-1-93

#### **437-002-0355**

##### **Air Supply Systems (Compressed Gases and Air)**

(1) For purposes of this standard, air supply systems shall include:

- (a) Air supplied directly to a diver;
- (b) Compressed systems used to fill air cylinders (tanks);
- (c) Compressed air cylinders (tanks); and
- (d) Compressed oxygen cylinder;

(e) For additional requirements for compressed gas cylinders, see OAR division 2/I, 1910.134(d), Respiratory Protection; Division 2/H, 1910.101, Compressed Gases; and 30 CFR 11, Respiratory Protective Devices.

(2) Tests for carbon monoxide shall be conducted on the air in air supply systems as follows:

- (a) At least daily for air supplied directly to the diver; and
- (b) At least once for each group or batch of cylinders filled or purchased.

(3) The employer shall insure that the requirements of 1910.430(d) through (i) are met, regardless of where compressed gas cylinder (tanks) are purchased or filled.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-1993, f. 5-3-93, cert. ef. 6-1-93

#### **437-002-0360**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1910, in the Federal Register:

- (1) (Reserved) 29 CFR 1910.1000 Air contaminants.  
**NOTE:** 29 CFR 1910.1000 was repealed on 11/15/93 by OR OSHA. In Oregon, OAR 437-002-0382 applies.
- (2) 29 CFR 1910.1001 Asbestos, published 2/8/13, FR vol. 78, no. 27, p. 9311.
- (3) 29 CFR 1910.1002 Coal tar pitch volatiles, interpretation of term, published 1/21/83, Federal Register, vol. 43, p. 2768.
- (4) 29 CFR 1910.1003 13 Carcinogens, published 3/26/12, FR vol. 77, no. 58, p. 17574.
- (5) 29 CFR 1910.1004 See §1910.1003, 13 Carcinogens.
- (6) Reserved for 29 CFR 1910.1005.
- (7) 29 CFR 1910.1006 See §1910.1003, 13 Carcinogens.
- (8) 29 CFR 1910.1007 See §1910.1003, 13 Carcinogens.
- (9) 29 CFR 1910.1008 See §1910.1003, 13 Carcinogens.
- (10) 29 CFR 1910.1009 See §1910.1003, 13 Carcinogens.
- (11) 29 CFR 1910.1010 See §1910.1003, 13 Carcinogens.
- (12) 29 CFR 1910.1011 See §1910.1003, 13 Carcinogens.
- (13) 29 CFR 1910.1012 See §1910.1003, 13 Carcinogens.
- (14) 29 CFR 1910.1013 See §1910.1003, 13 Carcinogens.
- (15) 29 CFR 1910.1014 See §1910.1003, 13 Carcinogens.
- (16) 29 CFR 1910.1015 See §1910.1003, 13 Carcinogens.
- (17) 29 CFR 1910.1016 See §1910.1003, 13 Carcinogens.
- (18) 29 CFR 1910.1017 Vinyl chloride, published 3/26/12, FR vol. 77, no. 58, p. 17574.
- (19) 29 CFR 1910.1018 Inorganic arsenic, published 3/26/12, FR vol. 77, no. 58, p. 17574.
- (20) 29 CFR 1910.1020 Access to Employee Exposure and Medical Records, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.

6/8/11, Federal Register, vol. 76, no. 110. P. 33590.

**Appendix A** Sample Authorization Letter.

**Appendix B** Availability of NIOSH RTECS.

(21) 29 CFR 1910.1025 Lead, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(22) 29 CFR 1910.1026 Chromium (VI), published 3/26/12, FR vol. 77, no. 58, p. 17574.

(23) 29 CFR 1910.1027 Cadmium, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(24) 29 CFR 1910.1028 Benzene, and Appendices A, B, C, D, and E, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(25) 29 CFR 1910.1029 Coke oven emissions, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(26) 29 CFR 1910.1030 Bloodborne pathogens, published 6/8/11, Federal Register, vol. 76, no. 110. P. 33590.

(27) 29 CFR 1910.1043 Cotton dust, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(28) 29 CFR 1910.1044 1,2 dibromo-3 chloropropane, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(29) 29 CFR 1910.1045 Acrylonitrile, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(30) 29 CFR 1910.1047 Ethylene oxide, published 3/26/12, FR vol. 77, no. 58, p. 17574.

(31) 29 CFR 1910.1048 Formaldehyde, and Appendices A, B, C, D and E, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(32) 29 CFR 1910.1050 Methylene dianiline (MDA), published 3/26/12, FR vol. 77, no. 58, p. 17574.

(33) 29 CFR 1910.1051 1,3-Butadiene, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(34) 29 CFR 1910.1052 Methylene Chloride, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(NOTE: 29 CFR 1910.1101 Asbestos, was repealed by Federal Register, vol. 57, no. 110, issued 6/8/92, p. 24330.)

(35) 29 CFR 1910.1096 Ionizing radiation, published 6/20/96, FR vol. 61, no. 46, p. 31427.

(36) 29 CFR 1910.1200 Hazard communication, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(37) 29 CFR 1910.1201 Retention of DOT Markings, Placards and Labels, published 7/19/94, Federal Register, vol. 59, p. 36700.

(38) 29 CFR 1910.1450 Occupational Exposure to Hazardous Chemicals in Laboratories, published 1/22/13, FR vol. 78, no. 14, p. 4324.

(39) 29 CFR 1910.1499 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9245.

(40) 29 CFR 1910.1500 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9245.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 13-1988, f. 8-2-88 & ef. 8-2-88; APD 14-1988, f. & ef. 9-12-88; APD 18-1988, f. & ef. 11-17-88; APD 4-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 6-1989(Temp), f. 4-20-89, ef. 5-1-89; APD 9-1989, f. & ef. 7-7-89; APD 11-1989, f. 7-14-89, ef. 8-14-89; APD 13-1989, f. & ef. 7-17-89; OSHA 1-1990(Temp), f. & ef. 1-11-90; OSHA 3-1990(Temp), f. & ef. 1-19-90; OSHA 6-1990, f. & ef. 3-2-90; OSHA 7-1990, f. & ef. 3-2-90; OSHA 9-1990, f. 5-8-90, ef. 8-8-90; OSHA 11-1990, f. 6-7-90, ef. 7-1-90; OSHA 13-1990(Temp), f. 6-28-90, ef. 8-1-90; OSHA 14-1990, f. 6-28-90, ef. 8-1-90; OSHA 19-1990, f. & ef. 8-31-90; OSHA 20-1990, f. & ef. 9-18-90; OSHA 21-1990, f. & ef. 9-18-90; OSHA 7-1991, f. & cert. ef. 4-25-91; OSHA 13-1991, f. & cert. ef. 10-10-91; OSHA 15-1991, f. & cert. ef. 12-13-91; OSHA 1-1992, f. & cert. ef. 1-22-92; OSHA 4-1992, f. & cert. ef. 4-16-92; OSHA 5-1992, f. 4-24-92, cert. ef. 7-1-92; OSHA 6-1992, f. & cert. ef. 5-18-92; OSHA 9-1992(Temp), f. & cert. ef. 9-24-92; OSHA 11-1992, f. & cert. ef. 10-9-92; OSHA 12-1992, f. & cert. ef. 10-13-92; OSHA 14-1992, f. & cert. ef. 12-7-92; OSHA 15-1992, f. & cert. ef. 12-30-92; OSHA 1-1993, f. & cert. ef. 1-22-93; OSHA 6-1993(Temp), f. & cert. ef. 5-17-93; OSHA 12-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 17-1993, f. & cert. ef. 11-15-93; OSHA 4-1994, f. & cert. ef. 8-4-94; OSHA 1-1995, f. & cert. ef. 1-19-95; OSHA 4-1995, f. & cert. ef. 3-29-95; OSHA 5-1995, f. & cert. ef. 4-6-95; OSHA 8-1995, f. & cert. ef. 8-25-95; OSHA 4-1996, f. & cert. ef. 9-13-96; OSHA 6-1996, f. & cert. ef. 11-29-96; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 8-1997, f. & cert. ef. 11-14-97; OSHA 1-1998, f. & cert. ef. 2-13-98; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 1-1999, f. & cert. ef. 3-22-99; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 6-2001, f. & cert. ef. 5-15-01; OSHA 10-2001, f. 9-14-01, cert. ef. 10-18-01; OSHA 12-2001, f. & cert. ef. 10-26-01; OSHA 1-2005, f. & cert. ef. 4-12-05; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 10-2006, f. & cert. ef. 11-30-06; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 3-2010, f. 6-10-10, cert. ef. 6-15-10; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 3-2013, f. & cert. ef. 7-18-13; OSHA 4-2013, f. & cert. ef. 7-19-13

### 437-002-0363

#### Oregon Amendment

1910.1028(j)(1)(ii) is amended to read (wording in brackets is deleted): 1910.1028(j)(1)(ii) The employer shall ensure that labels or other appropriate forms of warning are provided for containers of benzene within the workplace. [There is no requirement to label pipes.] The labels shall comply with the requirements of CFR 1910.1200(f) and in addition shall include the following legend:

#### **Danger Contains Benzene Cancer Hazard**

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 13-1988, f. & ef. 8-2-88

### 437-002-0364

#### Oregon Rules for MOCA (4,4'-Methylene Bis (2-chloroaniline))

(1) Application. This rule applies to any areas in which MOCA (4,4'-Methylene bis (2-chloroaniline)) (CAS# 101-14-4) is manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under OAR 437-002-0364(5)(b), (c), and (d).

#### (2) Definitions:

"Absolute filter" is one capable of retaining 99.97 percent of a monodisperse aerosol of 0.3  $\mu$ m particles.

"Administrator" means the Administrator of the Oregon Occupational Safety and Health Division, or any person directed to act for the Administrator.

"Authorized employee" means an employee whose duties require them to be in the regulated area and who has been specifically assigned by the employer.

"Clean change room" means a room where employees put on clean clothing and/or protective equipment in an environment free of MOCA. The clean change room shall be contiguous to and have an entry from a shower room, when the shower room facilities are otherwise required in this rule.

"Closed system" means an operation involving MOCA where containment prevents the release of MOCA into regulated areas, non-regulated areas, or the external environment.

"Decontamination" means the inactivation of MOCA or its safe disposal.

"Disposal" means the safe removal of MOCA from the work environment.

"Emergency" means an unforeseen circumstance or set of circumstances resulting in the release of MOCA which may result in exposure to or contact with MOCA.

"External environment" means any environment external to regulated and non-regulated areas.

"Isolated system" means a fully enclosed structure other than the vessel of containment of MOCA which is impervious to the passage of MOCA and which would prevent the entry of MOCA into regulated areas, non-regulated areas, or the external environment, should leakage or spillage from the vessel of containment occur.

"Laboratory type hood" is a device enclosed on three sides and the top and bottom, designed and maintained so as to draw air inward at an average linear face velocity of 150 feet per minute with a minimum of 125 feet per minute; designed, constructed, and maintained in such a way that an operation involving MOCA within the hood does not require the insertion of any portion of any employee's body other than their hands and arms.

"Non-regulated area" means any area under the control of the employer where entry and exit is neither restricted nor controlled.

"Open-vessel system" means an operation involving MOCA in an open vessel, which is not in an isolated system, a laboratory type hood, nor in any other system affording equivalent protection against the entry of MOCA into regulated areas, non-regulated areas, or the external environment.

"Protective clothing" means clothing designed to protect an employee against contact with or exposure to MOCA.

"Regulated area" means an area where entry and exit is restricted and controlled.

#### (3) Requirements for areas containing MOCA.

(a) A regulated area shall be established by an employer where MOCA is manufactured, processed, used, repackaged, released, handled or stored. All such areas shall be controlled in accordance with the requirements for the following category or categories describing the operation involved:

(A) Isolated systems. Employees working with MOCA within an isolated system, such as a "glove box" shall wash their hands and arms upon completion of the assigned task and before engaging in other activities not associated with the isolated system.

(B) Closed system operation. Within regulated areas where MOCA is stored in sealed containers, or contained in a closed system, including piping systems, with any sample ports or openings closed while MOCA is contained within:

(i) Access shall be restricted to authorized employees only; and

(ii) Employees shall be required to wash hands, forearms, face and neck upon each exit from the regulated areas, close to the point of exit and before engaging in other activities.

(C) Open vessel system operations. Open vessel system operations as defined in OAR 437-002-0364(2) are prohibited.



(D) Transfer from a closed system, charging or discharging point operations, or otherwise opening a closed system. In operations involving "laboratory type hoods," or in locations where MOCA is contained in an otherwise "closed system," but is transferred, charged, or discharged into other normally closed containers, the provisions of this rule shall apply.

(i) Access shall be restricted to authorized employees only.

(ii) Each operation shall be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation. Exhaust air shall not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air shall be introduced in sufficient volume to maintain the correct operation of the local exhaust system.

(iii) Employees shall be provided with, and required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.

(iv) Employees engaged in MOCA handling operations must be provided and required to wear and use respiratory protection, in accordance with OAR 437, Division 2/I, Personal Protective Equipment, 1910.134, Respiratory Protection.

(v) Prior to each exit from a regulated area, employees shall be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under OAR 437-002-0364(5)(b), (c) and (d).

(vi) Employees shall be required to wash hands, forearms, face and neck on each exit from the regulated area, close to the point of exit, and before engaging in other activities.

(vii) Employees shall be required to shower after the last exit of the day.

(viii) Drinking fountains are prohibited in the regulated area.

(E) Maintenance and decontamination activities. In cleanup of leaks or spills, maintenance or repair operations on contaminated systems or equipment, or any operations involving work in an area where direct contact with MOCA could result, each authorized employee entering that area shall:

(i) Be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood in accordance with OAR 437, Division 2/I, Personal Protective Equipment;

(ii) Be decontaminated before removing the protective garments and hood; and

(iii) Be required to shower upon removing the protective garments and hood.

(F) Premixed solutions. Where MOCA is present only in a single solution at a temperature not exceeding 220° F, the establishment of a regulated area is not required; however:

(i) Only authorized employees shall be permitted to handle such materials;

(ii) Each day employees shall be provided with and required to wear a clean change of protective clothing (smocks, coveralls, or long-sleeved shirts and pants), gloves, and other protective garments and equipment necessary to prevent contact with the solution in the process used;

(iii) Employees shall be required to remove and leave protective clothing and equipment when leaving the work area at the end of the work day, or at any time solution is spilled on such clothing or equipment. Used clothing and equipment shall be placed in impervious containers for purposes of decontamination or disposal. The contents of such impervious containers shall be identified, as required under OAR 437-002-0364(5)(b), (c) and (d).

(iv) Employees shall be required to wash hands and face after removing such clothing and equipment and before engaging in other activities;

(v) Employees assigned to work covered by OAR 437-002-0364(3)(a)(F) shall be deemed to be working in regulated areas for

the purposes of OAR 437-002-0364(4)(a); (b)(A), (B); (c)(C), (D), and 437-002-0364(5) through (7).

(vi) Work areas where solution may be spilled shall be:

(I) Covered daily or after any spill with a clean covering; or

(II) Cleaned thoroughly daily and after any spill.

(4) General Regulated Area Requirements:

(a) Emergencies. In an emergency, immediate measures including, but not limited to, the requirements of sections (A), (B), (C), (D), and (E) below shall be implemented:

(A) The potentially affected area shall be evacuated as soon as the emergency has been determined.

(B) Hazardous conditions created by the emergency shall be eliminated and the potentially affected area shall be decontaminated prior to the resumption of normal operations.

(C) Special medical surveillance by a physician shall be instituted within 24 hours, for employees present in the potentially affected area at the time of the emergency. A report of the medical surveillance and any treatment shall be included in the incident report, in accordance with OAR 437-002-0364(6)(b).

(D) Where an employee has a known contact with MOCA, such employee shall be required to shower as soon as possible, unless contraindicated by physical injuries.

(E) An incident report on the emergency shall be reported as provided in OAR 437-002-0364(6)(b).

(F) Emergency deluge showers and eyewash fountains supplied with running potable water shall be located near, within sight of, and on the same level with locations where a direct exposure to MOCA would be most likely as a result of equipment failure, or improper work practice.

(b) Hygiene Facilities and Practices.

(A) Storage or consumption of food, storage or use of containers of beverages, storage or application of cosmetics, smoking, storage of smoking materials, tobacco products or other products for chewing, or the chewing of such products, are prohibited in regulated areas.

(B) Where employees are required by OAR 437-002-0364 to wash, washing facilities shall be provided in accordance with OAR 437, Division 2/J, 1910.141, Sanitation.

(C) Where employees are required by OAR 437-002-0364 to shower, shower facilities shall be provided in accordance with OAR 437, Division 2/J, 1910.141 Sanitation.

(D) Where employees wear protective clothing and equipment clean change rooms shall be provided in accordance with OAR 437, Division 2/J, 1910.141, Sanitation, for the number of such employees required to change clothes.

(E) Where toilets are in regulated areas, such toilets shall be in a separate room.

(c) Contamination Control.

(A) Regulated areas, except for outdoor systems, shall be maintained under pressure negative with respect to non-regulated areas. Local exhaust ventilation may be used to satisfy this requirement. Clean make-up air in equal volume shall replace air removed.

(B) Any equipment, materials, or other item taken into or removed from a regulated area shall be done so in a manner that does not cause contamination in non-regulated areas or the external environment.

(C) Decontamination procedures shall be established and implemented to remove MOCA from the surfaces of materials, equipment, and the decontamination facility.

(D) Dry sweeping and dry mopping is prohibited.

(5) Signs, Information and Training.

(a) Signs.

(A) Entrances to regulated areas shall be posted with signs bearing the legend:

DANGER  
MOCA  
(4,4'-METHYLENE BIS (2-CHLOROANILINE))  
MAY CAUSE CANCER  
AUTHORIZED PERSONNEL ONLY

(B) Entrances to regulated areas containing operations covered in OAR 437-002-0364 (3)(a)(E), shall be posted with signs bearing the legend:

DANGER  
MOCA  
(4,4'-METHYLENE BIS (2-CHLOROANILINE))  
MAY CAUSE CANCER  
WEAR RESPIRATORY PROTECTION AND  
PROTECTIVE CLOTHING IN THIS AREA  
AUTHORIZED PERSONNEL ONLY

(C) Appropriate signs and instructions shall be posted at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

(b) Container Contents Identification.

(A) Provide impervious containers as required under OAR 437-002-0364(3)(a)(D)(v).

(i) Ensure only authorized employees have access to and handle containers.

(ii) Containers must display the following warning:

DANGER  
CONTENTS CONTAMINATED with MOCA  
(4,4'-METHYLENE BIS (2-CHLOROANILINE))  
MAY CAUSE CANCER

(B) Label all primary and secondary containers of MOCA in accordance with 1910.1200.

(c) Lettering.

(A) Lettering on signs and instructions required by OAR 437-002-0364(5)(a)[ and (b)] shall be a minimum letter height of 2 inches.

(B) Labels on containers required under OAR 437-002-0364(5)(b)(A)(ii) shall not be less than 1/2 the size of the largest lettering on the package, and not less than 8 point type in any instance; provided that no such required lettering need be more than 1 inch in height.

(d) Prohibited Statements. No statement shall appear on or near any required sign, label, or instruction which contradicts or detracts from the effect of any required warning, information or instruction.

(e) Training and Indoctrination.

(A) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:

(i) The nature of the carcinogenic hazards of MOCA including local and systemic toxicity;

(ii) The specific nature of the operation involving MOCA which could result in exposure;

(iii) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;

(iv) The purpose for and application of decontamination practices and purposes;

(v) The purpose for and significance of emergency practices and procedures;

(vi) The employee's specific role in emergency procedures;

(vii) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of MOCA;

(viii) The purpose for and application of specific first aid procedures and practices; and

(ix) A review of OAR 437-002-0364 at the employee's first training and indoctrination program and annually thereafter.

(B) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

(C) All materials relating to the program shall be provided upon request to authorized representatives of the Administrator.

(6) Reports.

(a) Reserved.

(b) Incidents. Incidents which result in the release of MOCA into any area where employees may be potentially exposed shall be reported in accordance with this rule.

(A) A report of the occurrence of the incident and the facts obtainable at that time, including a report of any medical treatment of affected employees, shall be made within 24 hours to the Administrator.

(B) A written report shall be filed with the Administrator within 15 calendar days thereafter, and shall include:

(i) A description of the area involved, and the extent of known and possible employee exposure and area contamination; and

(ii) A report of any medical treatment of affected employees, and any medical surveillance program implemented; and

(iii) An analysis of the circumstances of the incident, and measures taken or to be taken, with specific completion dates, to avoid further similar releases.

(7) Medical Surveillance. At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

(a) Examinations:

(A) Before an employee is assigned to enter a regulated area, a pre-assignment physical examination by a physician shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

(B) Authorized employees shall be provided periodic physical examinations, not less often than annually, following the pre-assignment examination.

(C) In all physical examinations, the examining physician shall consider whether there exist conditions of increased risk, including reduced immunological competence, those undergoing treatment with steroids or cytotoxic agents, pregnancy and cigarette smoking.

(b) Records:

(A) Employers of employees examined pursuant to this rule shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee's employment. The employer shall comply with the requirements concerning transfer of records set forth in Division 2/Z, 1910.1020(h).

(B) Records required by this rule shall be provided upon request to employees, designated representatives, and the Administrator in accordance with OAR 437, Division 2/Z, 1910.1020, Access to Employee Exposure and Medical Records.

(C) Any physician who conducts a medical examination required by this rule shall furnish to the employer a statement of the employee's suitability for employment in the specific exposure.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 3-1975, f. 10-6-75, ef. 11-1-75; WCB 4-1979, f. 5-21-79, ef. 7-15-79; WCB 8-1980, f. 11-5-80, ef. 12-1-80; OSHA 12-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 5-2012, f. & cert. ef. 9-25-12

#### **437-002-0368**

##### **Deterioration**

(1) Periodic examination, at least annually, of all asbestos containing material should be performed to detect deterioration.

(2) Asbestos which has become damaged or deteriorated shall be repaired, enclosed, encapsulated, or removed in accordance with the provisions of 29 CFR 1926.1101 in OAR 437, division 3, Construction.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 9-1989, f. & ef. 7-7-89; OSHA 12-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 4-1995, f. & cert. ef. 3-29-95; OSHA 1-2005, f. & cert. ef. 4-12-05

#### **437-002-0371**

##### **Scope and Application**

29 CFR 1910.1025 applies to all occupational exposures to lead, except Construction (see 1926.62 in division 3, Construction).

**NOTE:** §1910.1025(a)(1) and (2) were not adopted. In Oregon, OAR 437-002-0371 applies.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 26-1990, f. & cert. ef. 11-16-90; OSHA 6-1994, f. & cert. ef. 9-30-94

#### **437-002-0373**

##### **Oregon Rules for Thiram**

(1) Scope and Application.

(a) These rules include requirements for the control of worker exposure to thiram (Tetramethyl- thiuram disulfide).

(b) These rules apply where worker exposure to thiram may occur during manufacture, storage, packaging, tree application, treated seedling handling, or use of thiram or thiram treated seedlings.

(c) These rules apply to the transportation of thiram or thiram treated trees except to the extent that the U. S. Department of Transportation may regulate the hazards covered by these rules.

(2) Definitions. The following definitions shall apply in the application of the thiram rules:

Clean — The absence of dirt or materials which may be harmful to a worker's health.

Large Seedlings — Those seedlings of such size, either by length or breath, that during normal planting operations it is difficult to avoid contact of the thiram treated plant with the mouth or face.

(3) General Requirements. The following rules shall be applicable to thiram:

(a) Permissible Exposure Limits.

(A) No employee may be exposed to thiram at atmospheric concentrations greater than 0.15 mg/m<sup>3</sup> over any 8-hour period; and

(B) No employee may be exposed to thiram at atmospheric concentrations greater than 0.30 mg/m<sup>3</sup> averaged over any period not exceeding 15 minutes.

(C) Workers shall not be allowed to work more than five days in any seven day period with or around thiram or thiram treated seedlings.

(D) OAR 437-002-0373(3)(a)(C) above is not applicable if a specific thiram control program in addition to these rules and approved by the Administrator has been implemented.

(b) Washing and Worker Hygiene.

(A) Workers shall wash their hands prior to eating or smoking and at the close of work.

(B) Warm (at least 85°F, 29.4°C) wash water and single use hand wiping materials shall be provided for washing.

(C) The warm water and hand wiping materials shall be at fixed work locations or at the planting unit.

(D) Where warm water is not available within 15 minutes travel time, non-alcoholic based waterless hand cleaner shall also be provided.

(E) Every planter or nursery worker shall be advised to bathe or shower daily.

(F) The inside of crummies or other worker carrying vehicles shall be washed or vacuumed and wiped down at least weekly during the period of thiram use.

(c) Personal Protective Measures.

(A) Clothing shall be worn by workers to reduce skin contact with thiram to the legs, arms and torso.

(B) For those workers who have thiram skin irritations, exposed areas of the body shall be protected by a suitable barrier cream.

(C) Only impervious gloves may be worn by workers.

(D) Workers' hands should be clean of thiram before placing them into gloves.

(E) Nursery applicators shall be provided with and use NIOSH approved respirators according to OAR 437, Division 2/I, 1910.134, Respiratory Protection, disposable coveralls or rubber slickers or other impervious clothing, rubberized boots, head covers and rubberized gloves.

(F) Reserved.

(G) Nursery workers other than applicators who may be exposed to thiram shall be provided with and use disposable coveralls or rubber slickers or other impervious clothing, impervious footwear and gloves, and head covers unless showers in accordance with OAR 437, Division 2/J, 1910.141, Sanitation, have been provided and are used.

(H) Eye protection according to OAR 437, Division 2/I, 437-002-0134(8), shall be provided and worn by workers who may be exposed to splashes of thiram such as during spraying, plug bundling, belt line grading and plugging or other operations.

(d) Respiratory Protection.

(A) Only certified respiratory protection which is applicable and approved by NIOSH shall be provided to workers.

(B) All respirators shall be used and maintained in accordance with OAR 437, Division 2/I, 1010.134, Respiratory Protection.

(C) Respirators shall be worn when planting large seedlings to avoid mouth and face contact with the thiram treated plant unless equally effective measures or planting practices have been taken.

(e) Food Handling.

(A) Food, snacks, beverages, smoking materials, or any other item which is consumed shall not be stored or consumed in the packing area of the nursery.

(B) Crummies or other worker carrying vehicles shall have a clean area for carrying lunches.

(C) The clean area of the vehicle shall be elevated from the floor and not used to carry other than food or other consumable items.

(D) The carrying of lunches, food or other consumable items in tree planting bags is prohibited.

(E) Care shall be taken to ensure that worker exposure to thiram spray, including downwind driftings, is minimized or eliminated.

(F) Workers shall stand upwind when bags that contained thiram or thiram treated seedlings are burned.

(f) Thiram Use and Handling.

(A) Nurseries shall develop a quality control program approved by the Administrator to ensure that only the minimum amount of thiram necessary to achieve the desired anti-browsing results is applied to the tree seedlings.

(B) Thiram treated seedlings shall be allowed to set between the time of spraying and packing.

(C) Seedlings shall be kept moist during packing and whenever possible during planting operations.

(D) Floors where thiram is used shall not be dry swept but instead vacuumed, washed or otherwise cleaned at least daily.

(E) Silica chips used to cover seedling plugs shall be removed at the nursery.

(g) Labeling.

(A) In the event the Oregon Department of Agriculture, or the U.S. Environmental Protection Agency (EPA), has promulgated and maintained administrative rules relative to the labeling of thiram treated seedlings, such rules shall apply.

(B) In the event the Oregon State Department of Agriculture, or EPA, has not promulgated or maintained thiram labeling rules, there shall be attached to each container, bundle or wrapping of thiram treated seedlings, a clearly legible and visible tag or label, of waterproof material and printing, on which there is stated in English and Spanish the following:

#### CAUTION

These seedlings have been treated with an animal repellent containing **Thiram** (tetramethyl thiuram disulfide) which may flake off the seedlings during handling. Consumption of alcoholic beverages or use of alcohol-based creams or lotions during a time span from 12 hours before to 7 days after exposure to **Thiram** may result in nausea, headache, vomiting, fatigue, or flushness. Exposure to **Thiram** may also cause irritation of the eyes, nose, throat, or skin.

Thiram may interfere with or render ineffective medications taken by epileptics or heart patients with blood-clotting difficulties. Animal studies at very high concentrations (more than 250 mg/kg) indicate that Thiram may cause birth defects.

#### SAFETY PRECAUTIONS

1. Keep treated seedlings moist at all times.
2. Clothing shall be worn by workers to reduce skin contact with Thiram to the legs, arms and torso.
3. A fiber or cloth face mask (respirator) may be worn at the planter's discretion, except that when plating large seedlings, respirators shall be required to avoid mouth and face contact with thiram treated plants, unless equally effective measures have been taken.
4. Wash exposed skin areas thoroughly after handling treated seedlings and before smoking, drinking, eating or going to the bathroom.
5. If Thiram flakes come in contact with eyes, immediately flush eyes freely with water.
6. Bathe daily and change work clothes at least every other day.

#### PRECAUCION

Estas plantas han sido tratadas con un repelente contra animales que tiene la substancia **Thiram** (tetramethyl thiuram disulfide) que puede desaparecer en manoseo. La consuncion de bebidas alcoholicas o el uso de cremas o lociones con base de alcohol dentro de 12 horas antes de ser expuesto o hasta 7 dias despues de ser expuesto a **Thiram** puede resultar en sintomas de nausea, dolor de cabeza, vomito, faiga o rubor. Contacto con **Thiram** puede causar irritacion de los ojos, nariz, garganta o piel.

**Thiram** puede interferir o desv alidar en completa las medicinas de los epilepticos o personas con condiciones de la corazon con dificultades de



coagulación de la sangre. Estudios con animals en concentraciones muy altas (mnas que 250 mg-kg) indican que **Thiram** puede causar desformaciones fetales. Sin que cuando se sembra plantas de semillas grandes macaras estaran requerido a evitar contacto con la boca y la cara con plantas tratado con Thiram excepto cuando otros metodos igualmente efecaz estarah usados.

**MEDIAS DE PRECAUTION**

1. Guardar mojados las platas siempre.
2. El trabajador necesita usar ropa para reducir el contacto de Thiram con law piernas, brazos, y el torso.
3. Una mascara de fibre o garra (mascara) se puede usar a la discrecion del plantador.
4. Lavese bien los parten expuestos cuando trate los semillos antes de fumar, tomar, comer e ir al baño.
5. Se acaso el Thiram cae en sus ojos, inmediatamente labese los ojos libremente con agua.
6. Banese todos los dias y cambiese de ropa de trabajo por lo menos cada otro dia.

(C) Other containers or thiram handling areas shall be signed and labeled in accordance with OAR 437, Division 2/J, General Environmental Controls, 1910.144 and 1910.145.

(h) Training.

(A) Each worker engaged in operations where exposure to thiram may occur shall be provided training relating to the hazards of thiram and precautions for its safe use and handling.

(B) The training shall be approved by the Administrator.

(C) The training shall include instruction in:

(i) The nature of the health hazard(s) from chronic exposure to thiram including specifically the potential for birth defects, alcohol intolerance, and drug interaction.

(ii) The specific nature of operations which could result in exposure to thiram and the necessary protective steps;

(iii) The purpose for, proper use, and limitations of protective devices including respirators and clothing;

(iv) The acute toxicity and skin irritation effects of thiram, and the necessary protective steps;

(v) The necessity for and requirements of excellent personal hygiene;

(vi) A review of the thiram rules at the worker's first training and indoctrination, and annually thereafter.

(D) A copy of these thiram rules shall be provided to each worker who may be exposed to thiram.

**NOTE:** Former division 130, Thiram, has been redesignated, renumbered, and slightly amended as Oregon-initiated Rule 437-002-0373 to continue coverage not provided in federal standards.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 13-1977(Temp), f. & ef. 11-7-77; WCD 2-1978, f. & ef. 3-6-78; OSHA 12-1993, f. 8-20-93, cert. ef. 11-1-93; OSHA 1-2012, f. & cert. ef. 4-10-12

**437-002-0377**

**Additional Oregon Rules for Hazard Communication**

(1) In addition to the provisions of 1910.1200(i)(11), the Oregon Occupational Safety and Health Division shall have the authority under ORS Chapter 654 to issue a subpoena or any protective orders.

(2) Agency actions under ORS Chapter 654 and these rules may be enforced by the issuance of additional citations and penalties pursuant to ORS 654.071(4), ORS 654.086(1)(d), or ORS 654.086(3). The Oregon Occupational Safety and Health Division may refer the matter to the Circuit Court in the county in which the proceedings are pending for enforcement of the subpoena.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 6-1984, f. 6-25-84, ef. 11-25-85; APD 1-1988, f. & ef. 2-8-88; OSHA 12-1993, f. 8-20-93, cert.; ef. 11-1-93; OSHA 5-2012, f. & cert. ef. 9-25-12

**437-002-0378**

**Oregon Rules for Pipe Labelling**

(1) Scope and Application. This division shall apply to all piping systems containing hazardous substances or that use asbestos as a pipe insulation material in buildings, structures and workplaces. This division does not apply to buried piping.

(2) Definitions.

Hazardous substances: any substance which is a physical or health hazard.

**Health Hazard:** A chemical which is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 1910.1200 - Health Hazard Criteria.

**Physical Hazard:** A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. See Appendix B to 1910.1200 - Physical Hazard Criteria.

**Piping system:** includes pipes, single or multiple, of any kind and, in addition, valves and pipe coverings.

**Pipes:** conduits for the transport of gases, liquids, semiliquids or fine particulate dusts.

(3) Purpose. The purpose of this division is to prescribe minimum labelling requirements for all piping systems which contain hazardous substances, transport substances in a hazardous state, or which use asbestos as a pipe insulation material.

(4) Labelling.

(a) Pipes and piping systems which contain hazardous substances or transport substances in a hazardous state shall be labelled in accordance with subsections (A), (B), (C) and (D) or otherwise identified in accordance with subsection (c) of this rule:

(A) Positive identification of the hazardous contents of a piping system shall be by lettered labels. The label shall give the name of the contents in full or abbreviated form.

(B) Contents shall be identified by labelling with sufficient detail to identify the hazard.

(C) Label wording shall be brief, informative and simple.

(D) Labelling shall be accomplished by stencilling, the use of tape, adhesives, markers or approved alternative means.

(b) Pipes or piping systems which use asbestos as a pipe insulation material shall be labelled in accordance with subsection (b)(A), or otherwise identified in accordance with subsection (c) below:

(A) The label for pipe insulation containing asbestos shall include the following:

DANGER  
CONTAINS ASBESTOS FIBERS  
MAY CAUSE CANCER  
CAUSES DAMAGE TO LUNGS  
DO NOT BREATHE DUST  
AVOID CREATING DUST

(c) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual pipes, as long as the alternative method identifies the pipe(s) to which it is applicable and conveys the information required by this rule. The written materials shall be readily accessible to the employees in their work areas during each shift. (OAR 437, Division 2/Z, Hazard Communication, 1910.1200.)

(5) Location of Labelling.

(a) Labelling shall be applied where confusion may occur, such as close to valves or flanges and adjacent to changes in direction, branches and where pipes pass through walls, floors or ceilings.

(b) Labelling shall be applied, at a minimum, at the beginning and end of continuous pipe runs.

(c) For asbestos insulation, labelling shall be at a minimum, on unobstructed continuous pipe runs, every 75 feet. Illustration.

(6) Visibility.

(a) Where pipes are located above or below the normal line of vision, the lettering shall be placed below or above the horizontal centerline of the pipe.

(b) Where pipes are inaccessible and/or at a distance which precludes clear identification of the letters on labelling, alternatives to the labelling which meet all other requirements of this rule may be used (i.e., schematics posted on walls in work areas). Appendix.

**NOTE:** Former division 153, Pipe Labelling, has been redesignated, renumbered, and amended as Oregon-initiated Rule 437-002-0378, to continue coverage not provided in federal standards.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCD 8-1986, f. 9-4-86, cert. ef. 10-1-87; OSHA 12-1993, f. 6-20-93, cert. ef. 11-1-93, Renumbered from 437-153-004-0025; OSHA 5-2012, f. & cert. ef. 9-25-12

### 437-002-0382

#### Oregon Rules for Air Contaminants

An employee's exposure to any substance listed in Oregon Tables Z-1, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

##### (1) Oregon Table Z-1.

##### (a) Substances with limits preceded by "C" — Ceiling Values.

An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that substance. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day.

(b) Other substances — 8-hour Time Weighted Averages. An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is not preceded by a "C", shall not exceed the 8-hour Time Weighted Average given for that substance in any 8-hour work shift of a 40-hour work week.

(c) Other Substances — Excursion Limits. Excursions in worker exposure levels may exceed 3 times the PEL-TWA for no more than a total of 30 minutes during a workday, and under no circumstances should they exceed 5 times the PEL-TWA, provided that the PEL-TWA is not exceeded.

(d) Skin Designation. To prevent or reduce skin absorption, an employee's skin exposure to substances listed in Oregon Table Z-1 with an "X" in the Skin Designation column following the substance name shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

(2) Oregon Table Z-2. An employee's exposure to any substance listed in Oregon Table Z 2 shall not exceed the exposure limits specified as follows:

(a) 8-hour time weighted averages. An employee's exposure to any substance listed in Oregon Table Z-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in Oregon Table Z-2.

(b) Acceptable ceiling concentrations. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable ceiling concentration for the given substance in the table at any time during an 8-hour shift except: Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable maximum peak above the acceptable ceiling concentration, and shall not exceed the maximum duration for the given substance during an 8-hour shift.

(c) Example. Table. During an 8-hour work shift, an employee exposed to benzene may be exposed to an 8 hour time weighted average (TWA) of 10 ppm. Concentrations of benzene during the 8-hour work shift may not exceed 25 ppm, unless that exposure is no more than 50 ppm and does not exceed 10 minutes during an 8-hour work shift. Such exposures must be compensated by exposures to concentrations below 10 ppm so that the 8-hour time-weighted average is less than 10 ppm.

(d) Skin Designation. To prevent or reduce skin absorption, an employee's skin exposure to substances listed in Oregon Table Z-2 with an "X" in the Skin Designation column following the substance name shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

(3) Oregon Table Z-3. An employee's exposure to any substance listed in Oregon Table Z 3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in the table.

(4) Computation formulae. The computation formula which shall apply to employee exposure to more than one substance for which 8-hour time weighted averages are included in OAR 437,

Division 2/Z, Toxic and Hazardous Substances, in order to determine whether an employee is exposed over the regulatory limit is as follows:

##### (a) Cumulative exposures.

The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$E = (CaTa + CbTb + \dots CnTn) \div 8$$

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time T where the concentration remain constant.

T is the duration in hours of the exposure at the concentration C.

The value of E shall not exceed the 8-hour time weighted average specified in subpart Z of 29 CFR part 1910 for the substance involved.

To illustrate the formula prescribed in paragraph (4)(a)(i) of this section, assume that Substance A has an 8-hour time weighted average limit of 100 ppm (Oregon Table Z-1). Assume that an employee is subject to the following exposure:

Two hours exposure at 150 ppm

Two hours exposure at 75 ppm

Four hours exposure at 50 ppm

Substituting this information in the formula, we have

$$[(2 \times 150) + (2 \times 75) + (4 \times 50)] \div 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, the 8-hour time weighted average limit, the exposure is acceptable.

##### (b) Mixtures.

In case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$Em = (C1 \div L1) + (C2 \div L2) + \dots (Cn \div Ln)$$

Where:

Em is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that substance specified in Subpart Z of 29 CFR Part 1910.

The value of Em shall not exceed unity (1).

To illustrate the formula prescribed in paragraph (4)(b)(i) of this section, consider the following exposures:

Table.

Substituting in the formula, we have:

$$Em = (500 \div 1000) + (45 \div 200) + (40 \div 200)$$

$$Em = 0.500 + 0.225 + 0.200$$

$$Em = 0.925$$

Since Em is less than unity (1), the exposure combination is within acceptable limits.

(5) To achieve compliance with paragraphs (1) through (4) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1910.134.

Table Z-1, Notes, Footnotes; Table Z-2, Note, Footnotes; Table Z-3, Notes, Footnotes.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 17-1993, f. & cert. ef. 11-15-93; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 5-1997, f. & cert. ef. 4-22-97; OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 4-2001, f. & cert. ef. 2-5-01; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 6-2008, f. 5-13-08, cert. ef. 7-1-08; OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### 437-002-0390

#### Oregon Effective Dates

(1) The effective date for 29 CFR 1910.1450 in Oregon is August 8, 1990.

(2) Start up dates in Oregon:

(a) Employers shall have developed and implemented a written Chemical Hygiene Plan no later than May 8, 1991;

(b) 29 CFR 1910.1450(a)(2) shall not take effect until the employer has developed and implemented a written Chemical Hygiene Plan.

**NOTE:** The Oregon-initiated rule is adopted in place of 1910.1450(k).

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 9-1990, f. 5-8-90, ef. 8-8-90

**437-002-0391**

**Additional Oregon Rules for Carcinogens in Laboratories**

(1) Definitions. "Absolute filter" is one capable of retaining 99.97 percent of a monodisperse aerosol of 0.3  $\mu$ m particles. For the purposes of OAR 437-002-0391, "carcinogen" is defined as the substances regulated by 29 CFR 1910.1003, 1910.1004, 1910.1006, 1910.1007, 1910.1008, 1910.1009, 1910.1010, 1910.1011, 1910.1012, 1910.1013, 1910.1014, 1910.1015, 1910.1016 and OAR 437-002-0364.

(2) Laboratory activities. The requirements of this section shall apply to research and quality control activities involving the use of a carcinogen.

(a) Mechanical pipetting aids shall be used for all pipetting procedures.

(b) Experiments, procedures and equipment which could produce aerosols shall be confined to laboratory-type hoods or glove boxes.

(c) Surfaces on which a carcinogen is handled shall be protected from contamination.

(d) Contaminated wastes and animal carcasses shall be collected in impervious containers which are closed and decontaminated prior to removal from the work area. Such wastes and carcasses shall be incinerated in such a manner that no carcinogenic products are released.

(e) All other forms of a carcinogen shall be inactivated prior to disposal.

(f) Laboratory vacuum systems shall be protected with disposable absolute filters. Exhaust systems containing such filters shall be provided with suitable ports or openings to enable determination of whether the filter in its operating location, does meet the efficiency requirements defined in OAR 437-002-0391(1). Determination of filter efficiency shall be by measurement, with a forward light scattering photometer, of passage of a polydisperse dioctyl phthalate aerosol.

(g) Employees engaged in animal support activities shall be:

(A) Provided with, and required to wear, a complete protective clothing change, clean each day, including coveralls or pants and shirt, foot covers, head covers, gloves, and appropriate respiratory protective equipment or devices; and

(B) Required to remove and leave protective clothing and equipment at the point of exit prior to each exit from a regulated area and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must display the following warning:

DANGER  
CONTAMINATED  
MAY CAUSE CANCER

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities; and

(D) Required to shower after the last exit of the day.

(h) Employees, other than those engaged only in animal support activities, each day shall be:

(A) Provided with and required to wear a clean change of appropriate laboratory clothing, such as a solid front gown, surgical scrub suit, or full buttoned laboratory coat.

(B) Required to remove and leave protective clothing and equipment at the point of exit prior to each exit from a regulated area and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must display the following warning:

DANGER  
CONTAMINATED  
MAY CAUSE CANCER

(C) Required to wash hands, forearms, face and neck upon each exit from the regulated area close to the point of exit, and before engaging in other activities.

(i) Air pressure in laboratory areas and animal rooms where a carcinogen is handled and bio- assay studies are performed shall be negative in relation to the pressure in surrounding areas. Exhaust air

shall not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated.

(j) There shall be no connection between regulated areas and any other areas through the ventilation system.

(k) A current inventory of carcinogens shall be maintained.

(l) Ventilated apparatus such as laboratory type hoods, shall be tested at least semi-annually or immediately after ventilation modification or maintenance operations, by personnel fully qualified to certify correct containment and operation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: WCB 3-1975, f. 10-6-75, ef. 11-1-75; OSHA 12-1993, f. 6-20-93, cert. ef. 11-1-93; OSHA 5-2012, f. & cert. ef. 9-25-12

**437-002-1001**

**Asbestos Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d)(except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1001 Asbestos, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Asbestos rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1017**

**Vinyl Chloride Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1017, Vinyl Chloride, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Vinyl Chloride rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1018**

**Inorganic Arsenic Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1018 Inorganic Arsenic, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Inorganic Arsenic rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1025**

**Lead Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1025 Lead, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Lead rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1027**

**Cadmium Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1027 Cadmium, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Cadmium rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12



**437-002-1028****Benzene Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1028 Benzene, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Benzene rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1029****Coke Oven Emissions Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1029 Coke Oven Emissions, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Coke Oven Emissions rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1030****Additional Oregon Rules for Bloodborne Pathogens**

Every employer with employees that use medical sharps in direct patient care must, at least annually, identify, evaluate, and select engineering and work practice controls, including safer medical devices.

(1) This evaluation must involve non-managerial front-line employees responsible for direct patient care.

(2) This evaluation must be done on a facility-by-facility basis. When a facility has multiple departments with specific equipment and/or work practice concerns, the evaluation must involve employees from those departments.

(3) After a device is evaluated and selected, the employer must make a decision on implementing that device.

(a) If a device is not purchased because of employer or employee concerns, those concerns must be documented. However, if the employer does not purchase a device that had employee support, the employer must also document the employee support, as well as the justification for not purchasing that device.

(b) If a device is purchased without the consent of the employees who evaluated it, the employer must document the employees' concerns, as well as the employers' justification for purchasing that device.

(c) All documentation required by 437-002-1030(3) must be kept as part of the written Exposure Control Plan.

(4) The employer must ensure that all affected employees are informed on the process for selecting safer medical devices.

(5) Employees must be trained in the use of safer medical devices before the employees use those devices.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-2001, f. 9-14-01, cert. ef. 10-18-01

**437-002-1035****Oregon Rule for Sharps Injury Log**

The requirement to establish and maintain a sharps injury log applies to any employer who is required to maintain an Exposure Control Plan. The sharps injury log must be maintained for 5 years.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-2001, f. 9-14-01, cert. ef. 10-18-01

**437-002-1043****Cotton Dust Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o),

which covers each employee required by Division 2/Z, 1910.1043 Cotton Dust, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Cotton Dust rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1044****1,2-Dibromo-3-Chloropropane Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1044 1,2-Dibromo-3-Chloropropane, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these 1,2-Dibromo-3-Chloropropane rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1045****Acrylonitrile Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1045 Acrylonitrile, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Acrylonitrile rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1047****Ethylene Oxide Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1047 Ethylene Oxide, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Ethylene Oxide rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1048****Formaldehyde Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1048 Formaldehyde, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Formaldehyde rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1050****Methylenedianiline Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1050 Methylenedianiline, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Methylenedianiline rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1051**

**1,3-Butadiene Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1051 1,3-Butadiene, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these 1,3-Butadiene rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1052**

**Methylene Chloride Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 2/Z, 1910.1052 Methylene Chloride, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Methylene Chloride rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

**437-002-1053**

**Scope and Application**

This subdivision applies to all occupational exposures to respirable crystalline silica in general industry and construction activities, except for the following:

(1) Exposures that result from the processing of sorptive clays.

(2) Operations where objective data demonstrates that employee exposures to respirable crystalline silica will remain below 25 micrograms per cubic meter of air (25 µg/m<sup>3</sup>) as an 8-hour time-weighted average (TWA) under any foreseeable conditions.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

**437-002-1054**

**Definitions**

For the purposes of this subdivision the following definitions apply:

(1) Action level means a concentration of airborne respirable crystalline silica of 25 µg/m<sup>3</sup>, calculated as an 8-hour TWA.

(2) Competent person means an individual who is capable of identifying existing and foreseeable respirable crystalline silica hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in this subdivision.

(3) Employee exposure means the exposure to airborne respirable crystalline silica that would occur if the employee were not using a respirator.

(4) High-efficiency particulate air (HEPA) filter means a filter that is at least 99.97 percent efficient in removing monodispersed particles of 0.3 micrometers in diameter.

(5) Objective data means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to respirable crystalline silica associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

(6) Permissible exposure limit (PEL) means a concentration of airborne respirable crystalline silica of 50 µg/m<sup>3</sup>, calculated as an 8-hour TWA.

(7) Physician or other licensed health care professional (PLHCP) means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide

some or all of the particular health care services required by 437-002-1062.

(8) Regulated area means an area, demarcated by the employer, where an employee's exposure to airborne concentrations of respirable crystalline silica exceeds, or can reasonably be expected to exceed, the PEL.

(9) Respirable crystalline silica means quartz, cristobalite, and/or tridymite contained in airborne particles that are determined to be respirable by a sampling device designed to meet the characteristics for respirable-particle size-selective samplers specified in the International Organization for Standardization (ISO) 7708:1995: Air Quality — Particle Size Fraction Definitions for Health-Related Sampling.

(10) Specialist means an American Board Certified Specialist in Pulmonary Disease or an American Board Certified Specialist in Occupational Medicine.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

**437-002-1055**

**Permissible Exposure Limit (PEL)**

Ensure that no employee is exposed to an airborne concentration of respirable crystalline silica in excess of 50 µg/m<sup>3</sup>, calculated as an 8-hour time-weighted average (TWA).

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

**437-002-1056**

**Exposure Assessment**

This rule requires an evaluation of employee exposure to silica using air monitoring or objective data as described in the performance or scheduled monitoring options.

(1) Except for the specific conditions allowed for in 437-002-1057, assess the exposure of each employee who is or may reasonably be expected to be exposed to respirable crystalline silica at or above the action level in accordance with either the performance option in paragraph (2) or the scheduled monitoring option in paragraph (3).

(2) Performance option. Assess the 8-hour TWA exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to respirable crystalline silica.

(3) Scheduled monitoring option.

(a) Perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area. Where several employees perform the same tasks on the same shift and in the same work area, you may sample a representative fraction of these employees in order to meet this requirement. In representative sampling, sample the employee(s) who are expected to have the highest exposure to respirable crystalline silica.

(b) If initial monitoring indicates that employee exposures are below the action level, you may discontinue monitoring for those employees whose exposures are represented by such monitoring.

(c) Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, repeat such monitoring within six months of the most recent monitoring.

(d) Where the most recent exposure monitoring indicates that employee exposures are above the PEL, repeat such monitoring within three months of the most recent monitoring.

(e) Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the action level, repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken 7 or more days apart, are below the action level, at which time you may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in paragraph (4).

(4) Reassessment of exposures. Reassess exposures whenever a change in the production, process, control equipment, personnel,

or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when there is any reason to believe that new or additional exposures at or above the action level have occurred.

(5) Methods of sample analysis. Ensure that all samples taken to satisfy the monitoring requirements of this rule are evaluated by a laboratory that analyzes air samples for respirable crystalline silica in accordance with the procedures in **Appendix A** to this rule.

(6) Employee notification of assessment results.

(a) Individually notify each affected employee in writing of the results of that assessment or post the results in an appropriate location accessible to all affected employees in accordance with the following:

(A) Construction employers with a NAICS code of 23 must notify affected employees within 5 working days after receiving any results an exposure assessment in accordance with this rule.

(B) All other employers must notify affected employees within 15 working days after receiving any results of an exposure assessment in accordance with this rule.

(b) Whenever an exposure assessment indicates that employee exposure is above the PEL, describe in the written notification the corrective action being taken to reduce employee exposure to or below the PEL.

(7) Observation of monitoring.

(a) Where air monitoring is performed to comply with the requirements of this rule, provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to respirable crystalline silica.

(b) When observation of monitoring requires entry into an area where the use of protective clothing or equipment is required for any workplace hazard, provide the observer with protective clothing and equipment at no cost and ensure that the observer uses such clothing and equipment. **Appendix.**

[ED. NOTE: Appendix referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

#### **437-002-1057**

##### **Specified exposure control methods**

This rule lists specific tasks and control measures that do not require an exposure assessment and is only applicable to construction and construction like-activities.

(1) Fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on Table 1, unless you assess and limit the exposure of employees to respirable crystalline silica in accordance with 437-002-1056.

(a) When construction employees engage in a task identified on Table 1 of this rule, the exposure assessment in 437-002-1056 is not required when the engineering controls, work practices, and respiratory protection specified are fully and properly implemented for the tasks listed on Table 1 of this rule.

(b) The exposure assessment required by 437-002-1056 is not required when non-construction employees, such as building maintenance personnel, engage in a construction-like task, which when performed:

(A) Is indistinguishable from a construction task listed on Table 1; and

(B) The task will not be performed regularly in the same environment and condition; and

(C) The engineering controls, work practices, and respiratory protection specified are fully and properly implemented for the task on Table 1 of this rule.

(2) When using wet methods, apply water at flow rates sufficient to minimize the release of visible dust.

(3) For measures that include an enclosed cab or booth, ensure that the enclosed cab or booth:

(a) Is maintained as free as practicable from settled dust;

(b) Has door seals and closing mechanisms that work properly;

(c) Has gaskets and seals that are in good condition and work properly;

(d) Is under positive pressure maintained through continuous delivery of fresh air;

(e) Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0  $\mu\text{m}$  range (e.g., MERV-16 or better); and

(f) Has heating and cooling capabilities.

(4) Where an employee performs more than one task in Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks in Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

#### **437-002-1058**

##### **Regulated and Restricted Access Areas**

This rule applies to fixed site regulated areas and restricted access areas for construction activities.

(1) Regulated areas at fixed sites.

(a) Establishment. Establish a regulated area wherever an employee's exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL.

(b) Demarcation. Demarcate regulated areas from the rest of the workplace in a manner that minimizes the number of employees exposed to respirable crystalline silica within the regulated area. Post signs at all entrances to regulated areas that bear the following legend.

DANGER  
RESPIRABLE CRYSTALLINE SILICA  
MAY CAUSE CANCER  
CAUSES DAMAGE TO LUNGS  
WEAR RESPIRATORY PROTECTION IN THIS AREA  
AUTHORIZED PERSONNEL ONLY

(c) Access. Limit access to regulated areas to:

(A) Persons authorized by the employer and required by work duties to be present in the regulated area;

(B) Any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring procedures under 437-002-1056; and

(C) Any person authorized by the Occupational Safety and Health Act or regulations issued under it to be in a regulated area.

(d) Provision of respirators. Provide each employee and the employee's designated representative entering a regulated area with an appropriate respirator in accordance with 437-002-1060 and require each employee and the employee's designated representative use the respirator while in a regulated area.

(2) Restricted access for construction activities. For employers engaged in construction activities or using the specific exposure control methods in 437-002-1060;

(a) Written procedures. Develop and implement written procedures to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors. Procedures must be part of the written exposure control plan required by 437-002-1059(2).

(b) Competent person. Designate a competent person to ensure the procedures are followed.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

#### **437-002-1059**

##### **Methods of Compliance**

This rule describes the engineering and work practice controls you must use.

(1) Engineering and work practice controls. Use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible. Where-



ever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, use them to reduce employee exposure to the lowest feasible level and supplement them with the use of respiratory protection that complies with the requirements of this subdivision.

(2) Establish and implement a written exposure control plan that contains at least the following elements:

(a) A description of the tasks in the workplace that involve exposure to respirable crystalline silica;

(b) A description of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task; and

(c) A description of the housekeeping measures used to limit employee exposure to respirable crystalline silica.

(d) Review and evaluate the effectiveness of the written exposure control plan at least annually and update it as necessary.

(e) For employees engaged in construction activity or using the specified exposure control methods allowed in 437-002-1057, designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.

(f) Make the written exposure control plan readily available for examination and copying, upon request, to each employee covered by this subdivision, their designated representatives, the Director of the Oregon Department of Consumer and Business Services, or designee, and the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee.

(3) Abrasive blasting. In addition to the requirements of 437-002-1058(1), comply with other Oregon OSHA standards, when applicable, such as 1910.94 (Ventilation) or 1926.57 (Ventilation) where abrasive blasting is conducted using crystalline silica containing blasting agents, or where abrasive blasting is conducted on substrates that contain crystalline silica.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1060**

#### **Respiratory Protection**

This rule applies to all respirator use.

(1) General. Where respiratory protection is required by this subdivision, provide each employee an appropriate respirator that complies with the requirements of this rule and 1910.134. Respiratory protection is required:

(a) Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls;

(b) Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible;

(c) During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL;

(d) When specified by an exposure control method in Table 1, as allowed for in 437-002-1057;

(e) During periods when the employee is in a regulated area.

(2) Where respirator use is required by this rule, institute a respiratory protection program in accordance with 1910.134.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1061**

#### **Housekeeping**

This rule covers housekeeping requirements for all employers covered under the silica rule scope, 437-002-1053.

(1) Do not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to respirable crystalline silica unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.

(2) Do not allow compressed air to be used to clean clothing or surfaces where such activity could contribute to employee exposure to respirable crystalline silica unless:

(a) The compressed air is used in conjunction with a ventilation system that effectively captures the dust cloud created by the compressed air; or

(b) No alternative method is feasible.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1062**

#### **Medical Surveillance**

This rule describes the medical monitoring requirements of this subdivision.

(1) Make medical surveillance available to each employee who:

(a) Will be occupationally exposed to respirable crystalline silica at or above the action level for 30 or more days per year; or

(b) Will be required under this subdivision to use a respirator for 30 or more days per year.

NOTE: The medical evaluation requirements of the respiratory protection rule, 1910.134, still apply for employees wearing respiratory protection.

(2) Medical surveillance must be provided at no cost to the employee and at a reasonable time and place.

(3) Ensure that all medical examinations and procedures required by this rule are performed by a PLHCP as defined in 437-002-1054.

(4) Make an initial (baseline) medical examination available within 30 days after initial assignment, unless the employee has received a medical examination that meets the requirements of this rule within the last three years. The examination must consist of:

(a) A medical and work history, with emphasis on: Past, present, and anticipated exposure to respirable crystalline silica, dust, and other agents affecting the respiratory system; any history of respiratory system dysfunction, including signs and symptoms of respiratory disease (e.g., shortness of breath, cough, wheezing); history of tuberculosis; and smoking status and history;

(b) A physical examination with special emphasis on the respiratory system;

(c) A chest X-ray (a single posteroanterior radiographic projection or radiograph of the chest at full inspiration recorded on either film (no less than 14 x 17 inches and no more than 16 x 17 inches) or digital radiography systems), interpreted and classified according to the International Labour Office (ILO) International Classification of Radiographs of Pneumoconioses by a NIOSH-certified B Reader;

(d) A pulmonary function test to include forced vital capacity (FVC) and forced expiratory volume in one second (FEV1) and FEV1/FVC ratio, administered by a spirometry technician with a current certificate from a NIOSH approved spirometry course;

(e) Testing for latent tuberculosis infection; and

(f) Any other tests deemed appropriate by the PLHCP.

(5) Make medical examinations available that include the procedures described in 437-002-1062(4) (except 437-002-1062(4)(e)) at least every three years, or more frequently if recommended by the PLHCP.

(6) Ensure that the examining PLHCP has a copy of this rule, and provide the PLHCP with the following information:

(a) A description of the employee's former, current, and anticipated duties as they relate to the employee's occupational exposure to respirable crystalline silica;

(b) The employee's former, current, and anticipated levels of occupational exposure to respirable crystalline silica;

(c) A description of any personal protective equipment used or to be used by the employee, including when and for how long the employee has used or will use that equipment; and

(d) Information from records of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

(7) Ensure that the PLHCP explains to the employee the results of the medical examination and provides each employee with a writ-

ten medical report within 30 days of each medical examination performed. Ensure the written report contains:

(a) A statement indicating the results of the medical examination, including any medical condition(s) that would place the employee at increased risk of material impairment to health from exposure to respirable crystalline silica and any medical conditions that require further evaluation or treatment;

(b) Any recommended limitations on the employee's use of respirators;

(c) Any recommended limitations on the employee's exposure to respirable crystalline silica; and

(d) A statement that the employee should be examined by a specialist (pursuant to 437-002-1062(9)) if the chest X-ray provided in accordance with this rule is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

(8) Obtain a written medical opinion from the PLHCP within 30 days of the medical examination. The written opinion must contain only the following:

(a) The date of the examination;

(b) A statement that the examination has met the requirements of this rule; and

(c) Any recommended limitations on the employee's use of respirators.

(9) If the employee provides written authorization, the written opinion must also contain either or both of the following:

(a) Any recommended limitations on the employee's exposure to respirable crystalline silica;

(b) A statement that the employee should be examined by a specialist (pursuant to 437-002-1062(11)) if the chest X-ray provided in accordance with this rule is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the PLHCP.

(10) Ensure that each employee receives a copy of the written medical opinion within 30 days of each medical examination performed.

(11) If the PLHCP's written medical opinion indicates that an employee should be examined by a specialist, make a medical examination by a specialist available within 30 days after receiving the PLHCP's written opinion.

(a) Ensure that the examining specialist is provided with all of the information that the employer is obligated to provide to the PLHCP in accordance with this rule.

(b) Ensure that the specialist explains to the employee the results of the medical examination and provides each employee with a written medical report within 30 days of the examination. The written report must meet the requirements this rule.

(c) Obtain a written opinion from the specialist within 30 days of the medical examination. The written opinion must meet the requirements of this rule.

[ED. NOTE: Appendix referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1063**

#### **Communication of Respirable Crystalline Silica Hazards to Employees**

(1) Include respirable crystalline silica in the program established to comply with the hazard communication standard (HCS) (OAR 437-002-1910.1200). Ensure that each employee has access to labels on containers of crystalline silica and safety data sheets, and is trained in accordance with the provisions of HCS and this subdivision. Ensure that at least the following hazards are addressed:

(a) Cancer

(b) Lung effects

(c) Immune system effects

(d) Kidney effects

(2) Ensure that each employee covered by this subdivision can demonstrate knowledge and understanding of at least the following:

(a) The health hazards associated with exposure to respirable crystalline silica;

(b) Specific tasks in the workplace that could result in exposure to respirable crystalline silica;

(c) Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;

(d) The contents of this subdivision;

(e) The purpose and a description of the medical surveillance program required by 437-002-1062; and

(f) When a competent person is required, the identity of the designated competent person.

(3) Make a copy of 437-002-1053 through 437-002-1065 readily available without cost to each employee covered by these rules.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1064**

#### **Recordkeeping**

(1) Air monitoring data.

(a) Make and maintain an accurate record of all exposure measurements taken to assess employee exposure to respirable crystalline silica, as prescribed in 437-002-1056.

(b) This record must include at least the following information:

(A) The date of measurement for each sample taken;

(B) The task monitored;

(C) Sampling and analytical methods used;

(D) Number, duration, and results of samples taken;

(E) Identity of the laboratory that performed the analysis;

(F) Type of personal protective equipment, such as respirators, worn by the employees monitored; and

(G) Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.

(c) Ensure that exposure records are maintained and made available in accordance with 1910.1020.

(2) Objective data.

(a) Make and maintain an accurate record of all objective data relied upon to comply with the requirements of this subdivision.

(b) This record must include at least the following information:

(A) The crystalline silica-containing material in question;

(B) The source of the objective data;

(C) The testing protocol and results of testing;

(D) A description of the process, task, or activity on which the objective data were based; and

(E) Other data relevant to the process, task, activity, material, or exposures on which the objective data were based.

(c) Ensure that objective data are maintained and made available in accordance with 1910.1020.

(3) Medical surveillance.

(a) Make and maintain an accurate record for each employee covered by medical surveillance under 437-002-1062.

(b) The record must include the following information about the employee:

(A) Name and social security number;

(B) A copy of the PLHCPs' and specialists' written medical opinions;

(C) A copy of the information provided to the PLHCPs and specialists.

(c) Ensure that medical records are maintained and made available in accordance with 1910.1020.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001- 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1065**

#### **Dates**

(1) Construction employers with a NAICS code of 23 must comply with Division 2/Z Silica by July 1, 2018.

(2) All other employers must comply with Division 2/Z Silica by July 1, 2018, except as provided for below:

(a) For all employees exposed to respirable crystalline silica above the PEL for 30 days or more per year, you must comply with

the medical surveillance requirements in 437-002-1062 by July 1, 2018.

(b) For all employees exposed to respirable crystalline silica above the action level for 30 or more days per year, you must comply with the medical surveillance requirements in 437-002-1062 by July 1, 2020.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-002-1139**

#### **Working Over or In Water**

(1) Scope and Application: This rule applies to employees not covered by division 3, Construction; division 4, Agriculture or division 6, Forest Practices. These rules apply where the danger of drowning exists and the water is more than five feet deep. These rules do not apply to law enforcement or emergency services workers nor to any workers protected by general or personal fall protection nor to employees covered by OAR 437-002-1910.401 through 1910.441, Commercial Diving Operations.

(2) Definition: Rescue device — A ring buoy and line, gaff pole, throwable rescue device or other device that serves as a means to rescue somebody from the water without requiring the rescuer to enter the water.

(3)(a) Workers in water must wear a Coast Guard approved or equivalent, wearable personal flotation device (PFD).

(b) Workers over water on floating or unstable surfaces must wear a Coast Guard approved or equivalent, wearable personal flotation device (PFD).

(c) Piers, docks, wharves and work sites along developed shorelines must have rescue devices available within 200 feet of the water or shoreline work area.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2001, f. 1-18-01, cert. ef. 3-1-01

### **437-002-2101**

#### **Compressed Gases (General Requirements)**

(1) Inspection of compressed gas cylinders. Each employer must conduct a visual inspection of compressed gas cylinders under their control to determine they are in a safe condition. Visual and other inspections must be conducted as prescribed in the Hazardous Materials Regulations of the Department of Transportation (49 CFR Parts 171-179 and 14 CFR Part 103). Where those regulations are not applicable, visual and other inspections must be conducted in accordance with Compressed Gas Association (CGA) Pamphlet C-6 2013, 11th Edition, Standard for Visual Inspection of Steel Compressed Gas Cylinders and CGA Pamphlet C-8 2005, Reaffirmed 2010, 7th Edition, Standard for Requalification of DOT-3HT, CTC-3HT, and TC-3HTM Seamless Steel Cylinders.

(2) Compressed gases. The handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tankcars, or motor vehicle cargo tanks must be in accordance with Compressed Gas Association Pamphlet P-1 2008, 11th Edition, Safe Handling of Compressed Gases in Containers.

(3) Safety relief devices for compressed gas containers. Compressed gas cylinders, portable tanks, and cargo tanks must have pressure relief devices installed and maintained in accordance with Compressed Gas Association CGA S-1.1 2011 14th edition and, CGA S-1.2 2009 9th edition.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15

### **437-002-2102**

#### **Acetylene**

(1) Cylinders.

(a) Employers must ensure that the manufacturing, in-plant transfer, transportation, handling, storage, and use of acetylene in cylinders comply with this rule and the provisions of Compressed Gas Association (CGA) Pamphlet G-1-2009 ("Acetylene") (Compressed Gas Association, Inc., 12th ed., 2009).

(b) Definitions.

(A) Confined space: A space that meets all of the following:

(i) Large enough and configured so that an employee can fully enter the space and perform work.

(ii) Has limited or restricted means for entry and/or exit.

(iii) Is not designed for continuous human occupancy.

(B) Enclosed space — Spaces that are surrounded by something, and the only openings are access openings, for example, drawers, closets, unventilated cabinets, automobile trunks, unventilated cylinder compartments, or toolboxes.

(C) Handling — Moving, connecting, or disconnecting a compressed gas container under normal conditions.

(D) PSIG (Gauge Pressure) — Pressure above or below local atmospheric pressure displayed as pounds per square inch.

(E) Secure — Arrange to prevent movement (including lashing and chaining), or a minimum of three points of contact with other cylinders or walls.

(F) Use — Withdrawing and using the gas in a non-recoverable manner for applications other than manufacturing or repackaging of compressed gasses.

(c) Acetylene Cylinders General Requirements.

(A) You must:

(i) Store and use cylinders valve end up.

**NOTE:** Gas suppliers and distributors may store secured containers in a horizontal position.

(ii) Secure cylinder(s) to prevent falling or movement.

(iii) Use a cylinder cart or cylinder pallet to move acetylene cylinders.

**NOTE:** This rule does not apply to acetylene fill plants, handling, distribution, and maintenance processes where cylinders are tilted and rolled on their bottom edge only the minimal distance necessary to get them on and off carts or pallets.

(iv) Attach the cylinder to a pressure reducing regulator or blow back manifold before opening the cylinder valve.

(v) Remove pressure regulators before moving cylinders unless they are secured in an upright position on a cylinder cart.

(vi) Back out regulator adjusting screws before opening cylinder valves.

(vii) Protect cylinders from contact with welding spatters and cutting or burning slag.

(viii) Install reverse flow check valves and flashback arresters according to manufacturer recommendation.

(B) You must not:

(i) Drop cylinders.

(ii) Drag cylinders.

(iii) Apply a torch to the side of a cylinder.

(iv) Hoist cylinders using lifting magnets, slings, ropes, chains, or any other device where the cylinders form a part of the carrier.

(v) Handle cylinders so that the bottom fusible metal pressure relief device can strike an object.

(vi) Expose any part of your body to the line of discharge of a fusible metal pressure relief device.

(vii) Use acetylene at a pressure exceeding 15 psig.

(viii) Exceed an acetylene withdrawal rate of one-seventh of the cylinder capacity per hour for welding, cutting, and allied processes.

(d) Transporting Acetylene Cylinders (additional requirements).

(A) You must protect cylinders and attached regulators:

(i) From damage when being transported by any vehicle.

(ii) From abnormal mechanical shock that is likely to damage the cylinder, valve, or fusible metal pressure relief device.

(B) You must not transport cylinders in enclosed spaces.

(C) You must ensure that cylinders are leak checked prior to each placement into the vehicle. Cylinders left in vehicles overnight must be leak checked at the end of the day and again prior to transporting.

(e) Acetylene Cylinder Storage.

(A) You must store cylinders:

(i) In assigned locations.

(ii) In areas posted with signs prohibiting smoking and open flame.

(iii) In well-ventilated locations.

(iv) Away from heat sources.



(v) Where they are protected from corrosion.

**NOTE:** Cylinders with or without regulators, kept in or on vehicles due to their frequency of use will not be considered as stored when a leak test is performed at the end of the day. When cylinders are used during multiple shifts, they must be leak tested at the end of each shift.

(B) You must not store cylinders:

(i) Where they contact electrical welding equipment or electrical circuits.

**NOTE:** All high and low pressure cylinders in contact with or secured to a conductive table or column without being isolated from electrical current can become part of an electrical circuit.

(ii) Where they can be struck by heavy objects.

(iii) In enclosed spaces.

(iv) In confined spaces.

(v) Within 20 feet of oxygen unless they are separated by a non-combustible partition. Partitions must:

(I) vertically extend at least 18 inches above the tallest container and not less than 5 feet.

(II) laterally extend at least 18 inches beyond the sides of the containers.

(III) have a fire resistance rating of at least one-half hour.

**NOTE 1:** (paragraph (1)(e)(B)(v)): Single cylinders of acetylene and oxygen can be stored secured on a cart or used adjacent to each other without a partition.

**NOTE 2:** (paragraph (1)(e)(B)(v)): Single cylinders of acetylene and oxygen secured at a work station without attached pressure reducing regulators are considered to be in use.

(vi) With full and empty cylinders grouped together.

**NOTE:** (paragraph (1)(e)(B)(vi)): This does not apply to the cylinder distribution process.

(f) Connecting and Disconnecting Acetylene Cylinders for Use.

(A) You must:

(i) Return cylinders with contaminated valves (mud, oil, grease, and similar material) to the supplier.

(ii) Secure the cylinder(s) where it can not contact any electrical circuit or electrical welding equipment.

**NOTE:** All high and low pressure cylinders in contact with or secured to a conductive table column without being isolated from electrical current can become part of an electrical circuit.

(iii) Inspect hoses before each shift.

(iv) Remove damaged hoses from service.

(v) Check pressurized cylinder valves, fuse plugs and all connections for leaks prior to use.

(vi) Use industry approved leak detection solution or oil free soapy water.

(vii) Notify the gas supplier of any leaking cylinder and follow the supplier's instruction for returning the cylinder.

(viii) Back out the regulator adjusting screws before opening cylinder valves.

(ix) Close the system valves and release all gas from the regulators before removing the regulator from a cylinder.

(x) Keep the cylinder key used for opening the cylinder valve on the valve spindle when the cylinder is in use.

(B) You must not attempt to repair or alter cylinders or valves.

(2) Piped Systems.

(a) Employers must comply with Chapter 9 ("Acetylene Piping") of NFPA 51A-2006 ("Standard for Acetylene Charging Plants") (National Fire Protection Association, 2006 ed., 2006).

(b) When employers can demonstrate that the facilities, equipment, structures, or installations used to generate acetylene or to charge (fill) acetylene cylinders were installed prior to February 16, 2006, these employers may comply with the provisions of Chapter 7 ("Acetylene Piping") of NFPA 51A-2001 ("Standard for Acetylene Charging Plants") (National Fire Protection Association, 2001ed., 2001).

(c) The provisions of 437-002-2102(2)(b) also apply when the facilities, equipment, structures, or installation used to generate acetylene or to charge (fill) acetylene cylinders were approved for construction or installation prior to February 16, 2006, but constructed and installed on or after that date.

(d) For additional information on acetylene piping systems, see CGA G-1.2-2006, Part 3 ("Acetylene piping") (Compressed Gas Association, Inc., 3rd ed., 2006).

(3) Generators and filling cylinders.

(a) Employer must ensure that facilities, equipment, structures, or installations used to generate acetylene or to charge (fill) acetylene cylinders comply with the provisions of NFPA 51A-2006 ("Standard for Acetylene Charging plants") (National Fire Protection Association, 2006 ed., 2006).

(b) When employers can demonstrate that the facilities, equipment, structures, or installations used to generate acetylene or to charge (fill) of acetylene cylinders were constructed or installed prior to February 16, 2006, these employers may comply with the provisions of NFPA 51A-2001 ("Standard for Acetylene Charging Plants") (National Fire Protection Association, 2001 ed., 2001).

(c) The provisions of 437-002-2102(3)(b) also apply when the facilities, equipment, structures, or installation were approved for construction or installation prior to February 16, 2006, but constructed and installed on or after that date.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2010, f. & cert. ef. 2-19-10; OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15

## 437-002-2224

### Vehicle Drivers and Riders.

(1) Scope. This rule applies, without regard to vehicle ownership when your employees drive or ride as part of their employment.

**NOTE:** The Oregon Bureau of Labor and Industries (BOLI) administers rules about using minors as drivers. Please contact the nearest BOLI office for more information.

(2) Driver Qualifications. You must not allow an employee to drive a vehicle on a public highway or road unless they have a valid driver's license appropriate for that type vehicle.

(3) General Safety.

(a) Do not allow employees to drive or ride in any vehicle known to be unsafe.

(b) Require employees to report any safety problems effecting vehicles you own or provide.

(4) Rider Safety — General.

(a) Except as in (5), (6) and (7), do not allow employees to occupy a vehicle in excess of its seating capacity.

(b) Require employees to comply with all applicable seatbelt and traffic safety laws.

(5) Rider Safety in the Bed of Dump Trucks, Pickups and Similar Vehicles. Do not transport workers in the beds of dump trucks, pickups or similar vehicles unless these conditions are met when applicable:

(a) When seating is available, it must be secure to the floor and passengers may not stand.

(b) The bed is secure to the frame. Beds that tilt or slide must be secure from movement.

(c) Dump beds must be secure or the activating lever locked.

(d) The total height of the sides of the transport area must be at least 42 inches. If riders sit on the floor, the height must be at least 24 inches.

(e) There must be a tailgate the same height as the sides or three evenly spaced chains, cables or ropes taut across the back.

(f) Not more than 4 workers may ride on a flatbed without sides or a tailgate and then only when the speed will not be more than 30 mph. There must be two handholds for each rider.

(g) Workers must not ride in space with cargo unless it is secure from movement.

(6) Standing Rider Safety — Buses. Riders must not sit on the floor while the vehicle is moving. Riders may stand if these conditions are met:

(a) There must be an aisle at least 12 inches wide leading to the emergency exit.

(b) There are no seats in or boards across the aisle.

(c) There must be handholds for standing riders.

(d) Not more than one rider per row of seats may stand.

(e) Riders may not sit or stand near the driver and not ahead of the forward-most row of seats.

(f) Workers in transit must not stand for more than one hour or 45 miles, whichever is less. At the end of that period, the standing workers must get a seat or the vehicle must stop for a 15-minute rest allowing the workers to get out.

(7) Fueling.

(a) There must be no smoking or other source of ignition within 25 feet of any refueling operation.

(b) Do not fill any container that is not bonded or grounded while it is inside the vehicle, in the pickup bed or anyplace other than on the ground.

(c) Stop the engine (except diesels) during fueling.

(d) Refueling vehicles with LPG must be outdoors.

(8) Hauling gasoline or flammable liquid.

(a) For buses, vehicles that carry 16 or more, crew trucks, vans and passenger cars, use only DOT or UL approved containers that hold 5 gallons or less and secure them in an area separate from passengers.

(b) For pickups, flatbeds and other vehicles not in (a), there is no container size limit as long it is not in an enclosed passenger area.

(9) Hauling Explosives. When hauling explosives, only the driver and one qualified person may be in the vehicle. Comply with OAR 437-002-1910.109 and 437-002-0109.

(10) Loading or Unloading. When loading or unloading vehicles in a manner that is likely to cause the vehicle to move, set the brakes and chock the wheels.

(11) High Voltage Clearances. When operating a vehicle near overhead lines carrying more than 600v, OAR 437-002-0047 applies for general industry employers and OAR 437-003-0047 applies for Construction employers.

(12) Traffic Control. You must require employees to set up appropriate traffic controls when they stop on or adjacent to a highway, street, or road in a way that creates a hazard and when traffic cannot adjust safely on its own. The controls must conform to the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

**NOTE:** Get a copy of the Millennium Edition from the following organizations: American Traffic Safety Services Association, 15 Riverside Parkway, Suite 100, Fredericksburg, VA 22406-1022; Telephone: 1-800-231-3475; Fax: (540) 368-1722; [www.atssa.com](http://www.atssa.com); Institute of Transportation Engineers, 1099 14th Street, NW., Suite 300 West, Washington, DC 20005-3438; Fax: (202) 289-7722; [www.ite.org](http://www.ite.org); and American Association of State Highway and Transportation Officials; [www.aashto.org](http://www.aashto.org); Telephone: 1-800-525-5562. OR: Download the MUTCD 2000 at <http://mutcd.fhwa.dot.gov/kno-millennium>. OR: The MUTCD 2000 is available for review at the Oregon OSHA Resource Center, 350 Winter Street NE, Basement - Room 26, Salem, Oregon 97301-3882; Telephone: (503) 378-3272, or toll free in Oregon 1-800-922-2689.

**NOTE:** Employers who follow the most current edition of the Oregon Temporary Traffic Control Handbook for Operations of 3 Days or Less comply with this requirement.

Stat. Auth.: ORS 654.025(2), 656.726(4)

Stat. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

**437-002-2225**

**Vehicles for Highway and Road Operation Characteristics and Maintenance**

(1) Scope. This applies to employer-owned vehicles licensed for highway and road use, driven and/or maintained by employees on public or private property, except the following:

(a) Powered Industrial Trucks covered by OR-OSHA standard 1910.178 and OAR 437-002-0227.

(b) Earth moving equipment (scrappers, loaders, bulldozers and graders) covered by OAR 437-003-1926.602.

(c) Manufactured structures, ATVs, golf carts and other similar devices not intended for highway or road use.

**NOTE:** When operating a vehicle near overhead power lines more than 600 volts, OAR 437-002-0047 applies for General Industry employers and OAR 437-003-0047 applies for Construction employers.

**(2) Vehicle Components.**

(a) The engine start/stop control must be within reach of the driver.

(b) There must be steps, ladders and railings to allow safe access to and exit from areas on vehicles where employees must access. Steps and rungs must be slip resistant.

(c) Vehicles whose cargo is loaded by cranes, power shovels or other powered loaders must have a cab or cab shield that protects the occupants from the impact of falling material.

(d) Secure all material, equipment or tools to prevent movement or a barrier must be in place to protect the occupants from moving items.

(e) Vehicles with cabs must have a door or doors for entry and exit.

(f) Vehicle cargo must not prevent occupants from exiting under any condition.

(g) Vehicles must comply with ORS 811.225, Failure to Maintain Safety Belts in Working Order.

(3) Flashing Warning Lights. Buses with a capacity of 16 or more passengers must have a working flashing light system that complies with ORS 816.260 if they load or unload passengers on a public highway or road.

**(4) Buses and Crew Trucks.**

(a) Buses and crew trucks must have a secure seat with back rest for each occupant.

(b) Buses with an enclosed seating area for 12 or more workers, unless loaded from the rear, must have an emergency exit not less than 24 inches wide by not less than 48 inches high on the left side or rear of the vehicle. It must open easily from inside or outside the vehicle.

**(5) Passenger Compartments.**

(a) Floors and decks must be slip resistant.

(b) Seal openings between the engine compartment and muffler area to prevent carbon monoxide from entering the enclosed passenger compartment.

(c) Enclosed passenger compartment must be substantially dust proof and watertight.

(d) Areas where workers sit or stand must be free of protruding nails, screws, splinters or similar physical hazards.

(e) Protect riders from inclement weather by enclosing riding areas as necessary.

(6) Steering. Do not allow spinner knobs on vehicles without power steering. Spinner knobs must be on the inside of the steering wheel.

(7) Lighting. Where general lighting in vehicle operating areas is less than 2 footcandles per square foot, vehicles must have working lights that sufficiently light the travel path.

**(8) Testing, Maintenance, and Repair.**

(a) Block or crib heavy machinery, equipment or parts supported by slings, hoists, jacks or otherwise prevent it from falling before employees work underneath or between such objects.

(b) During repair or maintenance set all controls in neutral, stop the motor and set the brakes unless the work requires otherwise.

(c) During maintenance or inspection on vehicles with dump bins, use an attached, lockable support that prevents unintentional lowering of the bin.

(d) Disconnect the vehicle battery when the work allows and the energized system could cause injury.

**(9) Warning Devices.**

(a) All vehicles must have a working horn that can be heard above surrounding area noise. Paragraph (b) does not apply when the vehicle backs up with an observer or when the operator verifies that there is nobody behind the vehicle or when nobody may enter the danger area without the operator's knowledge.

(b) Vehicles with an obstructed view to the rear must have a backup alarm that can be heard over the surrounding noise. If surrounding noise prevents this or if there are so many vehicles using backup alarms that they cannot be distinguished from each other, flashing or strobe lights are acceptable.

**(10) Control of Exhaust Gases.**

(a) Vehicles must have a working muffler.

(b) Exhaust pipes must direct the gasses away from occupants.

(c) Insulate or otherwise protect exhaust pipes exposed to worker contact.

(11) First Aid Kits. Vehicles for transport of 16 or more workers must have a clean, stocked first aid kit with enough supplies for the number of workers usually transported.

**NOTE:** Laws and/or administrative rules administered by other government agencies require fire extinguishers in vehicles under specifically defined circumstances.

**(12) Controls.**

(a) Levers that control dump or hoist devices must have a latch or other device that prevents accidental starting or tripping of the mechanism.

(b) The operator of a dump truck must be able to operate the tailgate trip handle from a position clear of the dumping load.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stat. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

#### **437-002-2226**

##### **Vehicles for Use on Property Other Than Public Roads and Highways Operation, Characteristics and Maintenance**

(1) Scope. This rule applies to employer-owned vehicles, not licensed or normally operated on public highways or roads, except the following:

(a) Powered Industrial Trucks covered in OR-OSHA standard 1910.178 and OAR 437-002-0227.

(b) Earth moving equipment, (scrapers, loaders, bulldozers and graders) covered by OAR 437-003-1926.602.

(c) Manufactured structures, ATVs, golf carts and other similar devices not intended for highway or road use.

(2) Safe Operation. You must require the driver to:

(a) Look in the direction of travel and have a clear view unless being guided by somebody with a clear view of the route.

(b) Slow or stop as appropriate at intersections and not drive in marked pedestrian lanes.

(c) Not drive a vehicle up to a person standing in front of a stationary object.

(d) Manually control all towed or pushed vehicles unless they use a towbar.

(3) Vehicle Loads. You must protect employees from hazardous vehicle loads by requiring that they:

(a) Not load a vehicle beyond its rated capacity.

(b) Stabilize, lash down or otherwise secure the load.

(c) Never be under an elevated load.

(4) Basic Equipment Requirements. You must assure your vehicles comply with the following:

(a) Vehicles with windshields must have working powered wipers and an effective defroster.

(b) There must be no broken glass that impairs the driver's vision.

(c) When the load or passengers obstruct the use of the interior rear view mirror, there must be an outside rear view mirror on each side of the vehicle.

(d) Vehicle brakes must be effective when the vehicle is fully loaded. The parking brake must hold the loaded vehicle on any slope which it may operate.

**NOTE:** The rules on safety chains do not apply to saddle-mount towing, or to a semitrailer coupled to a towing vehicle with a fifth wheel and king-pin assembly so designed that the upper and lower halves may not separate without being manually released onto a dolly without a tow bar.

(5) Uncoupled towing. You must assure that:

(a) Towed vehicles with a gross weight of 5,000 pounds or less must have at least one safety chain or cable. Towed vehicles with a gross weight more than 5,000 pounds must have at least two safety chains or cables.

(b) Safety chains or cables must be strong enough to control the towed vehicle in event the tow bar or coupling device fails.

(c) Safety chains or cables must connect to the towed and towing vehicles and to the tow bar so as to prevent the tow bar from dropping to the ground if it or the coupling device fails.

(d) There must be only enough slack in safety chains or cables to permit proper turning.

(6) Coupled towing. You must assure that:

(a) Drawbar, coupling device, and other connections for towing of trailers must be strong enough to hold the weight of the towed vehicle on any grade over which it may operate.

(b) Any coupling device on any towing vehicle used as a connection for the tow bar on any towed vehicle with a gross weight more than 5,000 pounds must be firmly attached to the frame or to a solid connection to the frame.

(c) There must be a suitable locking means to prevent accidental separation of the towed and towing vehicles.

(d) Connections must have only enough slack to allow for universal action of the connections.

**NOTE:** When operating a vehicle near overhead power lines more than 600 volts, OAR 437-002-0047 applies for General Industry employers and OAR 437-003-0047 applies for Construction employers.

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stat. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

#### **437-002-2253**

##### **Oxygen-fuel Gas Welding and Cutting**

(1) Scope and Application.

These rules apply to safe practices for users of oxy-fuel gas for welding, cutting, soldering, brazing, flame coating (thermal spraying), related materials and equipment, in general industry and construction. This rule does not apply to agriculture, forest activities, or maritime industries.

(2) Definitions.

(a) Apparatus — Includes regulators, hoses, connections (fittings), torches, manifolds and safety devices.

(b) Approved — Means listed or approved by a nationally recognized testing laboratory. Refer to 1910.7 for definitions and requirements for a nationally recognized testing laboratory.

(c) Attended — When a trained employee or qualified person is within sight of and can maintain control of the torch.

(d) Brazing — Is a metal joining process where filler metal is heated to join two or more close-fitting metal parts. It is similar to soldering but the temperatures used to melt the filler metal at or above 800oF.

(e) Burners — A type of torch system usually designed for stationary use at the bench or lathe. The material being worked, such as glass, is moved into and around the flame. Flame size is determined by valves that adjust the flow and mix of fuel gas and oxygen.

(f) Check valve (reverse flow check valve) — A device designed to prevent the unintentional backflow of gases.

**NOTE:** Reverse flow check valves alone will not stop a flashback in the system.

(g) Compartment (inside) — Is within an enclosed vehicle and opens to the inside.

(h) Compartment (outside) — Is recessed or built into an enclosed vehicle but opens to the outside of the enclosed vehicle. This compartment seals the compressed gases from entering the vehicle compartment and is vented to the outside of the vehicle.

(i) Competent person — one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

(j) Confined space — A space that meets all of the following:

(A) Large enough and so configured that an employee can fully enter the space and perform work.

(B) Has limited or restricted means for entry or exit.

(C) Is not designed for continuous human occupancy.

(k) Containers (compressed, liquefied and dissolved gas) — Cylinders, portable tanks, non-refillable cylinders, or stationary tanks, consisting of various shapes and sizes that are designed and constructed to meet ASME, TC or DOT specification.

(l) Crack (Cracking) — Opening a cylinder valve slightly and immediately closing it prior to attaching a pressure reducing regulator. This is an approved process that applies only to oxygen cylinders.

(m) Cutting (oxy-fuel cutting) — A process where a cutting torch is used to heat metal to kindling temperature. A stream of oxygen is then trained on the metal, and metal burns in that oxygen and then flows out of the cut.

(n) Cylinder(s) — An approved DOT portable container used for transportation and storage of compressed gas. Generally a cylinder is a compressed gas container having a maximum water capacity of 454 kg (1000 lbs).

(o) Drop Test — A method using compressed gas cylinder (container) pressure to test connected regulators, hoses, torch and connections for leaks.



(p) Enclosed space — Spaces that are surrounded by something and the only openings are access openings, for example, drawers, closets, unventilated cabinets, automobile trunks, unventilated cylinder compartments or toolboxes.

(q) Enclosed vehicle — Includes but is not limited to the interior of automobiles, automobile trunks, vans, or in any enclosed truck or trailer.

(r) Flame coating (thermal spraying) — The use of oxygen and fuel gases to apply fine metallic or nonmetallic materials in a molten or semi-molten condition to form a coating. The coating material may be in the form of powder, ceramic-rod, wire, or molten materials.

(s) Flashback (flame) arrestor — A device that prevents the propagation of a flame upstream.

(t) Fuel Gas — A flammable product or mixture of products used in welding, cutting and heating processes. Commonly used fuel gases are available in compressed gases, liquefied and liquefied mixtures, acetylene dissolved, and gasoline.

(u) Handling — Moving, connecting, or disconnecting oxygen and fuel gas containers under normal conditions.

(v) Leak test — The application of a liquid solution, or the use of other methods, to verify that oxygen and fuel gas cylinders and apparatus do not leak. Solutions must be compatible with the gas being used.

(w) Manifold — An apparatus designed to connect two or more cylinders for use. In construction this may mean that two cylinders or more are connected by pigtails to form a manifold.

(x) Moving cylinders — The movement of a cylinder(s) from one location to another at the worksite or place of business.

(y) Periodic Inspection — An inspection that is made at least once per quarter.

(z) Portable Cylinder banks — Multiple cylinders manifolded together on a portable frame.

(aa) PSIG (Gauge Pressure) — Pressure above or below local atmospheric pressure displayed as pounds per square inch.

(bb) Secure — Arrange to prevent movement (including lashing and chaining), or a minimum of three points of contact with other cylinders or walls.

(cc) Special truck — A vehicle or cart that is designed for the specific purpose of moving compressed, dissolved and liquefied gas cylinders in a stable manner.

(dd) Stored — Cylinders without attached regulators, cylinders not secured to a workstation, or cylinders that have not been used for 24 hours or more will be considered stored. This does not include cylinders secured on a cart.

**NOTE 1:** No more than one additional set of cylinders may be secured to a workstation.

**NOTE 2:** Cylinders, with or without regulators, kept in or on vehicles due to their frequency of use will not be considered as stored when a leak test is performed at the end of the day. When cylinders are used during multiple shifts, they must be leak tested at the end of each shift.

(ee) Soldering — Is a metal joining process where filler metal is heated to join two or more close-fitting metal parts. It is similar to brazing but the temperatures used to melt the filler metal are below 800oF.

(ff) Supervisory personnel (supervisor) — An agent of the employer such as a manager, superintendent, foreperson, or person in charge of all or part of the place of employment who directs the work activities of one or more employees.

(gg) Torches:

(A) (Pre-mix) — Oxygen and fuel gases are mixed in a chamber within the torch body.

(B) (Surface-mix) — Oxygen and fuel gases are mixed at the torch tip.

(hh) Transporting cylinders — Any cylinder movement by a vehicle to a worksite or place of business.

**NOTE 1:** A cylinder(s) loaded into a vehicle for movement to a worksite or place of business is not in storage.

**NOTE 2:** Requirements for the separation of oxidizers and fuel gases do not apply when cylinders are being transported to a work site or place of business.

(ii) Use — Withdrawing and using the gas in a non-recoverable manner for applications other than manufacturing or repackaging of compressed gasses.

(jj) Valve end up — The tops of all acetylene cylinders are elevated so that the cylinders are inclined at an angle of not less than 30 degrees from horizontal (to protect against loss of acetone).

(kk) Welder and welding operator — One who operates electric or gas welding and cutting equipment.

(ll) Welding (oxy-fuel welding) — A process using fuel gases and oxygen to weld metals. Welded metal occurs when two pieces are heated to a temperature that produces a shared pool of molten metal. The molten pool is generally supplied with additional metal called filler. Filler material depends upon the metals to be welded.

(3) Training and Evaluation.

(a) You must provide training by a competent person that covers:

(A) Procedures, practices and requirements for representative tasks employees are expected to perform.

(B) Instructions for safe use, operation and maintenance of tools, equipment and machinery.

(C) Manufacturer's operating and maintenance instructions, warnings and precautions.

(D) Work performance expectations in a language or manner that employees are able to understand.

(E) Hazards associated with expected tasks.

(F) Ways to prevent or control identified hazards.

**NOTE:** A new employee does not need to be retrained in all of (3)(a)(A)–(F) if you are able to determine through discussion and observations that they received adequate training prior to employment with you. Retraining is required if the employee fails to demonstrate the knowledge and experience to safely perform the expected tasks.

(b) You must evaluate employee's ability to adequately perform the expected tasks prior to allowing them to work independently.

(4) General Requirements.

(a) You must:

(A) Guard against mixtures of fuel gases and air or oxygen that may be explosive.

(i) Use approved apparatus such as torches, regulators, or pressure reducing valves, hoses and connections, protective equipment, acetylene generators, and manifolds.

(ii) Install and use reverse flow check valves and flashback arrestors according to torch manufacturers' recommendations unless they are not required by the manufacturer.

(B) Use cylinders that meet the Department of Transportation requirements published in 49 CFR Part 178.

(C) Use portable cylinders for the storage and shipment of compressed gases that are constructed and maintained in accordance with the U.S. Department of Transportation regulations, 49 CFR Parts 171-179.

(D) Use compressed gas cylinders equipped with connections complying with Compressed Gas Association (CGA) Pamphlet V-1 1994, 7th Edition, Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections.

(E) Use compressed gas cylinders whose contents are legibly marked with:

(i) The chemical or trade name of the gas in conformance with Compressed Gas Association (CGA) Pamphlet C-7 2011, 9th Edition, Guide to Preparation of Precautionary Labeling and Marking of Compressed Gas Containers, and

(ii) Stenciling, stamping, or labeling that is not readily removable.

(F) Protect against oil and grease hazards.

(i) Keep cylinders, cylinder valves, couplings, regulators, hose, and apparatus free from oily or greasy substances.

(ii) Keep oxygen cylinders away from contacting oil and grease.

(G) Follow the requirements of OAR 437-002-2253(13) Service Piping, OAR 437-002-2253 (14) Acetylene Generators, OAR 437-002-2253 (15) Calcium Carbide Storage when generating acetylene for immediate use at the work location.

(H) Make readily available the rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equip-

ment including generators, and oxygen or fuel-gas distribution piping systems.

(b) You must not:

- (A) Remove any product or shipping hazard labels.
- (B) Deface any product or shipping hazard labels.
- (C) Use liquid acetylene.
- (D) Generate acetylene at a pressure in excess of 15 psig (30 psia).

(E) Pipe or use acetylene at a pressure in excess of 15 psig unless it is in an approved manifold.

**NOTE 1:** This requirement does not apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use.

**NOTE 2:** Due to the instability of acetylene, the 15 psig (30 psia) limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations, or tunnel construction.

(F) Use any device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch, unless approved for the purpose.

(G) Attempt to mix gases in a cylinder unless you are a gas supplier.

(H) Refill a cylinder unless you are:

- (i) The owner of the cylinder, or
- (ii) Authorized by the owner of the cylinder.

(I) Use a cylinder's contents for purposes other than those intended by the supplier.

(J) Use a damaged cylinder.

(K) Repair or alter cylinders or valves.

(L) Tamper with the numbers and markings stamped into cylinders.

(M) Handle oxygen cylinders, cylinder caps and valves, couplings, regulators, hoses, and apparatus with oily hands or gloves.

(N) Permit a jet of oxygen to:

- (i) Strike an oily surface.
- (ii) Strike greasy clothes.
- (iii) Enter a fuel oil or other storage tank.

(O) Blow off clothing with oxygen.

(P) Use oxygen in pneumatic tools, in oil preheating burners, to start internal-combustion engines, to blow out pipelines, to create pressure, or for ventilation.

(5) Transportation of Compressed, Liquefied and Dissolved Gas Cylinders.

(a) When transporting cylinders in vehicles you must:

- (A) Secure cylinders from moving.
- (B) Keep valve protection caps in place on cylinders when regulators are not attached.

**NOTE:** This applies to cylinders designed to accept valve caps.

(C) Protect cylinder valves and regulators when regulators are attached.

(D) Keep acetylene gas cylinders with valve(s) end up.

(E) Keep liquid cylinder valve(s) vertical.

(F) Keep oil residue from contacting oxygen cylinders.

(b) When transporting cylinders in enclosed vehicle(s) you must:

**NOTE:** This rule does not apply to cylinders transported in an unoccupied enclosed truck or trailer compartment with a shippers' certificate meeting the code for Hazardous Materials Regulations CFR 49 part 172.204.

(A) Ensure that cylinders are leak checked prior to each placement into the vehicle. Cylinders left in vehicles overnight must be leak checked at the end of the day and again prior to transporting.

(B) Cap cylinders.

(C) Secure cylinders from movement.

(D) Isolate fuel gas cylinders from sources of ignition.

(E) Maintain vehicle temperatures below 125 degrees.

**NOTE:** Temperatures in vehicles can exceed 125 F during sunny or warm weather. This may affect your decision to leave cylinders in vehicles for periods of time when temperatures may climb.

(F) Remove cylinders from the "inside vehicle compartment" to the outside of the vehicle prior to use.

(G) Open "outside vehicle compartment" doors when withdrawing product from cylinders.

(H) Ensure that all outside cylinder compartment(s) are sealed to prevent leakage to the inside of the vehicle. Outside compartment doors must open to the outside of the vehicle.

(I) Ensure the interior of any cylinder compartment containing oxidizers does not contain petroleum products or materials that have contacted petroleum products.

(c) When transporting cylinders in vehicles you must not put them in the trunks of passenger vehicles.

(6) Storage of Oxygen and Fuel Gas Cylinders.

(a) You must store oxygen and fuel gas cylinders in locations:

- (A) Specifically assigned.
- (B) Well ventilated.
- (C) That avoids prolonged exposure to damp environments.
- (D) Away from heat sources.

(E) Posted with signs prohibiting smoking and open flame within 20 feet.

(F) Where the temperature does not exceed 125°F (52°C).

(G) Where sparks, hot slag, or flame will not reach them.

(H) Where they will not contact electrical welding equipment or electrical circuits.

**NOTE:** All high and low pressure cylinders in contact with or secured to a conductive table or column without being isolated from electrical current can become part of an electrical circuit.

(I) Where they are protected from corrosion.

(J) Where they cannot be knocked over.

(K) Where they cannot be damaged by passing or falling objects.

(L) Where they will not be tampered with by unauthorized persons.

(M) Where they will not be struck by heavy objects.

(N) Away from inside or outside exit routes or other areas normally used or intended for safe travel of personnel.

(O) Where they will not be subject to unventilated enclosed spaces.

(P) That are not identified as confined spaces.

(Q) With prominent signs posted identifying the names of the gasses stored.

(b) You must store cylinders in the following manner:

(A) With valve caps in place.

**NOTE:** This applies to cylinders designed to accept valve caps.

(B) Valve end up and secured from movement.

(C) Liquefied gas cylinders and acetylene cylinders with valve end up.

**NOTE:** Liquefied petroleum gas cylinders used on forklifts may be stored either horizontally or vertically.

(D) Refrigerated liquid cylinders in a vertical position.

(E) With all individual oxygen and flammable gas cylinder valves on portable cylinder banks closed.

(c) You must separate oxygen cylinders from fuel-gas cylinders or combustible materials (especially oil or grease) and any other substance likely to cause or accelerate fire by:

(A) A minimum distance of 20 feet, or

(B) A noncombustible barrier that:

(i) Vertically extends 18 inches above the tallest cylinder(s) and is at least 5 feet high.

(ii) Laterally extends 18 inches beyond the sides of the cylinders.

(iii) Has a fire-resistance rating of at least one-half hour.

**NOTE 1:** If you have a preexisting noncombustible barrier used to separate oxygen from combustible materials or fuel gases other than acetylene, the barrier must be a minimum of 5 feet high and have a minimum fire resistance rating of one-half hour. Noncombustible barriers built after May 1, 2015, must comply with the 18 inch dimensions found in 437-002-2253(6)(c)(B)(i) and (ii).

**NOTE 2:** 437-002-2102 Acetylene, requires noncombustible partitions used for oxygen and acetylene separation to extend 18 inches horizontally and vertically.

(d) You must separate oxygen and fuel gas cylinders secured on a cart from assigned cylinder storage areas by a minimum of 20 feet or a non combustible barrier.

**NOTE 1:** Single cylinders of oxygen and fuel gas can be secured on a cart or used adjacent to each other without being separated by a partition.

**NOTE 2:** An additional set of cylinders secured at a workstation without attached pressure reducing regulators will be considered in use and not in storage.

(e) You must limit cylinders, except those in actual use or attached ready for use, stored inside buildings to a total gas capacity of 2,000 cubic feet or 300 pounds of liquefied petroleum gas.

(f) Store cylinders of fuel gases in excess of 2,000 cubic feet total gas capacity or 300 pounds of liquefied petroleum gas (LPG), or any LPG mixture where LPG is the primary gas, (this does not apply to cylinders in actual use or attached ready for use) in the following manner:

(A) Outside, or

(B) In a separate room, compartment or special building with interior walls, partitions, floors, and ceilings that:

(i) Are constructed with noncombustible material having a fire-resistance floor to ceiling

(ii) Are securely anchored

(iii) Have at least one wall of the room that is an exterior wall

(C) The room must have a swinging type, self-closing fire door for a Class B opening and have a rating of at least 1 hour if there are openings to other parts of the building.

(D) The room must have wired glass windows mounted with approved metal frames and fixed sashes where windows are used. They must be installed in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80-1970.

(g) You must comply with the provisions of the Compressed Gases and Cryogenic Fluid Code, NFPA No. 55-2010 when a liquid oxygen system is to be used to supply gaseous oxygen that has a storage capacity of more than 20,000 cubic feet of oxygen (measured at 14.7 psia (101 kPa) and 70° F (21.1° C)), connected in service or ready for service, or unconnected reserves on site.

(h) The handling, storage, and utilization of all compressed gases in cylinders, portable tanks, rail tank cars, or motor vehicle cargo tanks must be in accordance with Compressed Gas Association (CGA) Pamphlet P-1 2008, 11th Edition, Safe Handling of Compressed Gases in Containers.

(7) Handling of Oxygen and Fuel Gas Cylinders.

(a) When handling or moving cylinders you must:

(A) Provide adequate access for cylinder handling.

(B) Remove regulators and ensure any required valve protection is in place before moving unsecured cylinders.

(C) Move cylinders using a special truck, a cylinder hand truck, a cart or cylinder pallet.

**NOTE:** This rule does not apply to acetylene manufacturers, cylinder fill plants and distributors of compressed gases and acetylene. (7)(a)(C) does not apply to the movement of individual fuel gas cylinders of 40 cubic feet (b-tank) or less.

(D) Leave the valve protection cap and valve seal outlet in place until the cylinder has been secured in place and is ready to be connected to a regulator or manifold.

**NOTE:** This does not apply to manufacturers and distributors of compressed gases and acetylene plants where cylinders are connected and disconnected to cylinder manifolds.

(E) Use warm, not boiling, water to thaw frozen cylinders loose from the ground or if otherwise fixed.

(b) When moving cylinders by a crane or derrick you must:

(A) Use a cradle, boat, or suitable platform that secures cylinders.

(B) Install valve-protection caps on cylinders, including those cylinders with a water weight capacity of over 30 lbs., designed to accept a cap.

(C) Not use slings or electric magnets for this purpose.

(c) Before moving a portable bank or cylinder cradles you must:

(A) Close all individual oxygen and flammable gas cylinder valves on portable cylinder banks when in storage.

(B) Restrict manual movement of portable cylinder banks to clean, smooth, level stationary surfaces.

(C) Stay out of the portable-bank's travel path when moving manually.

(d) When moving a portable bank or cylinder cradles with a forklift you must secure them to the forklift.

(e) When moving a portable bank or cylinder cradles with a crane you must use the lifting hook attached to the cradles or other appropriate moving equipment.

(f) When lifting liquid cylinders you must:

(A) Lift by using the cylinder lift eyes.

(B) Use a lifting device designed for the lift and rated for the weight.

(g) Before moving cylinders to storage you must:

(A) Close the cylinder valve.

(B) Replace and secure any valve outlet seals.

(C) Properly install the cylinder cap.

(h) When handling or moving cylinders you must not:

(A) Repair or alter cylinders or valves.

(B) Place bars under valves or valve protection caps to pry cylinders loose when frozen to the ground or otherwise fixed.

(C) Use valve protection caps for lifting or lowering cylinders manually or with a crane from one position or location to another.

(D) Drag or slide cylinders.

(E) Lift liquid cylinders by the cylinder grab ring.

(F) Drop cylinders or permit them to strike each other violently.

(G) Subject any cylinder to mechanical shocks that may damage the valve.

(H) Use cylinders as rollers for moving material or other equipment.

(I) Permit oil, grease or other combustible substances to contact cylinders, valves, or other apparatus.

(J) Attempt to catch a falling cylinder.

(K) Place cylinders where they can become part of an electrical circuit.

**NOTE:** All pressurized cylinders in contact with or secured to a conductive table or column without being isolated from electrical current can become part of an electrical circuit.

(i) When connecting cylinders for use you must:

(A) Use a pressure-reducing regulator or separate control valve to discharge gas from a cylinder.

(B) Use regulators approved for the specific gas.

(C) Loosen the valve outlet seal slowly when preparing to connect a cylinder.

(D) Back out the regulator adjusting screws before opening cylinder valves.

(E) Open oxygen cylinder valves slowly and slightly (called cracking) for an instant and then close before attaching a regulator. Stand with the cylinder valve between you and the valve outlet connection so the outlet connection is facing away from your body when cracking an oxygen cylinder.

**NOTE:** Cracking is an approved process that applies only to oxygen cylinders.

(F) Open acetylene cylinder valves no more than one and one half turns.

**NOTE:** It is preferable to open the acetylene valve no more than three-fourths of a turn.

(G) Return cylinders with contaminated valves (mud, oil, grease, and similar material) to the supplier.

(H) Use acetylene tank keys or wrenches designed to open acetylene stem type valves.

(I) Notify the supplier if cylinder valves cannot be opened by hand.

(J) Stand with the cylinder valve between you and the regulator so your body, the cylinder valve, and regulator form a straight line when opening the cylinder valve.

(K) Open cylinder valves slowly and carefully after the cylinder has been connected to the process.

(L) Ensure that cylinder valves, pressure-reducing regulators, hoses, torches and all connections do not leak.

(i) Perform a drop test

(I) Ensure that both the oxygen and fuel control valves on the torch handle are closed.

(II) With the oxygen cylinder valve open, adjust the oxygen regulator to deliver a minimum of 20 PSIG (10kPa).

(III) With the fuel cylinder valve open, adjust the fuel regulator to deliver a minimum of 10 PSIG (70kPa).

(IV) Close both the oxygen and fuel cylinder valves.

(V) Turn the adjusting screws counterclockwise to relieve regulator pressure.



(VI) Observe the gauges on both regulators for a minimum of five minutes. If the gauge readings do not change, then the system is leak tight. If there is a leak, use an approved leak detection method to locate it.

(ii) If the pressure drops during the drop test, perform a leak test to identify all leaks.

(iii) Use industry approved oil free leak detection solution.

(iv) Perform a leak test on cylinder pressure relief and safety devices, valves and regulator connections after the cylinder valve is open and connected to the pressure reducing regulator.

(v) Remove from service any cylinder that leaks at the valve, safety device or fittings that cannot be stopped by closing the valve. Isolate the cylinder away from ignition sources.

**NOTE:** Remove leaking cylinders to a safe outside location whenever possible. A warning should be placed near cylinders with leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition.

(vi) Promptly notify the supplier of any leaking cylinder or trouble with any cylinder valve and follow their instructions.

(vii) Tag cylinders having leaking fuse plugs or other leaking safety devices.

(M) Keep the cylinder key used for opening stem type cylinder valves on the valve spindle.

(N) Allow each gas to flow through its respective hose for a few seconds to purge the hose of any mixture of gases:

(i) After connecting welding, cutting or heating apparatus to oxygen and fuel-gas cylinders.

(ii) When starting to reuse the apparatus after an interval of a half hour or more.

(j) When connecting cylinders you must not:

(A) Open cylinder valves (other than cracking oxygen) until a regulator has been attached.

(B) Stand or have any body part in front or behind the pressure reducing regulator when opening cylinder valves.

(C) Use a hammer or wrench to open hand wheel cylinder valves.

(k) When removing regulators from cylinders you must:

(A) Ensure that oxygen and fuel gas cylinder valves are closed.

(B) Visually check the low pressure delivery gauges and high pressure supply gauge to ensure there is no pressure remaining in the system.

(C) Use the appropriate wrench to disconnect the regulator.

(D) Place disconnected regulators, hoses, and torches where they will not come into contact with dust and oily or greasy substances.

(8) Use of Oxygen and Fuel Gas Cylinders.

(a) When using cylinders you must:

(A) Secure from movement with valve end up.

(B) Perform a drop test as defined in (7)(i)(L)(i) at the beginning of each shift to verify no leaks exist.

(C) Close cylinder or manifold valves:

(i) Before moving cylinders.

(ii) At the end of the shift or when work is finished.

(iii) When cylinders are empty.

(D) Place cylinders far enough away from the actual welding or cutting operation to:

(i) Ensure sparks, hot slag, or flame will not reach them, or

(ii) Protect them with fire resistant shields.

(E) Keep cylinders away from radiators, piping systems, layout tables, etc., that may be used for grounding electric circuits such as for arc welding machines.

(F) Keep keys, handles or nonadjustable wrenches on valve stems of cylinders not having fixed hand wheel while these cylinders are in service.

(G) Keep one key or handle on valve stems for each in service manifold in multiple cylinder installations.

(H) Allow each gas to flow through its respective hose for a few seconds to purge the hose of any mixture of gases before using a torch assembly that has been shutdown for an interval of one half hour or more.

(I) Follow the apparatus manufacturer's operating sequence when lighting, adjusting, and extinguishing torch flames.

(J) Close the torch handle valves on oxygen and/or fuel gas when the welding and cutting equipment is unattended for only a few minutes.

**NOTE:** This does not apply to jeweler's torches or other torches similar in size when placed in proper holders.

(K) Completely shut down a torch system (refer to (8)(a)(C)) in the following order:

(i) Close and drain the oxygen system before the closing and draining of the fuel gas system.

(ii) Open the torch valves momentarily after closing the cylinder valves to release all gas pressure from the hoses and regulators; then close the torch valves.

(iii) Turn the regulator pressure adjusting screws counter clockwise to release all spring pressure.

(iv) Visually check the low pressure delivery gauge and high pressure supply gauge to ensure there is no pressure remaining in the system.

(b) When using cylinders you must not:

(A) Place a cylinder where it might become part of an electric circuit.

(B) Tap an electrode against a cylinder to strike an arc.

(C) Use a cylinder as a roller or support.

(D) Attempt to mix gases in a cylinder unless you are the gas supplier.

(E) Refill a cylinder unless you are the owner of the cylinder or a person authorized by the owner.

(F) Use a cylinder's contents for purposes other than those intended by the supplier.

(G) Tamper with safety devices on cylinders or valves.

(H) Drop or handle cylinders roughly.

(I) Put down a lighted torch unless the torch or torch assembly is placed in a holder and secured from unintended movement.

(J) Use the regulator adjusting screw as a shut-off mechanism.

(K) Place anything on top of any cylinder when in use which may damage the safety device or interfere with the quick closing of the valve.

(L) Take cylinders containing oxygen or acetylene or other fuel gas into confined spaces.

(9) Pressure Reducing Regulators.

(a) When using pressure reducing regulators you must:

(A) Use them with cylinder and piping outlets to ensure suitable working pressure for fuel gas and oxygen-fuel gas applications.

(B) Use them for the gas and pressures for which they are intended.

(C) Ensure that regulator inlet connections are marked with an identifying Compressed Gas Association (CGA) number.

**NOTE:** The CGA numbers identify the cylinder valve and gas service for which an inlet connection is designed.

(D) Ensure that inlet connections of regulators intended for attachment to gas storage cylinders comply with the requirements of Compressed Gas Association (CGA) Pamphlet V-1 1994, 7th Edition, Standard for Compressed Gas Cylinder Valve Outlet and Inlet Connections and Compressed Gas Association (CGA) Pamphlet V-7 2009, 5th Edition, Standard Method of Determining Cylinder Valve Outlet Connections for Industrial Gas Mixtures.

(E) Ensure that regulators or parts of regulators, including gauges, are repaired only by skilled mechanics who have been properly instructed.

(F) Use oxygen regulators that are marked with "USE NO OIL."

(G) Use acetylene regulator with a delivery pressure gauge that graphically indicates the maximum 15 psig working pressure.

(H) Inspect regulator union nuts and connections to detect faulty seats before the regulators are attached to the cylinder valves.

(I) Fully turn the regulator pressure-adjusting screw counter clockwise before slowly opening the cylinder valve.

(J) Keep pressure-reducing regulators in good repair.

(K) Replace cracked, broken or otherwise defective parts (including gauge glasses).

(b) When using pressure reducing regulators you must not:

(A) Use the regulator adjusting screw as a "shut-off" mechanism.

(B) Use oxygen and/or fuel gases from cylinders, piping, or manifolds through torches or other devices equipped with shutoff valves without using a pressure reducing regulator.

(10) Hose and Hose Connections

(a) When using fuel gas and oxygen hoses you must:

(A) Use hoses that comply with the Compressed Gas Association (CGA) Pamphlet E-1 2009, 6th Edition, Standard for Rubber Welding Hose and Hose Connections for Gas Welding, Cutting, and Allied Processes and Association for Rubber Products Manufacturers (ARPM) Publication IP-7 2011, 10th Edition.

**NOTE:** This standard does not apply to liquefied petroleum gas hose covered under NFPA 58, Liquefied Petroleum Gas Code applicable to the propane industry.

(B) Use fuel gas and oxygen hoses that are easily distinguishable from each other.

**NOTE:** The contrast may be made by different colors or by surface characteristics readily distinguishable by the sense of touch. Use red for fuel gases, green for oxygen, and black for inert gas.

(C) Use "Grade T" hose for most fuel gases to include acetylene.

**NOTE:** Grade R or RM hose may only be used with acetylene. Do not use with any other fuel gas.

(D) Use oil free air or an oil free inert gas to test hoses.

(E) Keep hoses and couplings (connectors) free from oily or greasy substances.

(F) Visually inspect each hose for leaks, burns, worn places, bulges, cracks, crimps, multiple splices, cuts, oil and grease, damaged or worn fittings, and other defects rendering it unfit for service:

(i) At the beginning of each task, the portion of hose intended for use, or

(ii) At the end of each working shift, the portion of hose used before storing it on a cart or hose reel.

(G) Perform inspections on hoses and hose connections following any failed drop test to determine the cause of the failure.

(H) Test hose to twice the normal pressure it will be subjected to but in no case less than 300 psi. when it:

(i) Has been subject to flashback, or

(ii) Shows evidence of severe wear or damage.

(I) Repair or replace hoses that have defects rendering them unfit for service.

(J) Protect hoses from damage by physical hazards, hot objects, or kinking.

(K) Keep hoses, cables, and other equipment clear of passageways, ladders and stairs.

(L) Use manifold hose connections, including both ends of the supply hose that lead to the manifold, with hose that cannot be interchanged between fuel gas and oxygen manifolds and supply header connections. You must not use adapters to permit the interchange of hose.

(M) Cap manifold and header hose connections when not in use.

(N) Store gas hoses in ventilated boxes.

(b) When using fuel gas and oxygen hoses you must not:

(A) Route in such a manner that severely bends the hose at the hose coupling (connector).

(B) Pull or drag welding equipment with the hose assembly.

(C) Drag or rest hoses on materials that are not fully cooled.

(D) Drag hoses across potential puncture or abrading points.

(E) Handle oxygen hoses with oily hands or oily gloves.

(F) Tape together more than 4 inches out of 12 inches of parallel sections of oxygen and fuel gas hose.

(G) Use a single hose having more than one gas passage.

(H) Repair damaged hoses with tape.

(I) Use a defective hose.

(c) Hose connections must:

(A) Comply with Compressed Gas Association (CGA) Pamphlet E-1 2009, 6th Edition, Standard for Rubber Welding Hose and Hose Connections for Gas Welding, Cutting, and Allied Processes, (3) Connections.

(B) Clamp or securely fasten in a manner that will withstand twice the pressure to which they are normally subjected, and in no case less than a pressure of 300 psi, for one (1) minute, without leakage.

(C) Use oxygen and fuel gas connection fittings that are different in size and prevent the intermixing of connections, or

(D) Be marked in a manner to identify the oxygen and fuel gas hose.

(E) Use hose couplings that cannot be unlocked or disconnected by means of a straight pull without rotary motion.

(d) When using hose connections you must not use adaptors that permit the interchange of manifold hose connections.

(11) Torches used with Oxygen and Fuel Gas.

(a) When using oxygen and fuel gas torches you must:

(A) Follow the manufacturer's recommendation for the use of torch handles with internal check valves and flashback arrestors.

(B) Keep torches free from oily or greasy substances.

(C) Clean clogged torch tip openings with suitable:

(i) Cleaning wires.

(ii) Drills.

(iii) Devices designed for such purposes.

(D) Inspect torches following any failed drop test to determine the cause of the failure prior to using. Check:

(i) Shut-off valves.

(ii) Hose couplings.

(iii) Tip connections.

(E) Only light torches with friction lighters, stationary pilot flames or other approved devices.

(b) You must not:

(A) Use defective torches.

(B) Light a torch:

(i) With matches.

(ii) From hot work.

(iii) With other hand held open flame.

(12) Manifolds with Oxygen and Fuel Gas.

(a) When working with oxygen and fuel gas manifolds you must:

(A) Label each manifold with the name of the product they contain in letters at least 1-inch high:

(i) Use permanent signage, or

(ii) Use painted letters.

(B) Place oxygen and fuel gas manifolds in safe, well ventilated and accessible locations.

(C) Use manifolds that are either approved separately for each component part or as an approved assembled unit.

(D) Limit the total capacity of fuel-gas cylinders connected to one manifold inside a building. The total capacity must not exceed 300 pounds (135.9 kg) of liquefied petroleum gas or 3,000 cubic feet (m3) of other fuel-gas, except as provided for in paragraph (a)(F).

(E) Separate more than one manifold connected to cylinders located in the same room by:

(i) At least 50 feet, or

(ii) A noncombustible partition that:

(I) Extends at least 18 inches above the tallest container and is not less than 5 feet high.

(II) Extends laterally at least 18 inches beyond the sides of the containers.

**NOTE 1:** If you have a preexisting noncombustible barrier used to separate oxygen from combustible materials or fuel gases other than acetylene, the barrier must be a minimum of 5 feet high and have a minimum fire resistance rating of one-half hour. Noncombustible barriers built after May 1, 2015, must comply with the 18 inch dimensions found in 437-002-2253(12)(a)(E)(ii)(I) and (II).

**NOTE 2:** 437-002-2102 Acetylene, requires noncombustible partitions used for oxygen and acetylene separation to extend 18 inches horizontally and vertically.

(III) Has a fire-resistance rating of at least one-half hour.

(F) Locate fuel-gas cylinders connected to one manifold having an aggregate capacity exceeding 300 pounds of liquefied petroleum gas or 3,000 cubic feet of other fuel-gas:

(i) Outdoors, or

(ii) In a separate building or room constructed in accordance with the rules on acetylene generators (14)(d)(H)(i), (d)(H)(ii), and (d)(H)(iii) and (14)(d)(I)(i), (d)(I)(ii), and (d)(I)(iii).

(G) Ensure that separate manifold buildings or rooms used for storage of calcium carbide and cylinders containing fuel gases:

(i) Are well-ventilated.

- (ii) Do not have open flames for heat or lighting.
- (iii) Are in compliance with Storage (6)(f)(B) when cylinders exceed 2000 cubic feet or 300 pounds of liquefied petroleum gas.
- (H) Use approved pressure regulating devices on high-pressure fuel-gas manifolds.

(I) Use manifold hose connections that are not interchangeable on all ends of the supply hose that leads to the manifold.

(J) Keep hose connections free of grease and oil.

(K) Cap manifold and header hose connections when not in use.

(b) When working with oxygen and fuel gas manifolds you must not:

(A) Locate oxygen and fuel gas manifolds in enclosed or confined spaces.

(B) Use adaptors that permit the interchange of manifold hose connections.

(C) Place anything on top of a manifold when in use which will:

(i) Damage the manifold

(ii) Interfere with the quick closing of the manifold valve(s).

(c) When using high-pressure oxygen manifolds (for use with cylinders having a Department of Transportation service pressure above 200 psig (1.36 MPa)) you must:

(A) Use manifolds that are either approved separately for each component part or approved as an assembled unit.

(B) Separate oxygen manifolds from fuel-gas cylinders or combustible materials (especially oil or grease) by a:

(i) Minimum distance of 20 feet, or

(ii) Noncombustible partition that complies with Compressed Gas Association (CGA) Pamphlet P-1 2008, 11th Edition, Safe Handling of Compressed Gases in Containers:

(I) Extends at least 18 inches above the tallest container and is not less than 5 feet high.

(II) Extends laterally at least 18 inches beyond the sides of the containers.

**NOTE 1:** If you have a preexisting noncombustible barrier used to separate oxygen from combustible materials or fuel gases other than acetylene, the barrier must be a minimum of 5 feet high and have a minimum fire resistance rating of one-half hour. Noncombustible barriers built after May 1, 2015, must comply with the 18 inch dimensions found in 437-002-2253(12)(c)(B)(ii)(I) and (II).

**NOTE 2:** 437-002-2102 Acetylene, requires noncombustible partitions used for oxygen and acetylene separation to extend 18 inches horizontally and vertically.

(III) Has a fire-resistance rating of at least one-half hour.

(C) Limit oxygen cylinders connected to one manifold to a total gas capacity of 6,000 cubic feet except as provided in paragraph (c)(E).

(D) Separate manifolds by:

(i) At least 50 feet, or

(ii) A noncombustible partition that complies with Compressed Gas Association (CGA) Pamphlet P-1 2008, 11th Edition, Safe Handling of Compressed Gases in Containers:

(I) Extends at least 18 inches above the tallest container and not less than 5 feet high.

(II) Extends laterally at least 18 inches beyond the sides of the containers.

**NOTE 1:** If you have a preexisting noncombustible barrier used to separate oxygen from combustible materials or fuel gases other than acetylene, the barrier must be a minimum of 5 feet high and have a minimum fire resistance rating of one-half hour. Noncombustible barriers built after May 1, 2015, must comply with the 18 inch dimensions found in 437-002-2253(12)(c)(D)(ii)(I) and (II).

**NOTE 2:** 437-002-2102 Acetylene, requires noncombustible partitions used for oxygen and acetylene separation to extend 18 inches horizontally and vertically.

(III) Has a fire-resistance rating of at least one-half hour.

(E) Locate an oxygen manifold inside a building having other occupancy, with an aggregate cylinder capacity of more than 6,000 cubic feet of oxygen, in a separate room that is:

(i) Of noncombustible construction having a fire-resistance rating of at least one-half hour, or

(ii) A noncombustible partition that complies with Compressed Gas Association (CGA) Pamphlet P-1 2008, 11th Edition, Safe Handling of Compressed Gases in Containers:

(I) Extends at least 18 inches above the tallest container and is not less than 5 feet high.

(II) Extends laterally at least 18 inches beyond the sides of the containers.

**NOTE 1:** If you have a preexisting noncombustible barrier used to separate oxygen from combustible materials or fuel gases other than acetylene, the barrier must be a minimum of 5 feet high and have a minimum fire resistance rating of one-half hour. Noncombustible barriers built after May 1, 2015, must comply with the 18 inch dimensions found in 437-002-2253(12)(c)(E)(ii)(I) and (II).

**NOTE 2:** 437-002-2102 Acetylene, requires noncombustible partitions used for oxygen and acetylene separation to extend 18 inches horizontally and vertically.

(III) Has a fire-resistance rating of at least one-half hour.

(F) Comply with NFPA 55, 2010 Edition, Compressed Gases and Cryogenic Fluid Code, when an oxygen manifold or oxygen bulk supply system has more than 20,000 cubic feet of oxygen (measured at 14.7 psia (101 kPa) and 700 F (21.1°C)), connected in service, ready for service, or unconnected reserves on hand at the site.

(G) Use approved pressure regulating devices on high-pressure oxygen manifolds.

(d) When using high pressure oxygen manifolds you must not locate them in an acetylene generator room.

(e) When using low-pressure oxygen manifolds with cylinders having a Department of Transportation service pressure not exceeding 200 psig (1.36 Mpa) you must:

(A) Use manifolds that:

(i) Are constructed for use with oxygen at a pressure of 250 psig.

(ii) Have a minimum bursting pressure of 1,000 psig.

(iii) Are protected by a safety relief device that will relieve at a maximum pressure of 500 psig.

**NOTE:** DOT-4L200 cylinders safety device relieve at a maximum pressure of 250 psig, or 235 psig if vacuum insulation is used.

(B) Use hose and hose connections subject to cylinder pressure that have a bursting pressure of 1,000 psig.

(C) Test and prove manifolds are gas-tight at a pressure of 300 psig.

(D) Use oil-free non-combustible fluid for testing oxygen manifolds.

(E) Locate manifolds to comply with paragraphs (c)(B), (C), (D), (E), and (F) and all their parts.

(F) Post the following sign at each manifold:

Low-Pressure Manifold  
Do Not Connect High-Pressure Cylinders  
Maximum Pressure — 250 psig

(f) When using portable outlet headers you must:

(A) Equip each outlet on the service piping from which oxygen or fuel-gas is withdrawn, to supply a portable outlet header, with a readily accessible shutoff valve.

(B) Use hose and hose connections that comply with paragraph (a)(I) of this section when connecting the portable outlet header to the service piping.

(C) Provide master shutoff valves for both oxygen and fuel-gas at the entry end of the portable outlet header.

(D) Provide a hydraulic back-pressure valve, installed at the inlet and preceding the service outlets, on portable fuel-gas service outlet headers unless one of the following is installed at each outlet and approved for use:

(i) Pressure-reducing regulator,

(ii) Back-flow check valve, or

(iii) Hydraulic back-pressure valve.

(E) Provide oxygen service header outlets with pressure reducing regulators or direct hose connections.

(F) Provide each valve assembly with a detachable outlet seal cap, chained or otherwise attached to the body of the valve on the portable header service outlet.

(G) Use materials and fabrication procedures for portable outlet headers that comply with the rule on Service Piping Systems paragraphs (13)(a)(A)–(L), (13)(b)(A)–(E), and (13)(f)(A)–(C).

(H) Provide frames for portable outlet headers that will:

(i) Secure the equipment in the correct operating position.

(ii) Protect them from damage during handling and operation.



(g) When using portable outlet headers you must not use them indoors except for temporary service when a direct supply outlet located on the service piping system cannot be accessed.

(h) To comply with manifold operation procedures you must:

(A) Ensure that cylinder manifolds are installed under the supervision of someone familiar with the proper practices with reference to their construction and use.

(B) Ensure all manifolds and parts used in methods of manifolding are used only for the gas or gases for which they are approved.

(C) Install approved flash arresters between each acetylene cylinder and the coupler block.

**NOTE:** For outdoor use only, and when the number of cylinders coupled does not exceed three, one flash arrester installed between the coupler block and regulator is acceptable.

(D) Install manifold acetylene and liquefied fuel-gas cylinders in a vertical position.

(E) Maintain approximately equal pressure in the gas cylinders connected to and discharged simultaneously through a common manifold.

(i) To comply with manifold operation procedures you must not connect more than 3,000 cubic feet of aggregate capacity of fuel-gas cylinders to a portable manifold inside a building.

(13) Service piping systems materials and designs.

(a) Service piping systems must use:

(A) Piping and fittings that comply with section 2, Industrial Gas and Air Piping Systems, of the American National Standard Code for Power Piping ASME B31.1 2010.

(B) At least Schedule 40 pipe and use fittings that are at least standard weight in sizes up to and including 6-inch nominal.

(C) Copper tubing that is Type K or L and complies with the Standard Specification for Seamless Copper Water Tube, ASTM B88-66a.

(D) Steel, wrought iron, brass or copper pipe, or seamless copper, brass or stainless steel tubing, except when stated otherwise.

(E) Stainless steel or copper alloys for oxygen piping and fittings when pressures exceed 700 psi.

(F) Hose connections and hose to connect the outlet of a manifold pressure regulator to piping, provided that the working pressure of the piping is 250 psi or less and they comply with the rules for hose and hose connections found in paragraphs (10) (a)(A), (10) (a)(K), (10) (b)(G), (10)(c)(A), and (10)(c)(B).

(G) Hose(s) that do not exceed 5 feet in length to connect manifold pressure regulators to piping.

(H) Hose that has a minimum bursting pressure of 1,000 psig (6.8 MPa).

(I) A piping system with a minimum design pressure of 250 psig when oxygen is supplied from a low-pressure oxygen manifold without an intervening pressure regulating device.

(J) Pressure regulating devices at each station outlet when the connected equipment is for use at pressures less than 250 psig (1.7 MPa).

(K) Steel or wrought iron piping for acetylene or acetylenic compounds.

(L) Unalloyed copper for acetylene or acetylenic compounds only with equipment listed as appropriate for its use.

(b) Piping joints must be treated as follows. You must:

(A) Weld, thread or flange joints in steel or wrought iron piping.

**NOTE:** Fittings, such as ells, tees, couplings, and unions, may be rolled, forged or cast steel, malleable iron or nodular iron.

(B) Weld, braze, thread, or flange brass or copper pipe joints.

(C) Braze socket type joints with silver-brazing alloy or similar high melting point (not less than 800° F (427° C)) filler metal.

(D) Braze joints or use approved gas tubing fittings in seamless copper, brass, or stainless steel tubing.

(E) Prohibit the use of gray or white cast iron fittings on piping joints.

(c) When installing piping systems you must:

(A) Internally examine and remove scale and dirt from fittings and lengths of pipe before assembly.

(B) Wash out oxygen pipe and fittings with a suitable solution which will effectively remove grease and dirt but will not react with oxygen.

**NOTE:** Hot water solutions of caustic soda or trisodium phosphate are effective cleaning agents for this purpose. Rinse and dry piping thoroughly after cleaning.

(C) Install and maintain distribution lines in a safe operating condition.

(D) Run all piping as directly as practicable.

(E) Protect piping against physical damage.

(F) Make allowances for piping expansion, contraction, jarring and vibration.

(G) Locate pipe laid underground below the frost line.

(H) Protect against corrosion.

(I) Weld or braze piping that is installed in tunnels, trenches or ducts.

(J) Install shutoff valves outside of tunnels, trenches or ducts.

(K) Provide good natural or forced ventilation when oxygen piping is installed in the same tunnel, trench or duct with fuel-gas pipelines.

(L) Drain low points in piping that carries moist gas into drip pots, constructed to permit pumping or draining out the condensate, at necessary intervals.

(M) Install drain valves having outlets normally closed with screw caps or plugs for draining low points in piping systems.

(N) Case or jacket pipes leading to the surface of the ground where necessary to prevent loosening or breaking.

(O) Install gas cocks or valves for all buildings at points where they will be readily accessible for shutting off the gas supply to these buildings in an emergency.

(P) Install a shutoff valve in the discharge line from the generator, gas holder, manifold or other source of supply.

(Q) Thoroughly blow out assembled piping with air, nitrogen or carbon dioxide to remove foreign materials.

(R) Blowout oxygen piping using oil-free air, oil-free nitrogen, or oil-free carbon dioxide:

**NOTE:** Air or inert gas may be used with other piping.

(S) Purge oxygen lines, using oil-free air, oil-free nitrogen, or oil-free carbon dioxide.

(T) Use pressure relief devices set to function at not more than the design pressure of the systems and that discharge upwards to a safe location.

(d) When installing piping systems you must not:

(A) Install shutoff valves in safety relief lines in such a manner that the safety relief device can be rendered ineffective.

(B) Have uncapped openings of flammable gas lines or other parts of equipment being purged of air or gas near open lights or other sources of ignition.

(C) Use open end valves or petcocks except when drips are located outdoors, underground, and not readily accessible.

(D) Use valves outdoors, underground or in areas not readily accessible unless they are equipped with a means to secure them in the closed position.

(E) Weld or cut an acetylene or oxygen pipeline, including the attachment of hangers or supports, until the line has been purged.

(e) When painting and marking piping systems you must ensure that:

(A) Underground pipe and tubing and outdoor ferrous pipe and tubing is covered or painted with a suitable material for protection against corrosion.

(B) Aboveground piping systems are marked in accordance with the American National Standard Scheme for the Identification of Piping Systems, ASME A13.1 2007.

(C) Station outlets are marked with the name of the gas.

(f) When testing piping systems you must:

(A) Test and prove they are gas-tight at 1-1/2 times their maximum operating pressure.

(B) Thoroughly purge them of air before placing them in service.

(C) Use oil free and noncombustible material to test oxygen lines.

(g) When testing piping systems you must not:

- (A) Use flames to detect leaks.
- (B) Purge flammable gas lines or other parts of equipment of air or gas when uncapped openings are near sources of ignition.
- (h) When installing protective equipment, hose and regulators in service piping systems you must:

(A) Install and use equipment in the service for which it was approved and as recommended by the manufacturer.

(B) Install the protective equipment shown in Figures Q-1, Q-2, and Q-3 in portable outlet headers and fuel-gas and oxygen piping systems to prevent:

**NOTE:** When only a portion of a fuel-gas system is to be used with oxygen, only that portion need comply with paragraph (h)(A). Figures Q-1, Q-2, Q-3

- (i) Backflow of oxygen into the fuel-gas supply system.
- (ii) Passage of a flash back into the fuel-gas supply system.
- (iii) Excessive back pressure of oxygen in the fuel-gas supply system.

**NOTE:** The three functions of the protective equipment may be combined in one device or may be provided by separate devices.

(C) Locate protective equipment:

- (i) As in Figure Q-1 in the main supply line, Figure Q-1, or
- (ii) As in Figure Q-2 at the head of each branch line, or
- (iii) As in Figure Q-3 at each location where fuel-gas is withdrawn.

(iv) As in Figure Q-2 or Figure Q-3 where branch lines are of 2 inch pipe size or larger or of substantial length.

(D) Install flash-back protection that will prevent flame from passing into the fuel-gas system.

(E) Provide an approved back-pressure relief device set at a pressure not greater than the pressure rating of the backflow or the flashback protection device, whichever is lower.

(F) Locate pressure-relief devices on the downstream side of backflow and flashback protection devices.

(G) Install pressure-relief device vents that are at least as large as the relief device inlet.

(H) Install pressure-relief vents without low points that may collect moisture.

(I) Install drip pots with drains closed with screw plugs or caps at the low points if low points are unavoidable.

(J) Install the vent end so it:

(i) Does not endanger personnel or property through gas discharge.

(ii) Is located away from ignition sources.

(iii) Terminates in a hood or bend.

(K) Maintain liquid levels when using a liquid in the pipeline protective equipment.

**NOTE:** Suitable antifreeze may be used to prevent freezing.

(L) Withdraw fuel-gas for use with equipment not requiring oxygen upstream of the piping protective devices.

(i) Station outlet protective equipment must:

(A) Have a check valve, pressure regulator, hydraulic seal, or combination of these devices at each station outlet, including those on portable headers.

(B) Have these devices as shown in Figures Q-1, Q-2, and Q-3 and designated as SF and SO.

(C) Use approved pipeline protective equipment (designated PF) located at the station outlet as in Figure Q-3, or an additional check valve, pressure regulator, or hydraulic seal is required.

(D) Have a shutoff valve (designated VF and VO) installed at each station outlet.

(E) Have a shutoff valve located on the upstream side of other station outlet equipment.

(F) Terminate the station outlet in a union connection that complies with the Compressed Gas Association (CGA) Pamphlet E-1 2009, 6th Edition, Standard for Rubber Welding Hose and Hose Connections for Gas Welding, Cutting, and Allied Processes and Compressed Gas Association (CGA) Pamphlet E-4 2010, 6th Edition, Standard for Gas Pressure Regulators if the outlet is equipped with a detachable regulator.

(G) Terminate in a union connection complying with the Compressed Gas Association (CGA) Pamphlet E-1 2009, 6th Edition, Standard for Rubber Welding Hose and Hose Connections for Gas

Welding, Cutting, and Allied Processes if it is connected directly to a hose.

(H) Terminate in pipe threads to which permanent connections are to be made, such as to a machine.

(I) Have station outlets equipped with a detachable outlet seal cap secured in place.

(J) Use this cap to seal the outlet except when a hose, a regulator, or piping is attached.

(K) Be equipped with station outlets with approved backflow and flash-back protective devices when four or less torches are supplied from one station outlet through rigid piping provided:

(i) Each outlet from this piping is equipped with a shutoff valve, and

(ii) The fuel-gas capacity of any one torch does not exceed 15 cubic feet (0.42m<sup>3</sup>) per hour.

(14) Acetylene generators.

(a) When using acetylene generators you must:

(A) Use those that are of approved construction.

(B) Ensure they are plainly marked with:

(i) Maximum weight and size of carbide necessary for a single charge.

(ii) Manufacturer's name and address.

(iii) Name or number of the type of generator.

(iv) Size of the carbide to be used on the generator nameplate.

(v) Rating and pressure limitations.

(C) Limit the total hourly output rate for which it is approved and marked. Unless specifically approved for higher ratings, carbide-feed generators must be rated at 1 cubic foot (0.028 m<sup>3</sup>) per hour per pound of carbide required for a single complete charge.

(D) Require regular operating of relief valves.

(E) Set relief valves to open at a pressure not in excess of 15 psig.

(F) Set hydraulic back pressure valves to open at a pressure not in excess of 20 psig.

(G) Locate the generator where the operator can maintain ample free, unobstructed operation and maintenance space around the generator to permit ready adjustment and charging.

(H) Ensure that all non-automatic generator water overflows are visible.

(I) Ensure that non-automatic generators are not used to generate acetylene at pressures exceeding 1 psig.

(b) When using stationary acetylene generators (automatic and non-automatic) you must:

(A) Place on a foundation where:

(i) The generator(s) is level.

(ii) No excessive strain will be placed on the generator or its connections.

(B) Ensure the generator(s) is grounded.

(C) Place generators where water will not freeze.

(D) Ensure there are no prohibited sources of ignition in outside generator houses or inside generator rooms unless the generators are prepared in accordance with paragraph (h)(H)(i) through (iv) of this section:

(E) Ensure that when a non-continuous connection to the water supply is used the supply line must terminate at a point not less than 2 inches above the regularly provided opening for filling so that the water can be observed as it enters the generator.

(F) Discharge generators through an open connection into a suitably vented outdoor receptacle or residue pit.

**NOTE:** An open connection for the sludge draw off is desirable to enable the generator operator to observe leakage of generator water from the drain valve or sludge cock.

(G) Provide a vent pipe for each generator.

(H) Rigidly install the escape or relief pipe:

(i) Without traps.

(ii) So condensation will drain back to the generator.

(I) Carry the full size escape or relief pipe to a suitable point outside the building.

(J) Terminate the escape or relief pipe in a hood or bend located at least 12 feet (3.7m) above the ground.

**NOTE:** It is preferable to terminate the escape or relief pipe above the roof, and as far away as practicable from windows or other openings into build-

ings and as far away as practicable from sources of ignition such as flues or chimneys and tracks used by locomotives.

(K) Route the generating chamber relief pipes separately to the outside so they are unobstructed by rain, snow, ice, insects, or birds.

(L) Locate the end of the relief pipes at least 3 feet (0.9 m) from combustible construction.

(M) Use gas holders constructed on the gasometer principle that has the bell suitably guided.

(N) Ensure the gas bell moves freely without tendency to bind and it has at least 2 inches (5 cm) clearance from the shell.

(O) Provide a compressor or booster cutoff at a point 12 inches (0.3 m) or more above the landing point of the bell.

(P) Ventilate the room in accordance with paragraph (d)(J) of this section when the gas holder is located indoors.

(Q) Heat and light the room in accordance with paragraphs (d)(K) and (d)(L), (M), (N), (O), and (R) of this section when the gas holder is located indoors.

(R) Protect gas holder seals against freezing when the gas holder is not located within a heated building.

(S) Provide means to stop the generator-feeding mechanism before the gas holder reaches the upper limit of its travel.

(T) Ensure that the gas capacity of the gas holder is not less than one-third of the hourly rating of the generator when the holder is connected to only one generator.

(U) Ensure if acetylene is used from the gas holder without increase in pressure at some points, but with increase in pressure by a compressor or booster pump at other points, then you must:

(i) Install approved piping protective devices in each supply line.

(ii) Locate a low-pressure protective device between the gas holder and the shop piping.

(iii) Locate the medium-pressure protective device between the compressor or booster pump and the shop piping (see Figure 1).

**NOTE 1:** Approved protective equipment (designated PF) is used to prevent backflow of oxygen into the fuel-gas supply system, passage of a flashback into the fuel-gas supply system; and excessive back pressure of oxygen in the fuel-gas supply system.

**NOTE 2:** The three functions of the protective equipment may be combined in one device or may be provided by separate devices. Figure 1.

(V) Use approved compressor or booster systems only.

(W) Ensure that wiring and electrical equipment in compressor or booster pump rooms or enclosures conform to the provisions of Subdivision S, Electrical, Class I, Division 2.

(X) Locate compressors and booster pump equipment:

(i) In well-ventilated areas and

(ii) Away from ignition sources including, but not limited to, open flames, electrical or mechanical sparks.

(Y) Provide compressor or booster pumps with pressure relief valves which will relieve pressure exceeding 15 psig:

(i) To a safe outdoor location as provided in paragraph (b)(G), (H), (I), (J), (K), and (L) of this section, or

(ii) By returning the gas to the inlet side or to the gas supply source.

(Z) Provide compressor or booster pump discharge outlets with approved protective equipment. (See Service Piping Systems (h) and (i)).

(c) When using stationary acetylene generators (automatic and non-automatic) you must not:

(A) Use common salt (sodium chloride) or other corrosive chemicals for protection against freezing.

(B) Supply water through a continuous connection to the generator unless the generator is provided with an:

(i) Adequate open overflow, or

(ii) Automatic water shutoff which will effectively prevent overfilling the generator.

(C) Fit generators with continuous drain connections leading to sewers unless otherwise specifically approved.

(D) Interconnect generating chamber relief pipes.

(d) When outside generator houses and inside generator rooms for stationary acetylene generators are used, you must:

(A) Ensure that the walls, floors, and roofs of outside generator houses are of noncombustible construction.

(B) Separate the storage or manifolding of oxygen cylinders from the generator or carbide storage section by partition walls continuous from floor to roof or ceiling, of the type of construction stated in paragraph (d)(H)(i) thru (iii) of this section.

(C) Ensure that separation walls are:

(i) Without openings.

(ii) Joined to the floor, other walls and ceiling or roof in a manner to create a permanent gastight joint.

(D) Locate exit doors so they are readily accessible in case of emergency.

(E) Provide explosion venting:

(i) For outside generator houses and inside generator rooms in exterior walls or roofs.

(ii) In areas equal to not less than 1 square foot (0.09 m<sup>2</sup>) per 50 cubic feet (1.4 m<sup>3</sup>) of room volume.

(iii) That consists of one or any combination of the following:

(I) Walls of light, noncombustible material preferably single-thickness,

(II) Single-strength glass;

(III) Lightly fastened hatch covers;

(IV) Lightly fastened swinging doors in exterior walls opening outward;

(V) Lightly fastened walls or roof designed to relieve at a maximum pressure of 25 pounds per square foot (0.001 MPa).

(F) Restrict the installation of acetylene generators inside buildings to buildings not exceeding one story in height.

**NOTE:** This does not prohibit such installation on the roof or top floor of a building exceeding such height.

(G) Enclose generators installed inside a building in a separate room.

(H) Ensure that the walls, partitions, floors, and ceilings of inside generator rooms:

(i) Are constructed from noncombustible materials having a fire-resistance rating of at least 1 hour floor to ceiling.

(ii) Are securely anchored.

(iii) Have at least one wall of the room be an exterior wall.

(I) Protect openings from an inside generator room to other parts of the building:

(i) By a swinging type, self-closing fire door for a Class B opening and having a rating of at least 1 hour.

(ii) With wired glass windows in partitions that are in approved metal frames with fixed sash.

(iii) By completing Installation in accordance with the Standard for the Installation of Fire Doors and Windows, NFPA 80-1970.

**NOTE:** Inside generator rooms built after July 1, 2014 must comply with NFPA 80-2013.

(J) Ventilate inside generator rooms or outside generator houses with vents located at floor and ceiling levels.

(K) Heat by steam, hot water, enclosed electrically heated elements or other indirect means.

(L) Ensure that generator houses or rooms have natural light during daylight hours.

(M) Restrict installation of electric lamps to fixed position where artificial lighting is necessary.

(N) Provide lamps with enclosures of glass or other noncombustible material so designed and constructed to prevent gas vapors from reaching the lamp or socket and to resist breakage.

(O) Use rigid conduit with threaded connections.

(P) Install lamps outside of wired-glass panels in gas-tight frames in the exterior walls or roof of the generator house or room.

(Q) Locate electric switches, telephones, and all other electrical apparatus which may cause a spark, outside the generator house or in a room or space separated from the generator room by a gas-tight partition, except:

(i) If they are specifically approved for use inside acetylene generator room.

(ii) Where the generator system is designed so that no carbide fill opening or other part of the generator is open to the generator house or room during the operation of the generator, and

(iii) When residue is carried in closed piping from the residue discharge valve to a point outside the generator house or room, and



(iv) Where electrical equipment in the generator house or room must conform to the provisions of Subpart S for Class I, Division 2 locations.

(R) Ensure that unauthorized persons do not enter outside generator houses or inside generator rooms.

(e) When outside generator houses and inside generator rooms for stationary acetylene generators are used, you must not:

(A) Locate openings in any outside generator house within 5 feet (1.5m) of any opening in another building.

(B) Use flames or fire to heat outside generator houses or inside generator rooms, or in any enclosure communicating with them.

(f) When using portable acetylene generators you must:

(A) Use those that are approved for portable use.

(B) Use them further than 10 feet (3m) from combustible materials other than the floor.

(C) Protect them against freezing.

(D) Clean and recharge them and blow off the air mixture outside of buildings.

(E) Anchor them to the vehicles they are to be transported and used on.

(F) Turn off the vehicle motor during charging, cleaning, and generating processes.

(G) Locate portable generators at a safe distance from the welding position so they will not be exposed to sparks, slag, and misdirection of the torch flame or over heating from hot materials or processes.

(g) When using portable acetylene generators you must not:

(A) Use them in rooms with:

(i) A total volume less than the total gas-generating capacity per charge of all generators in the room (to obtain the gas-generating capacity in cubic feet per charge, multiply the pounds of carbide per charge by 4.5).

(ii) A ceiling height less than 10 feet (3 m).

(B) Use salt or other corrosive chemical to prevent freezing.

(C) Move those charged with carbide by crane or derrick.

(D) Store those not in use in rooms where open flames are used unless the:

(i) Generator contains no carbide.

(ii) Generator has been thoroughly purged of acetylene.

(iii) Rooms are well ventilated.

(h) When providing maintenance and operating acetylene generators you must:

(A) Post operating instructions in a conspicuous place near the generator or keep those in a suitable place available for ready reference.

(B) Follow the order of operations specified in the manufacturer instructions when recharging generators.

(C) Flush out batch-type generators with water:

(i) When the charge of carbide is exhausted.

(ii) Before additional carbide is added to the generating chamber, and

(D) Renew the water supply according to instruction card furnished by the manufacturer.

(E) Add enough carbide each time the generator is recharged to refill the space provided for carbide without ramming the charge.

(F) Keep the generator water chambers filled to the proper level at all times except while draining during the recharging operation.

(G) Fill the water chamber to the proper level whenever:

(i) Repairs are to be made.

(ii) The generator is to be charged.

(iii) Carbide is to be removed.

(H) Do the following before making repairs involving welding, soldering, or other hot work or other operations which produce a source of ignition:

(i) Completely remove the carbide charge and feed mechanism.

(ii) Expel all acetylene by completely flooding the generator shell with water.

(iii) Disconnect the generator from the piping system.

(iv) Keep the generator filled with water, if possible, or positioned to hold as much water as possible.

(i) When maintaining or operating acetylene generators you must not:

(A) Discharge water-carbide residue from the generator:

(i) Into sewer pipes, or

(ii) Store in areas near open flames.

**NOTE:** Clear water from residue settling pits may be discharged into sewer pipes.

(B) Use steel or ferrous tools while distributing the charge.

(C) Make hot repairs in a room where there are other generators unless all the generators and piping have been purged of acetylene.

(15) Storing of calcium carbide.

(a) Packaging of calcium carbide must:

(A) Be in containers that are:

(i) Constructed from metal having sufficient strength to prevent rupture.

(ii) Equipped with a screw top or equivalent.

(iii) Constructed to be water-and-air-tight.

(iv) Soldered in a manner that the package will not fail if exposed to fire.

(B) Ensure that the packages are conspicuously marked "Calcium Carbide — Dangerous If Not Kept Dry" or with equivalent warning.

(C) Make known this caution: "Metal tools, even the so-called spark resistant type may cause ignition of an acetylene and air mixture when opening carbide containers".

(b) When storing calcium carbide indoors you must:

(A) Store in dry, waterproof, well-ventilated locations when quantities of 600 pounds or less are being stored.

(B) Keep packages of calcium carbide sealed, except one of each size may be open.

(C) Store calcium carbide exceeding 600 pounds (272.2 kg) but not exceeding 5,000 pounds (2,268 kg):

(i) In accordance with paragraph (b)(D)(i), (ii), (I) through (III) of this section;

(ii) In an inside generator room or outside generator house; or

(iii) In a separate room in a one-story building which may contain other occupancies, but without cellar or basement beneath the carbide storage section. Such rooms must be constructed in accordance with paragraphs (d)(H)(i) through (iii) and (d)(I)(i) and (ii) of this section and ventilated in accordance with paragraph (d)(J) of this section. These rooms must be used for no other purpose.

(D) Store calcium carbide in excess of 5,000 pounds (2,268 kg) in:

(i) An outside generator houses, or

(ii) A one story building without cellar or basement and used for no other purpose:

(I) If the storage building is of noncombustible construction, it may adjoin other one-story buildings if they are separated by unpierced firewalls.

(II) If the storage building is detached and less than 10 feet (3 m) from a building or buildings, there must not be an opening in any of the mutually exposing sides of such buildings within 10 feet (3 m).

(III) If the storage building is of combustible construction, it must be at least 30 feet (9.1 m) from any other building exceeding two stories.

(c) When storing calcium carbide indoors you must not:

(A) Store more than 600 pounds of calcium carbide in the same room with fuel-gas cylinders.

(B) Break the seals when there is carbide in excess of 1 pound (0.5 kg) in any other unsealed package of the same size of carbide in the room.

(C) Store in rooms with sprinkler systems.

(d) When storing calcium carbide outdoors you must:

(A) Examine carbide containers to make sure they are in good condition.

(B) Place the bottom tier of each row on wooden planking or equivalent so containers will not contact the ground or ground water.

(C) Periodically re-examine carbide containers for rusting or other damage that might affect its water or air tightness.

(D) Ensure the carbide containers that are stored the longest are used first.

(E) Only store in unopened air and water tight metal containers.

(F) Store only those containers that are unopened.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15

### **437-002-2300**

#### **General**

(1) Application. Division 2/RR covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment. These provisions apply to:

(a) Power generation, transmission, and distribution installations, including related equipment for the purpose of communication or metering that are accessible only to qualified employees;

**NOTE** to paragraph (1)(a): The types of installations covered by this paragraph include the generation, transmission, and distribution installations of electric utilities, as well as equivalent installations of industrial establishments. This includes facilities producing electric energy from other forms of energy, including but not limited to thermal, hydroelectric, photovoltaic, wind-generated, wave energy, and chemical energy from fuel cells and batteries. Division 2/S covers supplementary electric generating equipment that is used to supply a workplace for emergency, standby, or similar purposes only.

(b) Other installations at an electric power generating station, as follows:

(A) Fuel and ash handling and processing installations, such as coal conveyors,

(B) Water and steam installations, such as penstocks, pipelines, and tanks, providing a source of energy for electric generators, and

(C) Chlorine and hydrogen systems;

(c) Test sites where employees perform electrical testing involving temporary measurements associated with electric power generation, transmission, and distribution in laboratories, in the field, in substations, and on lines, as opposed to metering, relaying, and routine line work;

(d) Work on, or directly associated with, the installations covered in paragraphs (1)(a) through (1)(C) of this rule; and

(e) Line-clearance tree-trimming performed for the purpose of clearing space around electric power generation, transmission, or distribution lines or equipment and on behalf of an organization that operates, or that controls the operating procedures for, those lines or equipment, as follows:

(A) Entire Division 2/RR, except paragraph (1) of 437-002-2317, applies to line-clearance tree trimming covered by the introductory text to paragraph (1)(e) of 437-002-2300 when performed by qualified employees (those who are knowledgeable in the construction and operation of the electric power generation, transmission, or distribution equipment involved, along with the associated hazards).

(B) Rules 437-002-2300(2), (3); 437-002-2301, 437-002-2302, 437-002-2306, 437-002-2310, 437-002-2315, and 437-002-2317 of Division 2/RR apply to line-clearance tree trimming covered by the introductory text to paragraph (1)(e) of 437-002-2300 when performed by line-clearance tree trimmers who are not qualified employees.

(f) Notwithstanding paragraph (1)(a) of this rule, Division 2/RR does not apply to electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by Division 2/S or Division 3/K.

**NOTE** 1 to paragraph (1)(f): Oregon OSHA considers work practices conforming to 1910.332 through 1910.335 of Division 2/S as complying with the electrical safety-related work-practice requirements of Division 2/RR identified in Table 1 of Appendix A-2 to Division 2/RR, provided that employers are performing the work on a generation or distribution installation meeting 1910.303 through 1910.308 of Division 2/S. This table also identifies provisions in Division 2/RR that apply to work by qualified persons directly on, or associated with, installations of electric power generation, transmission, and distribution lines or equipment, regardless of compliance with 1910.332 through 1910.335 of Division 2/S.

**NOTE** 2 to paragraph (1)(f): Oregon OSHA considers work practices performed by qualified persons and conforming to Division 2/RR as complying with 1910.333(c) and 1910.335 of Division 2/S.

(g) Division 2/RR applies in addition to all other applicable standards contained in Division 2. Employers covered under Division 2/RR are not exempt from complying with other applicable provisions in Division 2 by the operation of 1910.5(c) of Division 2. Specific references in Division 2/RR to other subdivisions are for emphasis only.

(h) Division 2/RR also covers the construction of electric power transmission and distribution lines and equipment. As used in this Subdivision, the term "construction" includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment. Division 2/RR applies to safety-related work practices for qualified employees.

(i) This rule applies in addition to all other applicable standards contained in Division 3, relating to construction activities. Employers engaged in construction activities covered under Division 2/RR are not exempt from complying with other applicable provisions in Division 3 by the operation of 437-003-0005 Additional Applicability, of Division 3/A. Specific references in Division 2/RR to other subdivisions of Division 3 are provided for emphasis only.

(2) Training.

(a) All employees performing work covered by this rule must be trained as follows:

(A) Each employee must be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements in this rule that pertain to their job assignments.

(B) Each employee must also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole-top and manhole rescue), that are not specifically addressed by this rule but that are related to their work and are necessary for their safety.

(C) The degree of training must be determined by the risk to the employee for the hazard involved.

(b) Each qualified employee must also be trained and competent in:

(A) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,

(B) The skills and techniques necessary to determine the nominal voltage of exposed live parts,

(C) The minimum approach distances specified in this rule corresponding to the voltages to which the qualified employee will be exposed and the skills and techniques necessary to maintain those distances,

(D) The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment, and

(E) The recognition of electrical hazards to which the employee may be exposed and the skills and techniques necessary to control or avoid these hazards.

**NOTE** to paragraph (2)(b): For the purposes of this rule, a person must have the training required by paragraph (2)(b) of this rule to be considered a qualified employee.

(c) Each line-clearance tree trimmer who is not a qualified employee must also be trained and competent in:

(A) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,

(B) The skills and techniques necessary to determine the nominal voltage of exposed live parts, and

(C) The minimum approach distances specified in this rule corresponding to the voltages to which the employee will be exposed and the skills and techniques necessary to maintain those distances.

(d) The employer must determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this rule.

(e) An employee must receive additional training (or retraining) under any of the following conditions:

(A) If the supervision or annual inspections required by paragraph (2)(d) of this rule indicate that the employee is not complying with the safety-related work practices required by this rule, or

(B) If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or

(C) If they must employ safety-related work practices that are not normally used during their regular job duties.

**NOTE** to paragraph (2)(e)(C): Oregon OSHA considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

(f) The training required by paragraph (a)(2) of this rule must be of the classroom or on-the-job type.

(g) The training must establish employee proficiency in the work practices required by this rule and must introduce the procedures necessary for compliance with this rule.

(h) The employer must ensure that each employee has demonstrated proficiency in the work practices involved before that employee is considered as having completed the training required by paragraph (a)(2) of this rule.

**NOTE** 1 to paragraph (2)(h): Though they are not required by this paragraph, employment records that indicate that an employee has successfully completed the required training are one way of keeping track of when an employee has demonstrated proficiency.

**NOTE** 2 to paragraph (2)(h): For an employee with previous training, an employer may determine that that employee has demonstrated the proficiency required by this paragraph using the following process:

(1) Confirm that the employee has the training required by paragraph (a)(2) of this rule,

(2) Use an examination or interview to make an initial determination that the employee understands the relevant safety-related work practices before they perform any work covered by this rule, and

(3) Supervise the employee closely until that employee has demonstrated proficiency as required by this paragraph.

(3) Information transfer.

(a) Before work begins, the host employer must inform contract employers of:

(A) The characteristics of the host employer's installation that are related to the safety of the work to be performed and are listed in paragraphs (4)(a) through (4)(e) of this rule;

**NOTE** to paragraph (3)(a)(A): This paragraph requires the host employer to obtain information listed in paragraphs (4)(a) through (4)(e) of this rule if it does not have this information in existing records.

(B) Conditions that are related to the safety of the work to be performed, that are listed in paragraphs (4)(f) through (4)(h) of this rule, and that are known to the host employer;

**NOTE** to paragraph (3)(a)(B): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

(C) Information about the design and operation of the host employer's installation that the contract employer needs to make the assessments required by this rule; and

**NOTE** to paragraph (3)(a)(C): This paragraph requires the host employer to obtain information about the design and operation of its installation that contract employers need to make required assessments if it does not have this information in existing records.

(D) Any other information about the design and operation of the host employer's installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer's employees.

**NOTE** to paragraph (3)(a)(D): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

(b) Contract employers must comply with the following requirements:

(A) The contract employer must ensure that each of its employees is instructed in the hazardous conditions relevant to the employee's work that the contract employer is aware of as a result of information communicated to the contract employer by the host employer under paragraph (3)(a) of this rule.

(B) Before work begins, the contract employer must advise the host employer of any unique hazardous conditions presented by the contract employer's work.

(C) The contract employer must advise the host employer of any unanticipated hazardous conditions found during the contract employer's work that the host employer did not mention under paragraph (3)(a) of this rule. The contract employer must provide this information to the host employer within 2 working days after discovering the hazardous condition.

(c) The contract employer and the host employer must coordinate their work rules and procedures so that each employee of the contract employer and the host employer is protected as required by this rule.

(4) Existing characteristics and conditions. Existing characteristics and conditions of electric lines and equipment that are related to the safety of the work to be performed must be determined before work on or near the lines or equipment is started. Such characteristics and conditions include, but are not limited to:

(a) The nominal voltages of lines and equipment,

(b) The maximum switching-transient voltages,

(c) The presence of hazardous induced voltages,

(d) The presence of protective grounds and equipment grounding conductors,

(e) The locations of circuits and equipment, including electric supply lines, communication lines, and fire-protective signaling circuits,

(f) The condition of protective grounds and equipment grounding conductors,

(g) The condition of poles, and

(h) Environmental conditions relating to safety.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2301**

##### **Medical Services and First Aid**

When employees are performing General Industry activities, the employer must provide medical services and first aid as required by 437-002-0161. When employees are performing Construction activities, the employer must provide medical services and first aid as required by 1926.50. In addition to the requirements of 437-002-0161 and 1926.50, the following requirements also apply:

(1) First-aid/CPR training. When employees are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, persons with first-aid/CPR training must be available as follows:

(a) For field work involving two or more employees at a work location, at least two trained persons must be available. However, for line-clearance tree trimming operations performed by line-clearance tree trimmers who are not qualified employees, only one trained person need be available if all new employees are trained in first aid/CPR within 3 months of their hiring dates.

(b) For fixed work locations such as substations, the number of trained persons available must be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example) each employee at the work location must be a trained employee.

(2) First-aid supplies. First-aid supplies required by 437-002-0161 and 1926.50 must be placed in weatherproof containers if the supplies could be exposed to the weather.

(3) First-aid kits. The employer must maintain each first-aid kit and ensure that it is readily available for use.

(a) For employers involved in general industry activities, the first aid kit must be inspected frequently enough to ensure that expended items are replaced, and at least once per year.

(b) For employers involved in construction activities, the first-aid supplies must be in individual sealed packages for each type of item, must be checked by the employer before being sent out to each job, and at least weekly to ensure expended items are replaced.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16



**437-002-2302**

**Job Briefing**

(1) Before each job.

(a) In assigning an employee or a group of employees to perform a job, the employer must provide the employee in charge of the job with all available information that relates to the determination of existing characteristics and conditions required by paragraph (4) of 437-002-2300.

(b) The employer must ensure that the employee in charge conducts a job briefing that meets paragraphs (2), (3), and (4) of this rule with the employees involved before they start each job.

(2) Subjects to be covered. The briefing must cover at least the following subjects:

- (a) Hazards associated with the job
- (b) Work procedures involved
- (c) Special precautions
- (d) Energy-source controls
- (e) Personal protective equipment requirements
- (3) Number of briefings.

(a) At least one job briefing must be conducted before the start of the first job of each day or shift even if the work or operations to be performed during the work day or shift are repetitive and similar.

(b) Additional job briefings must be held if significant changes, which might affect the safety of the employees, occur during the course of the work.

(4) Extent of briefing.

(a) A brief discussion is satisfactory if the work involved is routine and if the employees, by virtue of training and experience, can reasonably be expected to recognize and avoid the hazards involved in the job.

(b) A more extensive discussion must be conducted:

(A) If the work is complicated or particularly hazardous, or

(B) If the employee cannot be expected to recognize and avoid the hazards involved in the job.

(5) Working alone. An employee working alone need not conduct a job briefing. However, the employer must ensure that the tasks to be performed are planned as if a briefing were required.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

**437-002-2303**

**Hazardous Energy Control Procedures**

(1) Application. The provisions of this rule apply to the use of hazardous energy control procedures for the control of energy sources in installations for the purpose of electric power generation, including related equipment for communication or metering. Clearance procedures and hazardous energy control procedures for the deenergizing of electric energy sources that are used exclusively for purposes of transmission and distribution, and construction activities, are addressed in 437-002-2312 Deenergizing lines and equipment for employee protection.

**NOTE:** Installations in electric power generation facilities that are not an integral part of, or inextricably commingled with, power generation processes or equipment are covered under 1910.147 and Division 2/S, Electrical.

(2) General.

(a) The employer must establish a program consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

(b) The employer's energy control program under paragraph (2) of this rule must meet the following requirements:

(A) If an energy isolating device is not capable of being locked out, the employer's program must use a tagout system.

(B) If an energy isolating device is capable of being locked out, the employer's program must use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection as follows:

(i) When a tagout device is used on an energy isolating device that is capable of being locked out, the tagout device must be attached at the same location that the lockout device would have been attached, and the employer must demonstrate that the tagout program will provide a level of safety equivalent to that obtained by the use of a lockout program.

(ii) In demonstrating that a level of safety is achieved in the tagout program equivalent to the level of safety obtained by the use of a lockout program, the employer must demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection must include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.

(C) After November 1, 1994, whenever replacement or major repair, renovation, or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machines or equipment must be designed to accept a lockout device.

(c) Procedures must be developed, documented, and used for the control of potentially hazardous energy covered in 437-002-2303.

(d) The procedure must clearly and specifically outline the scope, purpose, responsibility, authorization, rules, and techniques to be applied to the control of hazardous energy, and the measures to enforce compliance including, but not limited to, the following:

(A) A specific statement of the intended use of this procedure;

(B) Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

(C) Specific procedural steps for the placement, removal, and transfer of lockout devices or tagout devices and the responsibility for them; and

(D) Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

(e) The employer must conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the provisions of 437-002-2303 are being followed.

(A) The periodic inspection must be performed by an authorized employee who is not using the energy control procedure being inspected.

(B) The periodic inspection must be designed to identify and correct any deviations or inadequacies.

(C) If lockout is used for energy control, the periodic inspection must include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.

(D) Where tagout is used for energy control, the periodic inspection must include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (2)(g) of this rule.

(E) The employer must certify that the inspections required by paragraph (2)(e) of this rule have been accomplished. The certification must identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

**NOTE** to paragraph (2)(e)(E): If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.

(f) The employer must provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training must include the following:

(A) Each authorized employee must receive training in the recognition of applicable hazardous energy sources, the type and

magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.

(B) Each affected employee must be instructed in the purpose and use of the energy control procedure.

(C) All other employees whose work operations are or may be in an area where energy control procedures may be used must be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

(g) When tagout systems are used, employees must also be trained in the following limitations of tags:

(A) Tags are essentially warning devices affixed to energy isolating devices and do not provide the physical restraint on those devices that is provided by a lock.

(B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.

(C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.

(D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.

(E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.

(F) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

(h) Retraining must be provided by the employer as follows:

(A) Retraining must be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.

(B) Retraining must also be conducted whenever a periodic inspection under paragraph (2)(e) of this rule reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.

(C) The retraining must reestablish employee proficiency and must introduce new or revised control methods and procedures, as necessary.

(i) The employer must certify that employee training has been accomplished and is being kept up to date. The certification must contain each employee's name and dates of training.

(3) Protective materials and hardware.

(a) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware must be provided by the employer for isolating, securing, or blocking of machines or equipment from energy sources.

(b) Lockout devices and tagout devices must be singularly identified; must be the only devices used for controlling energy; may not be used for other purposes; and must meet the following requirements:

(A) Lockout devices and tagout devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

(i) Tagout devices must be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(ii) Tagout devices must be so constructed as not to deteriorate when used in corrosive environments.

(B) Lockout devices and tagout devices must be standardized within the facility in at least one of the following criteria: color, shape, size. Additionally, in the case of tagout devices, print and format must be standardized.

(C) Lockout devices must be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or metal cutting tools.

(D) Tagout devices, including their means of attachment, must be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means must be of a non-reusable type, attachable by hand, self-locking, and nonreleasable with a minimum unlocking strength of no less than 50 pounds and must have the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

(E) Each lockout device or tagout device must include provisions for the identification of the employee applying the device.

(F) Tagout devices must warn against hazardous conditions if the machine or equipment is energized and must include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

**NOTE** to paragraph (3)(b)(F): For specific provisions covering accident prevention tags, see 1910.145.

(4) Energy isolation. Lockout and tagout device application and removal may only be performed by the authorized employees who are performing the servicing or maintenance.

(5) Notification. Affected employees must be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. Notification must be given before the controls are applied and after they are removed from the machine or equipment.

**NOTE** to paragraph (5): See also paragraph (7) of this rule, which requires that the second notification take place before the machine or equipment is reenergized.

(6) Lockout/tagout application. The established procedures for the application of energy control (the lockout or tagout procedures) must include the following elements and actions, and these procedures must be performed in the following sequence:

(a) Before an authorized or affected employee turns off a machine or equipment, the authorized employee must have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

(b) The machine or equipment must be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be used to avoid any additional or increased hazards to employees as a result of the equipment stoppage.

(c) All energy isolating devices that are needed to control the energy to the machine or equipment must be physically located and operated in such a manner as to isolate the machine or equipment from energy sources.

(d) Lockout or tagout devices must be affixed to each energy isolating device by authorized employees.

(A) Lockout devices must be attached in a manner that will hold the energy isolating devices in a "safe" or "off" position.

(B) Tagout devices must be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.

(i) Where tagout devices are used with energy isolating devices designed with the capability of being locked out, the tag attachment must be fastened at the same point at which the lock would have been attached.

(ii) Where a tag cannot be affixed directly to the energy isolating device, the tag must be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.

(e) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy must be relieved, disconnected, restrained, or otherwise rendered safe.

(f) If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation must be continued until the servicing or maintenance is completed or until the possibility of such accumulation no longer exists.

(g) Before starting work on machines or equipment that have been locked out or tagged out, the authorized employee must verify that isolation and deenergizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, a test must be performed to ensure that these parts are deenergized.

(7) Release from lockout/tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures must be followed and actions taken by the authorized employees to ensure the following:

(a) The work area must be inspected to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.

(b) The work area must be checked to ensure that all employees have been safely positioned or removed.

(c) After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees must be notified that the lockout or tagout devices have been removed.

(d) Each lockout or tagout device must be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device. However, if that employee is not available to remove it, the device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer must demonstrate that the specific procedure provides a degree of safety equivalent to that provided by the removal of the device by the authorized employee who applied it. The specific procedure must include at least the following elements:

(A) Verification by the employer that the authorized employee who applied the device is not at the facility;

(B) Making all reasonable efforts to contact the authorized employee to inform him or her that his or her lockout or tagout device has been removed; and

(C) Ensuring that the authorized employee has this knowledge before he or she resumes work at that facility.

(8) Additional requirements.

(a) If the lockout or tagout devices must be temporarily removed from energy isolating devices and the machine or equipment must be energized to test or position the machine, equipment, or component thereof, the following sequence of actions must be followed:

(A) Clear the machine or equipment of tools and materials in accordance with paragraph (7)(a) of this rule;

(B) Remove employees from the machine or equipment area in accordance with paragraphs (7)(b) and (7)(c) of this rule;

(C) Remove the lockout or tagout devices as specified in paragraph (7)(d) of this rule;

(D) Energize and proceed with the testing or positioning; and

(E) Deenergize all systems and reapply energy control measures in accordance with paragraph (6) of this rule to continue the servicing or maintenance.

(b) When servicing or maintenance is performed by a crew, craft, department, or other group, they must use a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device. Group lockout or tagout devices must be used in accordance with the procedures required by paragraphs (2)(c) and (2)(d) of this rule including, but not limited to, the following specific requirements:

(A) Primary responsibility must be vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

(B) Provision must be made for the authorized employee to ascertain the exposure status of all individual group members with regard to the lockout or tagout of the machine or equipment;

(C) When more than one crew, craft, department, or other group is involved, assignment of overall job-associated lockout or tagout control responsibility must be given to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(D) Each authorized employee must affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work and must remove those devices when he or she stops working on the machine or equipment being serviced or maintained.

(c) Procedures must be used during shift or personnel changes to ensure the continuity of lockout or tagout protection, including

provision for the orderly transfer of lockout or tagout device protection between off-going and on-coming employees, to minimize their exposure to hazards from the unexpected energizing or start-up of the machine or equipment or from the release of stored energy.

(d) Whenever outside servicing personnel are to be engaged in activities covered in 437-002-2303, the on-site employer and the outside employer must inform each other of their respective lockout or tagout procedures, and each employer must ensure that his or her personnel understand and comply with restrictions and prohibitions of the energy control procedures being used.

(e) If energy isolating devices are installed in a central location and are under the exclusive control of a system operator, the following requirements apply:

(A) The employer must use a procedure that affords employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

(B) The system operator must place and remove lockout and tagout devices in place of the authorized employee under paragraphs (4), (6)(d), and (7)(d) of this rule.

(C) Provisions must be made to identify the authorized employee who is responsible for (that is, being protected by) the lockout or tagout device, to transfer responsibility for lockout and tagout devices, and to ensure that an authorized employee requesting removal or transfer of a lockout or tagout device is the one responsible for it before the device is removed or transferred.

**NOTE** to 437-002-2303: Lockout and tagging procedures that comply with paragraphs (c) through (f) of 1910.147 will also be deemed to comply with 437-002-2303 if the procedures address the hazards covered by 437-002-2303.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2304**

##### **Enclosed Spaces**

This rule covers enclosed spaces that may be entered by employees. It does not apply to vented vaults if the employer makes a determination that the ventilation system is operating to protect employees before they enter the space. This rule applies to routine entry into enclosed spaces in lieu of the confined space entry requirements contained in 437-002-0146 (4) through (11). If, after the employer takes the precautions given in 437-002-2304 and 437-002-2319 of Division 2/RR, the hazards remaining in the enclosed space endanger the life of an entrant or could interfere with an entrant's escape from the space, then entry into the enclosed space must meet the permit-space entry requirements of 437-002-0146 (4) through (11), Confined spaces, in Division 2/J.

(1) Safe work practices. The employer must ensure the use of safe work practices for entry into, and work in, enclosed spaces and for rescue of employees from such spaces.

(2) Training. Each employee who enters an enclosed space or who serves as an attendant must be trained in the hazards of enclosed-space entry, in enclosed-space entry procedures, and in enclosed-space rescue procedures.

(3) Rescue equipment. Employers must provide equipment to ensure the prompt and safe rescue of employees from the enclosed space.

(4) Evaluating potential hazards. Before any entrance cover to an enclosed space is removed, the employer must determine whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and by evaluating whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover must be eliminated before the cover is removed.

**NOTE** to paragraph (4): The determination called for in this paragraph may consist of a check of the conditions that might foreseeably be in the enclosed space. For example, the cover could be checked to see if it is hot and, if it is fastened in place, could be loosened gradually to release any residual pressure. An evaluation also needs to be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen-deficient or flammable atmosphere, to develop within the space.

(5) Removing covers. When covers are removed from enclosed spaces, the opening must be promptly guarded by a railing, temporary cover, or other barrier designed to prevent an accidental fall



through the opening and to protect employees working in the space from objects entering the space.

(6) Hazardous atmosphere. Employees may not enter any enclosed space while it contains a hazardous atmosphere, unless the entry conforms to the confined space standard, 437-002-0146 Confined spaces, in Division 2/J.

(7) Attendants. While work is being performed in the enclosed space, an attendant with first-aid training must be immediately available outside the enclosed space to provide assistance if a hazard exists because of traffic patterns in the area of the opening used for entry. The attendant is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from: monitoring employees within the space or ensuring that it is safe for employees to enter and exit the space.

**NOTE** to paragraph (7): See 437-002-2319 Underground electrical installations, for additional requirements on attendants for work in manholes and vaults.

(8) Calibration of test instruments. Test instruments used to monitor atmospheres in enclosed spaces must be kept in calibration and must have a minimum accuracy of  $\pm 10$  percent.

(9) Testing for oxygen deficiency. Before an employee enters an enclosed space, the atmosphere in the enclosed space must be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for offsite evaluation. If continuous forced-air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

(10) Testing for flammable gases and vapors. Before an employee enters an enclosed space, the internal atmosphere must be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This test must be performed after the oxygen testing and ventilation required by paragraph (9) of this rule demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.

(11) Ventilation and monitoring for flammable gases or vapors. If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation must be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A continuous monitoring program to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.

**NOTE** to paragraph (11): See the definition of "hazardous atmosphere" for guidance in determining whether a specific concentration of a substance is hazardous.

(12) Specific ventilation requirements. If continuous forced-air ventilation is used, it must begin before entry is made and must be maintained long enough for the employer to be able to demonstrate that a safe atmosphere exists before employees are allowed to enter the work area. The forced-air ventilation must be so directed as to ventilate the immediate area where employees are present within the enclosed space and must continue until all employees leave the enclosed space.

(13) Air supply. The air supply for the continuous forced-air ventilation must be from a clean source and may not increase the hazards in the enclosed space.

(14) Open flames. If open flames are used in enclosed spaces, a test for flammable gases and vapors must be made immediately before the open flame device is used and at least once per hour while the device is used in the space. Testing must be conducted more frequently if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

**NOTE** to paragraph (14): See the definition of "hazardous atmosphere" for guidance in determining whether a specific concentration of a substance is hazardous.

**NOTE** to 437-002-2304 : Entries into enclosed spaces conducted in accordance with the requirements of 437-002-0146 (4) through (11), Confined spaces, are considered as complying with 437-002-2304 of Division 2/RR.  
Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

## **437-002-2305**

### **Excavations**

Excavation operations must comply with Division 3/P.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

## **437-002-2306**

### **Personal Protective Equipment**

(1) General. For employers engaged in general industry activities, personal protective equipment must meet the requirements of 437-002-0134. For employers engaged in construction activities, personal protective equipment must meet the requirements of 437-003-0134.

**NOTE** 1: 437-002-0134(4) and 437-003-0134(4) set employer payment obligations for the personal protective equipment required by this rule, including, but not limited to, the fall protection equipment required by paragraph (2) of this rule, the electrical protective equipment required by 437-002-2311(3) of Division 2/RR, and the flame-resistant and arc-rated clothing and other protective equipment required by 437-002-2311(8) of Division 2/RR.

**NOTE** 2: For general industry activities, refer to Division 2/I, 1910.137, for Electrical Protective Equipment requirements. For construction activities, refer to Division 3/E, 1926.97, for Electrical Protective Equipment requirements.

(2) Fall protection.

(a) Personal fall arrest systems must meet the requirements of Division 3/M, as required by 437-002-0134(5) of Division 2 and 437-003-0134(5) of Division 3.

(b) Personal fall arrest equipment used by employees who are exposed to hazards from flames or electric arcs, as determined by the employer under 437-002-2311(8)(a) of Division 2/RR, must be capable of passing a drop test equivalent to that required by paragraph (2)(c)(L) of this rule after exposure to an electric arc with a heat energy of  $40 \pm 5$  cal/cm<sup>2</sup>.

(c) Body belts and positioning straps for work-positioning equipment must meet the following requirements:

(A) Hardware for body belts and positioning straps must meet the following requirements:

(i) Hardware must be made of drop-forged steel, pressed steel, formed steel, or equivalent material.

(ii) Hardware must have a corrosion-resistant finish.

(iii) Hardware surfaces must be smooth and free of sharp edges.

(B) Buckles must be capable of withstanding an 8.9-kilonewton (2,000-pound-force) tension test with a maximum permanent deformation no greater than 0.4 millimeters (0.0156 inches).

(C) D rings must be capable of withstanding a 22-kilonewton (5,000-pound-force) tensile test without cracking or breaking.

(D) Snaphooks must be capable of withstanding a 22-kilonewton (5,000-pound-force) tension test without failure.

**Note** to paragraph (2)(c)(D) of this rule: Distortion of the snaphook sufficient to release the keeper is considered to be tensile failure of a snaphook.

(E) Top grain leather or leather substitute may be used in the manufacture of body belts and positioning straps; however, leather and leather substitutes may not be used alone as a load-bearing component of the assembly.

(F) Plied fabric used in positioning straps and in load-bearing parts of body belts must be constructed in such a way that no raw edges are exposed and the plies do not separate.

(G) Positioning straps must be capable of withstanding the following tests:

(i) A dielectric test of 819.7 volts, AC, per centimeter (25,000 volts per foot) for 3 minutes without visible deterioration;

(ii) A leakage test of 98.4 volts, AC, per centimeter (3,000 volts per foot) with a leakage current of no more than 1 mA;

**Note** to paragraphs (2)(c)(G)(i) and (2)(c)(G)(ii): Positioning straps that pass direct-current tests at equivalent voltages are considered as meeting this requirement.

(iii) Tension tests of 20 kilonewtons (4,500 pounds-force) for sections free of buckle holes and of 15 kilonewtons (3,500 pounds-force) for sections with buckle holes;

(iv) A buckle-tear test with a load of 4.4 kilonewtons (1,000 pounds-force); and

(v) A flammability test in accordance with Table RR-1. Table RR-1.

(H) The cushion part of the body belt must contain no exposed rivets on the inside and must be at least 76 millimeters (3 inches) in width.

(I) Tool loops must be situated on the body of a body belt so that the 100 millimeters (4 inches) of the body belt that is in the center of the back, measuring from D ring to D ring, is free of tool loops and any other attachments.

(J) Copper, steel, or equivalent liners must be used around the bars of D rings to prevent wear between these members and the leather or fabric enclosing them.

(K) Snaphooks must be of the locking type meeting the following requirements:

(i) The locking mechanism must first be released, or a destructive force must be placed on the keeper, before the keeper will open.

(ii) A force in the range of 6.7 N (1.5 lbf) to 17.8 N (4 lbf) must be required to release the locking mechanism.

(iii) With the locking mechanism released and with a force applied on the keeper against the face of the nose, the keeper may not begin to open with a force of 11.2 N (2.5 lbf) or less and must begin to open with a maximum force of 17.8 N (4 lbf).

(L) Body belts and positioning straps must be capable of withstanding a drop test as follows:

(i) The test mass must be rigidly constructed of steel or equivalent material with a mass of 100 kg (220.5 lbf). For work-positioning equipment used by employees weighing more than 140 kg (310 lbf) fully equipped, the test mass must be increased proportionately (that is, the test mass must equal the mass of the equipped worker divided by 1.4).

(ii) For body belts, the body belt must be fitted snugly around the test mass and must be attached to the test structure anchorage point by means of a wire rope.

(iii) For positioning straps, the strap must be adjusted to its shortest length possible to accommodate the test and connected to the test-structure anchorage point at one end and to the test mass on the other end.

(iv) The test mass must be dropped an unobstructed distance of 1 meter (39.4 inches) from a supporting structure that will sustain minimal deflection during the test.

(v) Body belts must successfully arrest the fall of the test mass and must be capable of supporting the mass after the test.

(vi) Positioning straps must successfully arrest the fall of the test mass without breaking, and the arrest force may not exceed 17.8 kilonewtons (4,000 pounds-force). Additionally, snaphooks on positioning straps may not distort to such an extent that the keeper would release.

**NOTE** to paragraph (2)(c) of this rule: When used by employees weighing no more than 140 kg (310 lbf) fully equipped, body belts and positioning straps that conform to American Society of Testing and Materials Standard Specifications for Personal Climbing Equipment, ASTM F887-12e1, are deemed to be in compliance with paragraph (2)(c) of this rule.

(d) The following requirements apply to the care and use of personal fall protection equipment.

(A) Body belts and positioning straps must never be stored with sharp or edged tools.

(B) Small tools carried in the belt must be placed so they present the least danger of coming in accidental contact with energized parts. Sharp or pointed tools must not be carried unless in scabbards, or are otherwise effectively safeguarded.

(C) Work-positioning equipment must be inspected before use each day to determine that the equipment is in safe working condition. Work-positioning equipment that is not in safe working condition may not be used.

**NOTE** to paragraph (2)(d)(C): Appendix F to Division 2/RR contains guidelines for inspecting work-positioning equipment.

(D) The use of chainsaws is prohibited on all overhead work where workers are supported by a single climbing belt or rope.

(E) Workers must not place positioning straps around the pole above the top crossarm except where adequate protection is taken to prevent it from slipping over the top of the pole. Workers must not

allow either end of a strap to hang loose, either in climbing or descending poles or other structures.

(F) Gaffs and Climbers

(i) Gaffs and Climbers must be maintained according to the manufacturer's recommendations.

(ii) Workers must remove climbers before driving any vehicle.

(iii) Climbers must not be worn except when required. Workers must not continue to wear their climbers while working on the ground except for brief periods when a worker is necessarily off the pole.

(iv) While climbers are not being worn, the gaffs must be properly guarded.

(G) Safety lines must be readily available while working aloft to be used for emergency rescue such as lowering a worker to the ground. Such safety lines must be a minimum of one-half-inch diameter and three or four strand first-grade manila or its equivalent in strength (2,650 lb.) and durability.

(H) Personal fall arrest systems must be used in accordance with 1926.502(d).

**NOTE** to paragraph (2)(d)(H): Fall protection equipment rigged to arrest falls is considered a fall arrest system and must meet the applicable requirements for the design and use of those systems. Fall protection equipment rigged for work positioning is considered work-positioning equipment and must meet the applicable requirements for the design and use of that equipment.

(I) The employer must ensure that employees use fall protection systems as follows:

(i) Each employee working from an aerial lift must use a fall restraint system or a personal fall arrest system. Paragraph (c)(2)(v) of 1910.67 and paragraph (b)(2)(v) of 1926.453 do not apply.

(ii) Except as provided in paragraph (2)(d)(I)(iii) of this rule, each employee in elevated locations more than 1.2 meters (4 feet) above the ground on poles, towers, or similar structures must use a personal fall arrest system, work-positioning equipment, or fall restraint system, as appropriate, if the employer has not provided other fall protection meeting Division 2/D, Walking-Working Surfaces; or Division 3/M, Fall Protection.

(iii) Each qualified employee climbing or changing location on poles, towers, or similar structures must use fall protection equipment unless the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard than climbing or changing location without it.

**NOTE** 1 to paragraphs (2)(d)(I)(ii) and (2)(d)(I)(iii) of this rule: These paragraphs apply to structures that support overhead electric power transmission and distribution lines and equipment. They do not apply to portions of buildings, such as loading docks, or to electric equipment, such as transformers and capacitors. Division 2/D, and Division 3/M contain the duty to provide fall protection associated with walking and working surfaces.

(J) Work-positioning equipment must be rigged so that an employee can free fall no more than 0.6 meters (2 feet).

(K) Anchorages for work-positioning equipment must be capable of supporting at least twice the potential impact load of an employee's fall, or 13.3 kilonewtons (3,000 pounds-force), whichever is greater.

**NOTE** to paragraph (2)(d)(K): Wood-pole fall-restriction devices meeting American Society of Testing and Materials Standard Specifications for Personal Climbing Equipment, ASTM F887-12e1, are deemed to meet the anchorage-strength requirement when they are used in accordance with manufacturers' instructions.

(L) Unless the snaphook is a locking type and designed specifically for the following connections, snaphooks on work-positioning equipment may not be engaged:

(i) Directly to webbing, rope, or wire rope;

(ii) To each other;

(iii) To a D ring to which another snaphook or other connector is attached;

(iv) To a horizontal lifeline; or

(v) To any object that is incompatibly shaped or dimensioned in relation to the snaphook such that accidental disengagement could occur should the connected object sufficiently depress the snaphook keeper to allow release of the object.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

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**437-002-2307**

**Portable Ladders and Platforms**

(1) General. For employers involved in general industry activities, requirements for portable ladders contained in Division 2/D apply in addition to the requirements of this rule, except as specifically noted in paragraph (2) of this rule. For employers involved in construction activities, requirements for portable ladders contained in Division 3/X apply in addition to the requirements of this rule, except as specifically noted in paragraph (2) of this rule.

(2) Special ladders and platforms. For general industry activities, portable ladders used on structures or conductors in conjunction with overhead line work need not meet 1910.25(d)(2)(i) and (d)(2)(iii) or 1910.26(c)(3)(iii). For construction activities, portable ladders and platforms used on structures or conductors in conjunction with overhead line work need not meet 1926.1053(b)(5)(i) and (b)(12). Portable ladders and platforms used on structures or conductors in conjunction with overhead line work must meet the following requirements:

(a) In the configurations in which they are used, portable platforms must be capable of supporting without failure at least 2.5 times the maximum intended load.

(b) Portable ladders and platforms may not be loaded in excess of the working loads for which they are designed.

(c) Portable ladders and platforms must be secured to prevent them from becoming dislodged.

(d) Portable ladders and platforms may be used only in applications for which they are designed.

(3) Conductive ladders. Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high-voltage work, conductive ladders must be used when the employer demonstrates that nonconductive ladders would present a greater hazard to employees than conductive ladders.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

**437-002-2308**

**Hand and Portable Power Equipment**

(1) General. Paragraph (2) of this rule applies to electric equipment connected by cord and plug. Paragraph (3) of this rule applies to portable and vehicle-mounted generators used to supply cord- and plug-connected equipment. Paragraph (4) of this rule applies to hydraulic and pneumatic tools.

(2) Cord- and plug-connected equipment. For general industry activities, cord- and plug-connected equipment not covered by Division 2/S must comply with one of the following instead of 1910.243(a)(5); and for construction activities, cord- and plug-connected equipment not covered by Division 3/K must comply with one of the following instead of 1926.302(a)(1):

(a) The equipment must be equipped with a cord containing an equipment grounding conductor connected to the equipment frame and to a means for grounding the other end of the conductor (however, this option may not be used where the introduction of the ground into the work environment increases the hazard to an employee); or

(b) The equipment must be of the double-insulated type conforming to Division 2/S or Division 3/K; or

(c) The equipment must be connected to the power supply through an isolating transformer with an ungrounded secondary of not more than 50 volts.

(3) Portable and vehicle-mounted generators. Portable and vehicle-mounted generators used to supply cord- and plug-connected equipment covered by paragraph (2) of this section must meet the following requirements:

(a) The generator may only supply equipment located on the generator or the vehicle and cord- and plug-connected equipment through receptacles mounted on the generator or the vehicle.

(b) The non-current-carrying metal parts of equipment and the equipment grounding conductor terminals of the receptacles must be bonded to the generator frame.

(c) For vehicle-mounted generators, the frame of the generator must be bonded to the vehicle frame.

(d) Any neutral conductor must be bonded to the generator frame.

(4) Hydraulic and pneumatic tools.

**NOTE** to paragraph (4)(1) of this rule: Paragraph (d)(1) of 1926.302 does not apply to hydraulic fluid used in insulating sections of hydraulic tools.

(a) Safe operating pressures for hydraulic and pneumatic tools, hoses, valves, pipes, filters, and fittings may not be exceeded.

**NOTE** to paragraph (4)(a) of this rule: If any hazardous defects are present, no operating pressure is safe, and the hydraulic or pneumatic equipment involved may not be used. In the absence of defects, the maximum rated operating pressure is the maximum safe pressure.

(b) A hydraulic or pneumatic tool used where it may contact exposed energized parts must be designed and maintained for such use.

(c) The hydraulic system supplying a hydraulic tool used where it may contact exposed live parts must provide protection against loss of insulating value, for the voltage involved, due to the formation of a partial vacuum in the hydraulic line.

**Note** to paragraph (4)(c) of this rule: Use of hydraulic lines that do not have check valves and that have a separation of more than 10.7 meters (35 feet) between the oil reservoir and the upper end of the hydraulic system promotes the formation of a partial vacuum.

(d) A pneumatic tool used on energized electric lines or equipment, or used where it may contact exposed live parts, must provide protection against the accumulation of moisture in the air supply.

(e) Pressure must be released before connections are broken, unless quick acting, self-closing connectors are used.

(f) Employers must ensure that employees do not use any part of their bodies to locate, or attempt to stop, a hydraulic leak.

(g) Hoses may not be kinked.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

**437-002-2309**

**Live-line Tools**

(1) Live-line tools must be used by employees when doing work on energized lines and equipment in excess of 5,000 volts.

(2) Live-line tools must be used while handling foreign objects that are in contact with high voltage equipment or conductors energized in excess of 5,000 volts.

(3) Only live-line tools that are tested and warranted by the manufacturer at the time of purchase to be adequate for the voltage involved must be used.

(4) Design of tools. Live-line tool rods, tubes, and poles must be designed and constructed to withstand the following minimum tests:

(a) If the tool is made of fiberglass-reinforced plastic (FRP), it must withstand 328,100 volts per meter (100,000 volts per foot) of length for 5 minutes, or

**NOTE** to paragraph (4)(a): Live-line tools using rod and tube that meet ASTM F711-02 (2007), Standard Specification for Fiberglass-Reinforced Plastic (FRP) Rod and Tube Used in Live Line Tools, are deemed to comply with paragraph (4) of this rule.

(b) If the tool is made of wood, it must withstand 246,100 volts per meter (75,000 volts per foot) of length for 3 minutes, or

(c) The tool must withstand other tests that the employer can demonstrate are equivalent.

(5) Condition of tools.

(a) Each live-line tool must be wiped clean and visually inspected for defects before use each day.

(b) If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool must be removed from service and examined and tested according to paragraph (5)(c) of this rule before being returned to service.

(c) Live-line tools used for primary employee protection must be removed from service every 2 years, and whenever required under paragraph (5)(b) of this rule, for examination, cleaning, repair, and testing as follows:

(A) Each tool must be thoroughly examined for defects.



(B) If a defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is found, the tool must be repaired and refinished or must be permanently removed from service. If no such defect or contamination is found, the tool must be cleaned and waxed.

(C) The tool must be tested in accordance with paragraphs (5)(c)(D) and (5)(c)(E) of this rule under the following conditions:

(i) After the tool has been repaired or refinished; and

(ii) After the examination if repair or refinishing is not performed, unless the tool is made of FRP rod or foam-filled FRP tube and the employer can demonstrate that the tool has no defects that could cause it to fail during use.

(D) The test method used must be designed to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.

(E) The voltage applied during the tests must be as follows:

(i) 246,100 volts per meter (75,000 volts per foot) of length for 1 minute if the tool is made of fiberglass, or

(ii) 164,000 volts per meter (50,000 volts per foot) of length for 1 minute if the tool is made of wood, or

(iii) Other tests that the employer can demonstrate are equivalent.

(d) Live-line tools may not be used when rain, fog, or any other factor is sufficient to reduce their insulating qualities so that leakage can be felt.

(e) Live-line tools must be kept in a dry place. When transporting, they must be kept in separate special storage compartments, or be contained in protective bags. They may not be laid directly on the ground.

**NOTE** to paragraph (5) of this rule: Guidelines for the examination, cleaning, repairing, and in-service testing of live-line tools are specified in the Institute of Electrical and Electronics Engineers' IEEE Guide for Maintenance Methods on Energized Power Lines, IEEE Std 516-2009.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-2310**

#### **Materials Handling and Storage**

(1) General. For general industry activities, materials handling and storage must comply with applicable material handling and material storage requirements in Division 2, including those in Division 2/N, except for Helicopters, which must comply with 437-002-2323. For construction activities, materials handling and storage must comply with applicable material handling and material storage requirements in Division 3, including those in Division 3/N and Division 3/CC, except for Helicopters, which must comply with 437-002-2323.

(2) Materials storage near energized lines or equipment.

(a) In areas to which access is not restricted to qualified persons only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances, plus a distance that provides for the maximum sag and side swing of all conductors and for the height and movement of material-handling equipment:

(A) For lines and equipment energized at 50 kilovolts or less, the distance is 3.05 meters (10 feet).

(B) For lines and equipment energized at more than 50 kilovolts, the distance is 3.05 meters (10 feet) plus 0.10 meter (4 inches) for every 10 kilovolts over 50 kilovolts.

(b) In areas restricted to qualified employees, materials may not be stored within the working space about energized lines or equipment.

**NOTE** to paragraph (2)(b): 437-002-2320(1) Substations; and 437-002-2321(3) Power Generation Installations; of Division 2/RR, specify the size of the working space.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-2311**

#### **Working On or Near Exposed Energized Parts**

This rule applies to work on or near exposed live parts.

(1) General.

(a) Only qualified employees may work on or with exposed energized lines or parts of equipment.

(b) Only qualified employees may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more.

(c) Electric lines and equipment must be considered and treated as energized unless they have been deenergized in accordance with 437-002-2303 Hazardous Energy Control, or 437-002-2312, of Division 2/RR.

(2) Two worker rules.

(a) Not fewer than two qualified employees may work on lines or equipment energized at more than 600 volts while performing the following types of work:

(A) Installation, removal, or repair of lines energized at more than 600 volts,

(B) Installation, removal, or repair of deenergized lines if an employee is exposed to contact with other parts energized at more than 600 volts,

(C) Installation, removal, or repair of equipment, such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts,

(D) Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts, and

(E) Other work that exposes an employee to electrical hazards greater than, or equal to, the electrical hazards posed by operations listed specifically in paragraphs (2)(a)(A) through (2)(a)(E) of this section.

(b) The following exceptions to the two-worker rule in 437-002-2311(2)(a)(A) through (2)(a)(E) apply:

(A) When re-fusing circuits with a live-line tool.

(B) When operating switches by means of operating handles or live-line tools, excluding installation or removal of load break elbows with live line tools, addressed in paragraph (2)(b)(E) of this rule.

(C) When a qualified apprentice is assigned to work with a journeyman for the purpose of training.

(D) When installing or removing a live-line clamp connection with an approved live-line tool on single phase line or apparatus, providing that the connection or disconnection does not interrupt or pick up a load.

(E) Routine circuit switching, including installation or removal of a load break elbow with a live line tool on a single phase line or apparatus, with only one potential primary source.

(i) Authorized employees must conduct an inspection to determine that conditions on the site allow for safe work. Conditions include the following examples:

(I) Physical condition of the cable, elbows, apparatus, and switching equipment.

(II) Environmental and work conditions, such as limited visibility, bad weather, restricted working space, and poor lighting.

(III) Service life of the elbow, power cable, and apparatus.

(ii) When an employee requests a second worker on site, a second worker must be provided.

(F) Emergency repairs to the extent necessary to safeguard the general public.

(G) Work performed with live-line tools when the position of the employee is such that he or she is neither within reach of, nor otherwise exposed to contact with, energized parts.

(c) Proximity. Workers within reach of each other must not work on different phases of the same circuit, on different circuits, or on one energized phase and a ground conductor at the same time.

(3) Minimum approach distances.

(a) The employer must establish minimum approach distances no less than the distances computed by Table RR-2 for ac systems or Table RR-7 for dc systems.

(b) For voltages over 72.5 kilovolts, the employer must determine the maximum anticipated per-unit transient overvoltage, phase-to-ground, through an engineering analysis or assume a maximum anticipated per-unit transient overvoltage, phase-to-ground, in accordance with Table RR-8. When the employer uses portable protective gaps to control the maximum transient overvoltage, the value

of the maximum anticipated per-unit transient overvoltage, phase-to-ground, must provide for five standard deviations between the statistical sparkover voltage of the gap and the statistical withstand voltage corresponding to the electrical component of the minimum approach distance. The employer must make any engineering analysis conducted to determine maximum anticipated per-unit transient overvoltage available upon request to employees and to Oregon OSHA for examination and copying.

**NOTE** to paragraph (3)(b): See Appendix B to Division 2/RR for information on how to calculate the maximum anticipated per-unit transient overvoltage, phase-to-ground, when the employer uses portable protective gaps to reduce maximum transient overvoltages.

(c) The employer must ensure that no employee approaches or takes any conductive object closer to exposed energized parts than the employer's established minimum approach distance, unless:

(A) The employee is insulated from the energized part. Rubber insulating gloves or rubber insulating gloves and sleeves worn in accordance with paragraph (4) of this rule constitutes insulation of the employee from the energized part upon which the employee is working provided that the employee has control of the part in a manner sufficient to prevent exposure to uninsulated portions of the employee's body; or

(B) The energized part is insulated from the employee and from any other conductive object at a different potential.

(C) Live-line barehand work is prohibited in Oregon.

(4) Type of insulation: Adequate barriers and clearances.

(a) Protective equipment and devices must be installed or removed with:

(A) Rubber gloves or hot sticks on conductors or equipment energized at 5,000 volts or less.

(B) Live line tools for conductors or equipment energized in excess of 5,000 volts.

(C) Rubber protective equipment may be considered as adequate barriers when used on voltages for which it is rated. Rubber gloves may be used as additional protection from accidental contact only on voltages above 5,000 and not over 15,000 volts phase to ground.

(D) Rubber gloves cannot be used as primary protection on voltages over 5,000 volts.

(E) Fixed protective guards and barriers, when installed and maintained according to the manufacturer's guidelines, may be considered as providing adequate clearance.

(b) When an employee uses rubber insulating gloves as insulation from energized parts (under paragraph (3)(c)(A) of this rule), the employer must ensure that the employee also uses rubber insulating sleeves. However, an employee need not use rubber insulating sleeves if:

(A) Exposed energized parts on which the employee is not working are insulated from the employee; and

(B) When installing insulation for purposes of paragraph (4)(b)(A) of this rule, the employee installs the insulation from a position that does not expose their upper arms to contact with other energized parts.

(c) When an employee uses rubber insulating gloves or rubber insulating gloves and sleeves as insulation from energized parts (under paragraph (3)(c)(A) of this rule), the employer must ensure that the employee:

(A) Puts on the rubber insulating gloves and sleeves in a position where they cannot reach into the minimum approach distance, established by the employer under paragraph (3)(a) of this rule; and

(B) Does not remove the rubber insulating gloves and sleeves until they are in a position where they cannot reach into the minimum approach distance, established by the employer under paragraph (3)(a) of this rule.

(5) Working position.

(a) The employer must ensure that each employee, to the extent that other safety-related conditions at the worksite permit, works in a position from which a slip or shock will not bring the employee's body into contact with exposed, uninsulated parts energized at a potential different from the employee's.

(b) When an employee performs work near exposed parts energized at more than 600 volts, but not more than 72.5 kilovolts, and

is not wearing rubber insulating gloves, being protected by insulating equipment covering the energized parts, performing work using live-line tools, the employee must work from a position where he or she cannot reach into the minimum approach distance, established by the employer under paragraph (3)(a) of this rule.

(6) Making connections. The employer must ensure that employees make connections as follows:

(a) In connecting deenergized equipment or lines to an energized circuit by means of a conducting wire or device, an employee must first attach the wire to the deenergized part;

(b) When disconnecting equipment or lines from an energized circuit by means of a conducting wire or device, an employee must remove the source end first; and

(c) When lines or equipment are connected to or disconnected from energized circuits, an employee must keep loose conductors away from exposed energized parts.

(7) Conductive articles. When an employee performs work within reaching distance of exposed energized parts of equipment, the employer must ensure that the employee removes or renders non-conductive all exposed conductive articles, such as keychains or watch chains, rings, or wrist watches or bands, unless such articles do not increase the hazards associated with contact with the energized parts.

(8) Protection from flames and electric arcs.

(a) The employer must assess the workplace to identify employees exposed to hazards from flames or from electric arcs.

(b) For each employee exposed to hazards from electric arcs, the employer must make a reasonable estimate of the incident heat energy to which the employee would be exposed.

**NOTE 1** to paragraph (8)(b): Appendix E to Division 2/RR provides guidance on estimating available heat energy. Oregon OSHA will deem employers following the guidance in Appendix E to Division 2/RR to be in compliance with paragraph (8)(b) of this rule. An employer may choose a method of calculating incident heat energy not included in Appendix E to Division 2/RR if the chosen method reasonably predicts the incident energy to which the employee would be exposed.

**NOTE 2** to paragraph (8)(b): This paragraph does not require the employer to estimate the incident heat energy exposure for every job task performed by each employee. The employer may make broad estimates that cover multiple system areas provided the employer uses reasonable assumptions about the energy-exposure distribution throughout the system and provided the estimates represent the maximum employee exposure for those areas. For example, the employer could estimate the heat energy just outside a substation feeding a radial distribution system and use that estimate for all jobs performed on that radial system.

(c) The employer must ensure that each employee who is exposed to hazards from flames or electric arcs does not wear clothing that could melt onto their skin or that could ignite and continue to burn when exposed to flames or the heat energy estimated under paragraph (8)(b) of this rule.

**NOTE** to paragraph (8)(c) of this rule: This paragraph prohibits clothing made from acetate, nylon, polyester, rayon and polypropylene, either alone or in blends, unless the employer demonstrates that the fabric has been treated to withstand the conditions that may be encountered by the employee or that the employee wears the clothing in such a manner as to eliminate the hazard involved.

(d) The employer must ensure that the outer layer of clothing worn by an employee, except for clothing not required to be arc rated under paragraphs (8)(e)(A) through (8)(e)(E) of this rule, is flame resistant under any of the following conditions:

(A) The employee is exposed to contact with energized circuit parts operating at more than 600 volts,

(B) An electric arc could ignite flammable material in the work area that, in turn, could ignite the employee's clothing,

(C) Molten metal or electric arcs from faulted conductors in the work area could ignite the employee's clothing, or

**NOTE** to paragraph (8)(d)(C): This paragraph does not apply to conductors that are capable of carrying, without failure, the maximum available fault current for the time the circuit protective devices take to interrupt the fault.

(D) The incident heat energy estimated under paragraph (8)(b) of this rule exceeds 2.0 cal/cm<sup>2</sup>.

(e) The employer must ensure that each employee exposed to hazards from electric arcs wears protective clothing and other protective equipment with an arc rating greater than or equal to the heat energy estimated under paragraph (8)(b) of this rule whenever that

estimate exceeds 2.0 cal/cm<sup>2</sup>. This protective equipment must cover the employee's entire body, except as follows:

(A) Arc-rated protection is not necessary for the employee's hands when the employee is wearing rubber insulating gloves with protectors or, if the estimated incident energy is no more than 14 cal/cm<sup>2</sup>, heavy-duty leather work gloves with a weight of at least 407 gm/m<sup>2</sup> (12 oz/yd<sup>2</sup>),

(B) Arc-rated protection is not necessary for the employee's feet when the employee is wearing heavy-duty work shoes or boots,

(C) Arc-rated protection is not necessary for the employee's head when the employee is wearing head protection meeting 437-002-0134(9) and 437-003-0134(9) if the estimated incident energy is less than 9 cal/cm<sup>2</sup> for exposures involving single-phase arcs in open air or 5 cal/cm<sup>2</sup> for other exposures,

(D) The protection for the employee's head may consist of head protection meeting 437-002-0134(9) and 437-003-0134(9), and a faceshield with a minimum arc rating of 8 cal/cm<sup>2</sup> if the estimated incident-energy exposure is less than 13 cal/cm<sup>2</sup> for exposures involving single-phase arcs in open air or 9 cal/cm<sup>2</sup> for other exposures, and

(E) For exposures involving single phase arcs in open air, the arc rating for the employee's head and face protection may be 4 cal/cm<sup>2</sup> less than the estimated incident energy.

**Note** to paragraph (8): See Appendix E to Division 2/RR for further information on the selection of appropriate protection.

(9) Fuse handling. When an employee must install or remove fuses with one or both terminals energized at more than 300 volts, or with exposed parts energized at more than 50 volts, the employer must ensure that the employee uses tools or gloves rated for the voltage. When an employee installs or removes expulsion-type fuses with one or both terminals energized at more than 300 volts, the employer must ensure that the employee wears eye protection meeting the requirements of Division 2/I and Division 3/E, uses a tool rated for the voltage, and is clear of the exhaust path of the fuse barrel.

(10) Covered (non-insulated) conductors. The requirements of this section that pertain to the hazards of exposed live parts also apply when an employee performs work in proximity to covered (non-insulated) wires.

(11) Non-current-carrying metal parts. Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, must be treated as energized at the highest voltage to which these parts are exposed, unless the employer inspects the installation and determines that these parts are grounded before employees begin performing the work.

(12) Opening and closing circuits under load.

(a) The employer must ensure that devices used by employees to open circuits under load conditions are designed to interrupt the current involved.

(b) The employer must ensure that devices used by employees to close circuits under load conditions are designed to safely carry the current involved.

(13) Safety Watch

(a) A qualified safety watch must be provided in areas where inadvertent motions, movements, or tool use would violate Minimum Approach Distances (MAD). The safety watch's sole duty is to keep constant watch over persons working within the MAD, to warn them of danger, and to stop the work when necessary.

(b) The foreman or other worker in charge of the work being performed is responsible for the designation of the safety watch. It is the responsibility of the worker in charge to select a qualified worker who is capable and familiar with the work.

(c) The worker in charge may act as a safety watch providing no other duties interfere. If the worker in charge is distracted or must leave the immediate vicinity, that worker must either designate another qualified person as the safety watch or order the work stopped.

(d) Use of vehicles, gin poles, cranes, and other equipment in restricted or hazardous areas must at all times be monitored by a qualified safety watch other than the equipment operator. Tables RR-2 through RR-8.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

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#### **437-002-2312**

##### **Deenergizing Lines and Equipment for Employee Protection**

(1) Application. This rule applies to the deenergizing of transmission and distribution lines and equipment for the purpose of protecting employees. See 437-002-2303 Hazardous Energy Control, Division 2/RR, for requirements on the control of hazardous energy sources used in the generation of electric energy. Conductors and parts of electric equipment that have been deenergized under procedures other than those required by 437-002-2303, as applicable, must be treated as energized.

(2) General.

(a) If a system operator is in charge of the lines or equipment and their means of disconnection, the employer must designate one employee in the crew to be in charge of the clearance and must comply with all of the requirements of paragraph (3) of this rule in the order specified.

(b) If no system operator is in charge of the lines or equipment and their means of disconnection, the employer must designate one employee in the crew to be in charge of the clearance and to perform the functions that the system operator would otherwise perform under this rule. All of the requirements of paragraph (3) of this rule apply, in the order specified, except as provided in paragraph (2)(b) of this rule.

(c) If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to, and under the sole control of, the employee in charge of the clearance, paragraphs (3)(b), (3)(d), and (3)(f) of this rule do not apply. Additionally, the employer does not need to use the tags required by the remaining provisions of paragraph (3) of this rule.

(d) If two or more crews will be working on the same lines or equipment, then:

(A) The crews must coordinate their activities under this rule with a single employee in charge of the clearance for all of the crews and follow the requirements of this rule as if all of the employees formed a single crew, or

(B) Each crew must independently comply with this rule and, if there is no system operator in charge of the lines or equipment, must have separate tags and coordinate deenergizing and reenergizing the lines and equipment with the other crews.

(e) The employer must render any disconnecting means that are accessible to individuals outside the employer's control (for example, the general public) inoperable while the disconnecting means are open for the purpose of protecting employees.

(3) Deenergizing lines and equipment

(a) The employee that the employer designates pursuant to paragraph (2) of this rule as being in charge of the clearance must make a request of the system operator to deenergize the particular section of line or equipment. The designated employee becomes the employee in charge (as this term is used in paragraph (3) of this rule) and is responsible for the clearance.

(b) The circuit or equipment must be considered as energized until notification from the system operator to the contrary is received.

(c) The system operator must obtain the name of the person requesting clearance and be assured that the person is qualified to receive such clearance.

(d) The person requesting the clearance must state exactly what circuit or equipment they want de-energized and the reason.

(e) The system operator must repeat the request for clearance and be certain that the request is fully understood.

(f) The employer must ensure that all switches, disconnectors, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be deenergized are open. The employer must render such means inoperable, unless its design does not so permit, and then ensure that such means are tagged to indicate that employees are at work.

(g) The employer must ensure that automatically and remotely controlled switches that could cause the opened disconnecting means to close are also tagged at the points of control. The employer must render the automatic or remote control feature inoperable, unless its design does not so permit.



(h) The employer need not use the tags mentioned in paragraphs (3)(f) and (3)(g) of this rule on a network protector for work on the primary feeder for the network protector's associated network transformer when the employer can demonstrate all of the following conditions:

(A) Every network protector is maintained so that it will immediately trip open if closed when a primary conductor is deenergized;

(B) Employees cannot manually place any network protector in a closed position without the use of tools, and any manual override position is blocked, locked, or otherwise disabled; and

(C) The employer has procedures for manually overriding any network protector that incorporate provisions for determining, before anyone places a network protector in a closed position, that: The line connected to the network protector is not deenergized for the protection of any employee working on the line; and (if the line connected to the network protector is not deenergized for the protection of any employee working on the line) the primary conductors for the network protector are energized.

(i) Tags must prohibit operation of the disconnecting means and must indicate that employees are at work.

(j) After the applicable requirements in paragraphs (3)(a) through (3)(i) of this section have been followed and the system operator gives a clearance to the employee in charge, the employer must ensure that the lines and equipment are deenergized by testing the lines and equipment to be worked with a device designed to detect voltage.

(k) The employer must ensure the installation of protective grounds as required by 437-002-2313 Grounding for the protection of employees, Division 2/RR.

(l) After the applicable requirements of paragraphs (3)(a) through (3)(k) of this rule have been followed, the lines and equipment involved may be considered deenergized.

(m) To transfer the clearance, the employee in charge (or the employee's supervisor if the employee in charge must leave the worksite due to illness or other emergency) must inform the system operator and employees in the crew; and the new employee in charge must be responsible for the clearance.

(n) To release a clearance, the employee in charge must:

(A) Notify each employee under that clearance of the pending release of the clearance;

(B) Ensure that all employees under that clearance are clear of the lines and equipment;

(C) Ensure that all protective grounds protecting employees under that clearance have been removed; and

(D) Report this information to the system operator and then release the clearance.

(o) Only the employee in charge who requested the clearance may release the clearance, unless the employer transfers responsibility under paragraph (3)(m) of this rule.

(p) No one may remove tags without the release of the associated clearance as specified under paragraphs (3)(n) and (3)(o) of this rule.

(q) The employer must ensure that no one initiates action to reenergize the lines or equipment at a point of disconnection until all protective grounds have been removed, all crews working on the lines or equipment release their clearances, all employees are clear of the lines and equipment, and all protective tags are removed from that point of disconnection.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-2313**

#### **Grounding for the Protection of Employees**

(1) Application. 437-002-2313 applies to grounding of generation, transmission, and distribution lines and equipment for the purpose of protecting employees. Paragraph (4) of this rule also applies to protective grounding of other equipment as required elsewhere in Division 2/RR.

(2) General. For any employee to work transmission and distribution lines or equipment as deenergized, the employer must ensure that the lines or equipment are deenergized under the provisions of 437-002-2312 and must ensure proper grounding of the lines or equipment as specified in paragraphs (3) through (8) below. However, if the employer can demonstrate that installation of a ground is impracticable or that the conditions resulting from the installation of a ground would present greater hazards to employees than working without grounds, the lines and equipment may be treated as deenergized provided that the employer establishes that all of the following conditions apply:

(a) The employer ensures that the lines and equipment are deenergized under the provisions of 437-002-2312 Deenergizing lines and equipment for employee protection, Division 2/RR.

(b) There is no possibility of contact with another energized source.

(c) The hazard of induced voltage is not present.

(3) Equipotential zone. Temporary protective grounds must be placed at such locations and arranged to will prevent each employee from being exposed to hazardous differences in electric potential.

**NOTE** to paragraph (3): Appendix C to Division 2/RR contains guidelines for establishing the equipotential zone required by this paragraph. Oregon OSHA will deem grounding practices meeting these guidelines as complying with paragraph (3) of this rule.

(4) Protective grounding equipment.

(a) Protective grounding equipment must be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.

(b) Protective grounding equipment must have an ampacity greater than or equal to that of No. 2 AWG copper.

(c) Protective grounds must have an impedance low enough so that they do not delay the operation of protective devices in case of accidental energizing of the lines or equipment.

(d) While working on circuits deenergized under clearance conditions with multi-phase lines, shorts and grounds must be established at the lowest impedance available. Employees may perform work on one phase of a multi-phase line after establishing an equipotential zone that includes the phase being directly worked on. The phases outside the equipotential zone are to be treated as energized with minimum approach distance observed, unless they become part of the equipotential zone.

**NOTE** to paragraph (4): American Society for Testing and Materials Standard Specifications for Temporary Protective Grounds to Be Used on De-Energized Electric Power Lines and Equipment, ASTM F855-09, contains guidelines for protective grounding equipment. The Institute of Electrical Engineers Guide for Protective Grounding of Power Lines, IEEE Std 1048-2003, contains guidelines for selecting and installing protective grounding equipment.

(5) Testing. The employer must ensure that, unless a previously installed ground is present, employees test lines and equipment and verify the absence of nominal voltage before employees install any ground on those lines or that equipment.

(6) Grounding must be verified if an employee requests it.

(7) Connecting and removing grounds.

(a) The employer must ensure that, when an employee attaches a ground to a line or to equipment, the employee attaches the ground-end connection first and then attaches the other end by means of a live-line tool. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool if the employer ensures that the line or equipment is not energized at the time the ground is connected or if the employer can demonstrate that each employee is protected from hazards that may develop if the line or equipment is energized.

(b) The employer must ensure that, when an employee removes a ground, the employee removes the grounding device from the line or equipment using a live-line tool before they remove the ground-end connection. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool if the employer ensures that the line or equipment is not energized at the time the ground is disconnected or if the employer can demonstrate that each employee is protected from hazards that may develop if the line or equipment is energized.

(8) Additional precautions. The employer must ensure that, when an employee performs work on a cable at a location remote from the cable terminal, the cable is not grounded at the cable terminal.

minimal if there is a possibility of hazardous transfer of potential should a fault occur.

(9) Removal of grounds for test. The employer may permit employees to remove grounds temporarily during tests. During the test procedure, the employer must ensure that each employee uses insulating equipment, must isolate each employee from any hazards involved, and must implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2314**

##### **Testing and Test Facilities**

(1) Application. 437-002-2314 provides for safe work practices for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements using high voltage, high power, or combinations of high voltage and high power, and not to testing involving continuous measurements as in routine metering, relaying, and normal line work.

**NOTE** to paragraph (1): Oregon OSHA considers routine inspection and maintenance measurements made by qualified employees to be routine line work not included in the scope of 437-002-2314, provided that the hazards related to the use of intrinsic high-voltage or high-power sources require only the normal precautions associated with routine work specified in the other paragraphs of this rule. Two typical examples of such excluded test work procedures are "phasing-out" testing and testing for a "no-voltage" condition.

(2) General requirements.

(a) The employer must establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices must include, as a minimum, test area safeguarding, grounding, the safe use of measuring and control circuits, and a means providing for periodic safety checks of field test areas.

(b) The employer must ensure that each employee, upon initial assignment to the test area, receives training in safe work practices, with retraining provided as required by 437-002-2300(2).

(3) Safeguarding of test areas.

(a) The employer must provide safeguarding within test areas to control access to test equipment or to apparatus under test that could become energized as part of the testing by either direct or inductive coupling and to prevent accidental employee contact with energized parts.

(b) The employer must guard permanent test areas with walls, fences, or other barriers designed to keep employees out of the test areas.

(c) In field testing, or at a temporary test site not guarded by permanent fences and gates, the employer must ensure the use of one of the following means to prevent employees without authorization from entering:

(A) Distinctively colored safety tape supported approximately waist high with safety signs attached to it,

(B) A barrier or barricade that limits access to the test area to a degree equivalent, physically and visually, to the barricade specified in paragraph (3)(c)(A) of this rule, or

(C) One or more test observers stationed so that they can monitor the entire area.

(d) The employer must ensure the removal of the safeguards required by paragraph (3)(c) of this rule when employees no longer need the protection afforded by the safeguards.

(4) Grounding practices.

(a) The employer must establish and implement safe grounding practices for the test facility.

(A) The employer must maintain at ground potential all conductive parts accessible to the test operator while the equipment is operating at high voltage.

(B) Wherever ungrounded terminals of test equipment or apparatus under test may be present, they must be treated as energized until tests demonstrate that they are deenergized.

(b) The employer must ensure either that visible grounds are applied automatically, or that employees using properly insulated tools manually apply visible grounds, to the high-voltage circuits after they are deenergized and before any employee performs work on the circuit or on the item or apparatus under test. Common ground connections must be solidly connected to the test equipment and the apparatus under test.

(c) In high-power testing, the employer must provide an isolated ground-return conductor system designed to prevent the intentional passage of current, with its attendant voltage rise, from occurring in the ground grid or in the earth. However, the employer need not provide an isolated ground-return conductor if the employer can demonstrate that both of the following conditions exist:

(A) The employer cannot provide an isolated ground-return conductor due to the distance of the test site from the electric energy source, and

(B) The employer protects employees from any hazardous step and touch potentials that may develop during the test.

**NOTE** to paragraph (4)(c)(B): See Appendix C to Division 2/RR for information on measures that employers can take to protect employees from hazardous step and touch potentials.

(d) For tests in which using the equipment grounding conductor in the equipment power cord to ground the test equipment would result in greater hazards to test personnel or prevent the taking of satisfactory measurements, the employer may use a ground clearly indicated in the test set-up if the employer can demonstrate that this ground affords protection for employees equivalent to the protection afforded by an equipment grounding conductor in the power supply cord.

(e) The employer must ensure that, when any employee enters the test area after equipment is deenergized, a ground is placed on the high-voltage terminal and any other exposed terminals.

(A) Before any employee applies a direct ground, the employer must discharge high capacitance equipment through a resistor rated for the available energy.

(B) A direct ground must be applied to the exposed terminals after the stored energy drops to a level at which it is safe to do so.

(f) If the employer uses a test trailer or test vehicle in field testing, its chassis must be grounded. The employer must protect each employee against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees with bonding, insulation, or isolation.

(5) Control and measuring circuits.

(a) The employer may not run control wiring, meter connections, test leads, or cables from a test area unless contained in a grounded metallic sheath and terminated in a grounded metallic enclosure or unless the employer takes other precautions that it can demonstrate will provide employees with equivalent safety.

(b) The employer must isolate meters and other instruments with accessible terminals or parts from test personnel to protect against hazards that could arise should such terminals and parts become energized during testing. If the employer provides this isolation by locating test equipment in metal compartments with viewing windows, the employer must provide interlocks to interrupt the power supply when someone opens the compartment cover.

(c) The employer must protect temporary wiring and its connections against damage, accidental interruptions, and other hazards. To the maximum extent possible, the employer must keep signal, control, ground, and power cables separate from each other.

(d) If any employee will be present in the test area during testing, a test observer must be present. The test observer must be capable of implementing the immediate deenergizing of test circuits for safety purposes.

(6) Safety check.

(a) Safety practices governing employee work at temporary or field test areas must provide, at the beginning of each series of tests, for a routine safety check of such test areas.

(b) The test operator in charge must conduct these routine safety checks before each series of tests and must verify at least the following conditions:

(A) Barriers and safeguards are in workable condition and placed properly to isolate hazardous areas;

- (B) System test status signals, if used, are in operable condition;
  - (C) Clearly marked test-power disconnects are readily available in an emergency;
  - (D) Ground connections are clearly identifiable;
  - (E) Personal protective equipment is provided and used as required by Division 2/I, Division 3/E, and Division 2/RR; and
  - (F) Proper separation between signal, ground, and power cables.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2315**

##### **Mechanical Equipment**

###### **(1) General requirements.**

**Note** to 437-002-2315: For employers engaged in construction activities, mechanical equipment must be operated in accordance with applicable requirements in Division 3, including subdivisions N, O, and CC of Division 3, except that 1926.600(a)(6) does not apply to operations performed by qualified employees.

(a) The critical safety components of mechanical elevating and rotating equipment must receive a thorough visual inspection before use on each shift.

**Note** to paragraph (1)(a): Critical safety components of mechanical elevating and rotating equipment are components for which failure would result in free fall or free rotation of the boom.

(b) No motor vehicle or earthmoving or compacting equipment having an obstructed view to the rear may be operated on off-highway jobsites where any employee is exposed to the hazards created by the moving vehicle, unless:

(A) The vehicle has a reverse signal alarm audible above the surrounding noise level, or

(B) The vehicle is backed up only when a designated employee signals that it is safe to do so.

(c) Rubber-tired self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler-type tractors, crawler-type loaders, and motor graders, with or without attachments, must have rollover protective structures that meet the requirements of Division 3/W.

(d) The operator of an electric line truck may not leave their position at the controls while a load is suspended, unless the employer can demonstrate that no employee (including the operator) is endangered.

###### **(2) Outriggers.**

(a) Mobile equipment, if provided with outriggers, must be operated with the outriggers extended and firmly set, except as provided in paragraph (2)(c) of this rule.

(b) Outriggers may not be extended or retracted outside of the clear view of the operator unless all employees are outside the range of possible equipment motion.

(c) If the work area or the terrain precludes the use of outriggers, the equipment may be operated only within its maximum load ratings specified by the equipment manufacturer for the particular configuration of the equipment without outriggers.

(3) Applied loads. Mechanical equipment used to lift or move lines or other material must be used within its maximum load rating and other design limitations for the conditions under which the mechanical equipment is being used.

###### **(4) Operations near energized lines or equipment.**

(a) Mechanical equipment must be operated so that the minimum approach distances from exposed energized lines and equipment, established by the employer under paragraph (3)(a) of 437-002-2311, are maintained. However, the insulated portion of an aerial lift operated by a qualified employee in the lift is exempt from this requirement if the applicable minimum approach distance is maintained between the uninsulated portions of the aerial lift and exposed objects having a different electrical potential.

(b) A designated employee other than the equipment operator must observe the approach distance to exposed lines and equipment and provide timely warnings before the minimum approach distance required by paragraph (4)(a) of this rule is reached, unless the employer can demonstrate that the operator can accurately maintain the minimum approach distance.

(c) Aerial lifts must have dual controls (lower and upper) as follows:

(A) The upper controls must be within easy reach of the employee in the bucket. On a two-bucket-type lift, access to the controls must be within easy reach of both buckets.

(B) The lower set of controls must be near the base of the boom and must be designed so that they can override operation of the equipment at any time.

(C) Controls must be placed and guarded so that the equipment cannot be activated by inadvertent contact by the operator, tools, equipment, lines, or foreign objects.

(d) If, during operation of the mechanical equipment, that equipment could become energized, the operation also must comply with at least one of paragraphs (4)(d)(A) through (4)(d)(C) of this rule.

(A) The energized lines or equipment exposed to contact must be covered with insulating protective material that will withstand the type of contact that could be made during the operation.

(B) The mechanical equipment must be insulated for the voltage involved. The mechanical equipment must be positioned so that its uninsulated portions cannot approach the energized lines or equipment any closer than the minimum approach distances, established by the employer under paragraph (3)(a) of 437-002-2311.

(C) Each employee must be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The measures used must ensure that employees will not be exposed to hazardous differences in electric potential. Unless the employer can demonstrate that the methods in use protect each employee from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, the measures used must include all of the following techniques:

(i) Using the best available ground to minimize the time the lines or electric equipment remain energized,

(ii) Bonding mechanical equipment together to minimize potential differences,

(iii) Providing ground mats to extend areas of equipotential, and

(iv) Employing insulating protective equipment or barricades to guard against any remaining hazardous electrical potential differences.

**NOTE** to paragraph (4)(d)(C): Appendix C to Division 2/RR contains information on hazardous step and touch potentials and on methods of protecting employees from hazards resulting from such potentials.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

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#### **437-002-2316**

##### **Overhead Lines**

(1) General. This paragraph provides additional requirements for work performed on or near overhead lines and equipment.

(a) The employer must determine if elevated structures such as poles or towers are capable of withstanding the additional or unbalanced stresses of climbing or equipment. If the pole or other structure cannot withstand the expected loads, the employer must brace or otherwise support the pole or structure to prevent failure.

**Note** to paragraph (1)(a): Appendix D to Division 2/RR contains test methods that employers can use to determine whether a wood pole is capable of sustaining the forces imposed by an employee climbing the pole. This paragraph also requires the employer to determine that the pole can sustain all other forces imposed by the work employees will perform.

(b) When a pole is set, moved, or removed near an exposed energized overhead conductor, the pole may not contact the conductor.

(c) Raising poles, towers, or fixtures close to high voltage conductors must be done under the supervision of a worker qualified for this work.

(d) Conductive rigging (wire rope) may not be used to raise poles, transformers, and other equipment except when such rigging is below, protected, or at a sufficient distance from energized high voltage conductors to prevent hazardous contact.



(e) When a pole is set, moved, or removed near an energized overhead conductor, the employer must ensure that each employee wears electrical protective equipment or uses insulated devices when handling the pole and that no employee contacts the pole with uninsulated parts of their body.

(f) To protect employees from falling into holes used for placing poles, the employer must physically guard the holes, or ensure that employees attend the holes, whenever anyone is working nearby.

(g) Suitable guards and barriers must be erected so that workers or tools and equipment will not fall into or accidentally contact energized conductors or equipment.

(h) Materials and tools other than belt tools for which the body belt is designed:

(A) Must be raised or lowered by means of a suitable container or handline.

(B) May not be thrown to or from employees working on poles or structures. When field conditions prevent the use of a handline or alternative method from being done safely, a designated drop zone must be established. Clear communication must occur to prevent employees from entering the zone while material is being dropped in a controlled manner.

(2) Installing and removing overhead lines. The following provisions apply to the installation and removal of overhead conductors or cable (overhead lines).

(a) When lines that employees are installing or removing can contact energized parts, the employer must use the tension-stringing method, barriers, or other equivalent measures to minimize the possibility that conductors and cables the employees are installing or removing will contact energized power lines or equipment.

(b) For conductors, cables, and pulling and tensioning equipment, the employer must provide the protective measures required by 437-002-2315 (4)(d) when employees are installing or removing a conductor or cable close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the conductor or cable being installed or removed:

- (A) Failure of the pulling or tensioning equipment,
- (B) Failure of the conductor or cable being pulled, or
- (C) Failure of the previously installed lines or equipment.

(c) If the conductors that employees are installing or removing cross over energized conductors in excess of 600 volts and if the design of the circuit interrupting devices protecting the lines so permits, the employer must render inoperable the automatic-reclosing feature of these devices.

(d) Before employees install lines parallel to existing energized lines, the employer must make a determination of the approximate voltage to be induced in the new lines, or work must proceed on the assumption that the induced voltage is hazardous. Unless the employer can demonstrate that the lines that employees are installing are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, temporary protective grounds must be placed at such locations and arranged in such a manner that the employer can demonstrate will prevent exposure of each employee to hazardous differences in electric potential.

**NOTE 1** to paragraph (2)(d): If the employer takes no precautions to protect employees from hazards associated with involuntary reactions from electric shock, a hazard exists if the induced voltage is sufficient to pass a current of 1 milliampere through a 500-ohm resistor. If the employer protects employees from injury due to involuntary reactions from electric shock, a hazard exists if the resultant current would be more than 6 milliamperes.

**NOTE 2** to paragraph (2)(d): Appendix C to Division 2/RR rule contains guidelines for protecting employees from hazardous differences in electric potential as required by this paragraph.

(e) Conductors being strung must not be allowed to slack enough to be in reach of traffic or pedestrians, unless guarded by flaggers or other suitable safeguards.

(f) Reel-handling equipment, including pulling and tensioning devices, must be in safe operating condition and must be leveled and aligned.

(g) When stringing or removing conductors under tension, sleeves must not be pulled through the bull wheel or the puller on the tension machine unless appropriate safeguards are taken.

(h) A qualified employee, or an experienced person under the supervision of a qualified employee, must be placed in charge of the reels as the reel tender.

(i) Reel handling equipment, including pulling, braking, and sagging equipment must be firmly anchored or secured during operations.

(j) The employer must ensure that employees do not exceed load ratings of stringing lines, pulling lines, conductor grips, load-bearing hardware and accessories, rigging, and hoists.

(k) When replacing a conductor with a new or larger conductor, the conductor being removed may not be used to pull in the new one unless the one being removed has been carefully inspected for its entire length and then adjudged to have adequate strength.

(l) The employer must repair or replace defective pulling lines and accessories.

(m) Each pull must be snubbed or dead ended at both ends before subsequent pulls.

(n) The employer must ensure that employees do not use conductor grips on wire rope unless the manufacturer specifically designed the grip for this application.

(o) The employer must ensure that employees maintain reliable communications, through two-way radios or other equivalent means, between the reel tender and the pulling rig operator.

(p) Employees may operate the pulling rig only when it is safe to do so.

**NOTE** to paragraph (2)(p): Examples of unsafe conditions include: employees in locations prohibited by paragraph (2)(q) of this rule, conductor and pulling line hang-ups, and slipping of the conductor grip.

(q) While a power-driven device is pulling the conductor or pulling line and the conductor or pulling line is in motion, the employer must ensure that employees are not directly under overhead operations or on the cross arm, except as necessary for the employees to guide the stringing sock or board over or through the stringing sheave.

(3) Live-line bare-hand work is prohibited.

(4) Towers and structures. The following requirements apply to work performed on towers or other structures that support overhead lines.

(a) The employer must ensure that no employee is under a tower or structure while work is in progress, except when the employer can demonstrate that such a working position is necessary to assist employees working above.

(b) The employer must ensure that employees use tag lines or other similar devices to maintain control of tower rules being raised or positioned, unless the employer can demonstrate that the use of such devices would create a greater hazard to employees.

(c) The employer must ensure that employees do not detach the loadline from a member or rule until they safely secure the load.

(d) The employer must ensure that, except during emergency restoration procedures, employees discontinue work when adverse weather conditions would make the work hazardous in spite of the work practices required by this rule.

**NOTE** to paragraph (4)(d): Thunderstorms in the vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that make this work too hazardous to perform even after the employer implements the work practices required by this rule.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

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#### **437-002-2317**

##### **Line-clearance Tree Trimming**

This rule provides additional requirements for line-clearance tree trimming and for equipment used in this type of work.

(1) Electrical hazards. This paragraph does not apply to qualified employees.

(a) Before an employee climbs, enters, or works around any tree, a determination must be made of the nominal voltage of electric power lines posing a hazard to employees. However, a determination of the maximum nominal voltage to which an employee will be exposed may be made instead, if all lines are considered as energized at this maximum voltage.

(b) There must be a second line-clearance tree trimmer within normal, unassisted voice communication under any of the following conditions:

(A) If a line-clearance tree trimmer is to approach more closely than 3.05 meters (10 feet) to any conductor or electric apparatus energized at more than 600 volts or

(B) If branches or limbs being removed are closer to lines energized at more than 600 volts than the distances listed in Table RR-4, Table RR-5, Table RR-6, and Table RR-7 or

(C) If roping is necessary to remove branches or limbs from such conductors or apparatus.

(c) Line-clearance tree trimmers must maintain the minimum approach distances from energized conductors given in Table RR-4, Table RR-5, Table RR-6, and Table RR-7.

(d) Branches that are contacting exposed energized conductors or equipment, or that are within the distances specified in Table RR-4, Table RR-5, Table RR-6, and Table RR-7 may be removed only through the use of insulating equipment.

**Note** to paragraph (1)(d): A tool constructed of a material that the employer can demonstrate has insulating qualities meeting paragraph (3) of 437-002-2309 is considered as insulated under paragraph (1)(d) of this rule if the tool is clean and dry.

(e) Ladders, platforms, and aerial devices may not be brought closer to an energized part than the distances listed in Table RR-4, Table RR-5, Table RR-6, and Table RR-7.

(f) Line-clearance tree trimming may not be performed when adverse weather conditions make the work hazardous in spite of the work practices required by this rule. Each employee performing line-clearance tree trimming in the aftermath of a storm or under similar emergency conditions must be trained in the special hazards related to this type of work.

**NOTE** to paragraph (1)(f): Thunderstorms in the immediate vicinity, high winds, snow storms, and ice storms are examples of adverse weather conditions that are presumed to make line-clearance tree trimming too hazardous to perform safely.

(2) Brush chippers.

(a) Brush chippers must be equipped with a locking device in the ignition system.

(b) Access panels for maintenance and adjustment of the chipper blades and associated drive train must be in place and secure during operation of the equipment.

(c) Brush chippers not equipped with a mechanical infeed system must be equipped with an infeed hopper of length sufficient to prevent employees from contacting the blades or knives of the machine during operation.

(d) Trailer chippers detached from trucks must be chocked or otherwise secured.

(e) Each employee in the immediate area of an operating chipper feed table must wear personal protective equipment as required Division 2/I.

(3) Sprayers and related equipment.

(a) Walking and working surfaces of sprayers and related equipment must be covered with slip-resistant material. If slipping hazards cannot be eliminated, slip-resistant footwear or handrails and stair rails meeting the requirements of Division 2/D may be used instead of slip-resistant material.

(b) Equipment on which employees stand to spray while the vehicle is in motion must be equipped with guardrails around the working area. The guardrail must be constructed in accordance with Division 2/D.

(4) Stump cutters.

(a) Stump cutters must be equipped with enclosures or guards to protect employees.

(b) Each employee in the immediate area of stump grinding operations including the stump cutter operator must wear personal protective equipment as required by Division 2/I.

(5) Gas powered saws. Gas powered saw operations must meet the requirements of 437-007-0405 Chain Saws, Division 7; and the following:

(a) Each power saw weighing more than 6.8 kilograms (15 pounds, service weight) that is used in trees must be supported by a separate line, except when work is performed from an aerial lift and

except during topping or removing operations where no supporting limb will be available.

(b) Each power saw must be equipped with a control that will return the saw to idling speed when released.

(c) Each power saw must be equipped with a clutch and must be so adjusted that the clutch will not engage the chain drive at idling speed.

(d) A power saw must be started on the ground or where it is otherwise firmly supported. Drop starting of saws over 6.8 kilograms (15 pounds), other than chain saws, is permitted outside of the bucket of an aerial lift only if the area below the lift is clear of personnel. Drop starting chain saws is prohibited.

(e) A power saw engine may be started and operated only when all employees other than the operator are clear of the saw.

(f) A power saw may not be running when the saw is being carried up into a tree by an employee.

(g) Power saw engines must be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

(6) Backpack power units for use in pruning and clearing.

(a) While a backpack power unit is running, no one other than the operator may be within 3.05 meters (10 feet) of the cutting head of a brush saw.

(b) A backpack power unit must be equipped with a quick shut-off switch readily accessible to the operator.

(c) Backpack power unit engines must be stopped for all cleaning, refueling, adjustments, and repairs to the saw or motor, except as the manufacturer's servicing procedures require otherwise.

(7) Rope.

(a) Climbing ropes must be used by employees working aloft in trees. These ropes must have a minimum diameter of 12 millimeters (0.5 inch) with a minimum breaking strength of 10.2 kilonewtons (2,300 pounds). Synthetic rope must have elasticity of not more than 7 percent.

(b) Rope must be inspected before each use and, if unsafe (for example, because of damage or defect), may not be used.

(c) Rope must be stored away from cutting edges and sharp tools. Rope contact with corrosive chemicals, gas, and oil must be avoided.

(d) When stored, rope must be coiled and piled, or must be suspended, so that air can circulate through the coils.

(e) Rope ends must be secured to prevent their unraveling.

(f) Climbing rope may not be repaired by splicing.

(g) A rope that is wet, that is contaminated to the extent that its insulating capacity is impaired, or that is otherwise not considered to be insulated for the voltage involved may not be used near exposed energized lines.

(8) Fall protection. Each employee must be tied in with a climbing rope and safety saddle when the employee is working above the ground in a tree, except when ascending into or descending from the tree.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

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## **437-002-2318**

### **Communication Facilities**

(1) Microwave transmission.

(a) The employer must ensure that no employee looks into an open waveguide or antenna connected to an energized microwave source.

(b) If the electromagnetic-radiation level within an accessible area associated with microwave communications systems exceeds the radiation-protection guide specified by 1910.97(a)(2), the employer must post the area with warning signs containing the warning symbol described in 1910.97(a)(3). The lower half of the warning symbol must include the following statements, or ones that the employer can demonstrate are equivalent: "Radiation in this area may exceed hazard limitations and special precautions are required. Obtain specific instruction before entering."

(c) When an employee works in an area where the electromagnetic radiation could exceed the radiation protection guide, the

employer must institute measures that ensure that the employee's exposure is not greater than that permitted by that guide. Such measures may include administrative and engineering controls and personal protective equipment.

(2) Power-line carrier. The employer must ensure that employees perform power-line carrier work, including work on equipment used for coupling carrier current to power line conductors, in accordance with the requirements of Division 2/RR pertaining to work on energized lines.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2319**

##### **Underground Electrical Installations**

This rule provides additional requirements for work on underground electrical installations.

(1) Access. The employer must ensure that employees use a ladder or other climbing device to enter and exit a manhole or subsurface vault exceeding 1.22 meters (4 feet) in depth. No employee may climb into or out of a manhole or vault by stepping on cables or hangers.

(2) Lowering equipment into manholes.

(a) Equipment used to lower materials and tools into manholes or vaults must be capable of supporting the weight to be lowered and must be checked for defects before use.

(b) Before anyone lowers tools or material into the opening for a manhole or vault, each employee working in the manhole or vault must be clear of the area directly under the opening.

(3) Attendants for manholes and vaults.

(a) While work is being performed in a manhole or vault containing energized electric equipment, an employee with first-aid and cardiopulmonary resuscitation training must be available on the surface in the immediate vicinity of the manhole or vault entrance to render emergency assistance.

(b) Occasionally, the employee on the surface may briefly enter a manhole or vault to provide nonemergency assistance.

**NOTE** 1 to paragraph (3)(b): 437-002-2304(7) of Division 2/RR may also require an attendant and does not permit this attendant to enter the manhole or vault.

**NOTE** 2 to paragraph (3)(b): 437-002-2311(1)(b) of Division 2/RR requires employees entering manholes or vaults containing unguarded, uninsulated energized lines or parts of electric equipment operating at 50 volts or more to be qualified.

(c) For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole or vault where energized cables or equipment are in service if the employer can demonstrate that the employee will be protected from all electrical hazards.

(d) The employer must ensure that employees maintain reliable communications, through two-way radios or other equivalent means, among all employees involved in the job.

(4) Duct rods. The employer must ensure that, if employees use duct rods, the employees install the duct rods in the direction presenting the least hazard to employees. The employer must station an employee at the far end of the duct line being rodged to ensure that the employees maintain the required minimum approach distances.

(5) All primary cables must be permanently and plainly identified by tags or other methods at both ends.

(6) Multiple cables. When multiple cables are present in a work area, the employer must identify the cable to be worked by electrical means, unless its identity is obvious by reason of distinctive appearance or location or by other readily apparent means of identification. The employer must protect cables other than the one being worked from damage.

(7) Moving cables. Except when paragraph (8)(b) of this rule permits employees to perform work that could cause a fault in an energized cable in a manhole or vault, the employer must ensure that employees inspect energized cables to be moved for abnormalities.

(8) Protection against faults.

(a) Where a cable in a manhole or vault has one or more abnormalities that could lead to a fault or be an indication of an impending fault, the employer must deenergize the cable with the abnormality

before any employee may work in the manhole or vault, except when service-load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole or vault provided the employer protects them from the possible effects of a failure using shields or other devices that are capable of containing the adverse effects of a fault. The employer must treat the following abnormalities as indications of impending faults unless the employer can demonstrate that the conditions could not lead to a fault: Oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints swollen beyond normal tolerance.

(b) If the work employees will perform in a manhole or vault could cause a fault in a cable, the employer must deenergize that cable before any employee works in the manhole or vault, except when service-load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole or vault provided the employer protects them from the possible effects of a failure using shields or other devices that are capable of containing the adverse effects of a fault.

(9) Sheath continuity. When employees perform work on buried cable or on cable in a manhole or vault, the employer must maintain metallic-sheath continuity, or the cable sheath must be treated as energized.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2320**

##### **Substations**

This paragraph provides additional requirements for substations and for work performed in them.

(1) Access and working space. The employer must provide and maintain sufficient access and working space around electric equipment to permit ready and safe operation and maintenance of such equipment by employees.

**NOTE** to paragraph (1): American National Standard: National Electrical Safety Code, ANSI/IEEE C2-2012 contains guidelines for the dimensions of access and working space about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (u)(1) of this rule. Oregon OSHA will determine whether an installation that does not conform to this ANSI standard complies with paragraph (1) of this rule based on the following criteria:

Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made.

Whether the configuration of the installation enables employees to maintain the minimum approach distances, established by the employer under paragraph (3)(a) of 437-002-2311, while the employees are working on exposed, energized parts, and

Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by access and working space meeting ANSI/IEEE C2-2012.

(2) Draw-out-type circuit breakers. The employer must ensure that, when employees remove or insert draw-out-type circuit breakers, the breaker is in the open position. The employer must also render the control circuit inoperable if the design of the equipment permits.

(3) Substation fences. Conductive fences around substations must be grounded. When a substation fence is expanded or a section is removed, fence sections must be isolated, grounded, or bonded as necessary to protect employees from hazardous differences in electric potential.

**NOTE** to paragraph (3): IEEE Std 80-2000, IEEE Guide for Safety in AC Substation Grounding, contains guidelines for protection against hazardous differences in electric potential.

(4) Guarding of rooms and other spaces containing electric supply equipment.

(a) Rooms and other spaces in which electric supply lines or equipment are installed must meet the requirements of paragraphs (4)(a) through (4)(e) of this rule under the following conditions:

(A) If exposed live parts operating at 50 to 150 volts to ground are within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space,

(B) If live parts operating at 151 to 600 volts to ground and located within 2.4 meters (8 feet) of the ground or other working sur-



face inside the room or other space are guarded only by location, as permitted under paragraph (5)(a) of this rule, or

(C) If live parts operating at more than 600 volts to ground are within the room or other space, unless:

(i) The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or

(ii) The live parts are installed at a height, above ground and any other working surface, that provides protection at the voltage on the live parts corresponding to the protection provided by a 2.4-meter (8-foot) height at 50 volts.

(b) Fences, screens, partitions, or walls must enclose the rooms and other spaces so as to minimize the possibility that unqualified persons will enter.

(c) Unqualified persons may not enter the rooms or other spaces while the electric supply lines or equipment are energized.

(d) The employer must display signs at entrances to the rooms and other spaces warning unqualified persons to keep out.

(e) The employer must keep each entrance to a room or other space locked, unless the entrance is under the observation of a person who is attending the room or other space for the purpose of preventing unqualified employees from entering.

(5) Guarding of energized parts.

(a) The employer must provide guards around all live parts operating at more than 150 volts to ground without an insulating covering unless the location of the live parts gives sufficient clearance (horizontal, vertical, or both) to minimize the possibility of accidental employee contact.

**NOTE** to paragraph (5)(a): American National Standard: National Electrical Safety Code, ANSI/IEEE C2-2002 contains guidelines for the dimensions of clearance distances about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (5)(a) of this rule. Oregon OSHA will determine whether an installation that does not conform to this ANSI standard complies with paragraph (5)(a) of this rule based on the following criteria:

Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made,

Whether each employee is isolated from energized parts at the point of closest approach; and

Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by horizontal and vertical clearances meeting ANSI/IEEE C2-2002.

(b) Except for fuse replacement and other necessary access by qualified persons, the employer must maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

(c) Before guards are removed from energized equipment, the employer must install barriers around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

(d) Proper identification and warning signs must be posted at all entrances to battery rooms or compartments.

(6) Substation entry.

(a) Upon entering an attended substation, each employee, other than employees regularly working in the station, must report their presence to the employee in charge of substation activities to receive information on special system conditions affecting employee safety.

(b) The job briefing required by 437-002-2302 Job Briefing, Division 2/RR; must cover information on special system conditions affecting employee safety, including the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area. Job briefings apply equally to unattended and attended substations and to employees already working in a substation and employees who enter a substation.

(c) A qualified safety watch must be provided for all other work being performed in any energized substation yard except when the work is separated from all energized equipment by a barrier.

(d) Qualified nonelectrical workers will be allowed to work in substations without barriers and without a safety watch if all the following conditions are observed:

(A) Permission to enter must be obtained from the substation operator or other authorized person.

(B) Each qualified nonelectrical worker must be trained and competent as required by 437-002-2300(2)(b) Training, of Division 2/RR, and must have demonstrated proficiencies in the work practices involved as required by 437-002-2300 (2)(h) Training, Division 2/RR.

**NOTE:** Employees who have not demonstrated proficiency in the work practices involved are considered to be undergoing on-the-job training and must be under the direct supervision of a qualified employee.

(C) The worker must not work off the ground without the specific approval of the person responsible for control of entry except to operate such equipment as light motor vehicles, which have no equipment or loads that can project above the cab.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

### **437-002-2321**

#### **Power Generation Installations**

This rule provides additional requirements and related work practices for power generating plants.

(1) Interlocks and other safety devices.

(a) Interlocks and other safety devices must be maintained in a safe, operable condition.

(b) No interlock or other safety device may be modified to defeat its function, except for test, repair, or adjustment of the device.

(2) Changing brushes. Before exciter or generator brushes are changed while the generator is in service, the exciter or generator field must be checked to determine whether a ground condition exists. The brushes may not be changed while the generator is energized if a ground condition exists.

(3) Access and working space. The employer must provide and maintain sufficient access and working space around electric equipment to permit ready and safe operation and maintenance.

**NOTE** to paragraph (3) of this rule: American National Standard: National Electrical Safety Code, ANSI/IEEE C2-2012 contains guidelines for the dimensions of access and working space about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (3) of this rule. Oregon OSHA will determine whether an installation that does not conform to this ANSI standard complies with paragraph (3) of this rule based on the following criteria:

Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made;

Whether the configuration of the installation enables employees to maintain the minimum approach distances, established by the employer under paragraph (3)(a) of this section, while the employees are working on exposed, energized parts; and;

Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by access and working space meeting ANSI/IEEE C2-2012.

(4) Guarding of rooms and other spaces containing electric supply equipment.

(a) Rooms and other spaces in which electric supply lines or equipment are installed must meet the requirements of paragraphs (4)(b) through (4)(e) of this rule under the following conditions:

(A) If exposed live parts operating at 50 to 150 volts to ground are within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space,

(B) If live parts operating at 151 to 600 volts to ground and located within 2.4 meters (8 feet) of the ground or other working surface inside the room or other space are guarded only by location, as permitted under paragraph (5)(a) of this rule, or

(C) If live parts operating at more than 600 volts to ground are within the room or other space, unless:

(i) The live parts are enclosed within grounded, metal-enclosed equipment whose only openings are designed so that foreign objects inserted in these openings will be deflected from energized parts, or

(ii) The live parts are installed at a height, above ground and any other working surface, that provides protection at the voltage on the live parts corresponding to the protection provided by a 2.4-meter (8-foot) height at 50 volts.

(b) Fences, screens, partitions, or walls must enclose the rooms and other spaces so as to minimize the possibility that unqualified persons will enter.

(c) Unqualified persons may not enter the rooms or other spaces while the electric supply lines or equipment are energized.

(d) The employer must display signs at entrances to the rooms and other spaces warning unqualified persons to keep out.

(e) The employer must keep each entrance to a room or other space locked, unless the entrance is under the observation of a person who is attending the room or other space for the purpose of preventing unqualified employees from entering.

(5) Guarding of energized parts.

(a) The employer must provide guards around all live parts operating at more than 150 volts to ground without an insulating covering unless the location of the live parts gives sufficient clearance (horizontal, vertical, or both) to minimize the possibility of accidental employee contact.

**NOTE** to paragraph (5)(a): American National Standard: National Electrical Safety Code, ANSI/IEEE C2-2002 contains guidelines for the dimensions of clearance distances about electric equipment in substations. Installations meeting the ANSI provisions comply with paragraph (5)(a) of this rule. Oregon OSHA will determine whether an installation that does not conform to this ANSI standard complies with paragraph (5)(a) of this rule based on the following criteria:

Whether the installation conforms to the edition of ANSI C2 that was in effect when the installation was made;

Whether each employee is isolated from energized parts at the point of closest approach; and

Whether the precautions taken when employees perform work on the installation provide protection equivalent to the protection provided by horizontal and vertical clearances meeting ANSI/IEEE C2-2002.

(b) Except for fuse replacement and other necessary access by qualified persons, the employer must maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

(c) Before guards are removed from energized equipment, the employer must install barriers around the work area to prevent employees who are not working on the equipment, but who are in the area, from contacting the exposed live parts.

(6) Water or steam spaces. The following requirements apply to work in water and steam spaces associated with boilers:

(a) A designated employee must inspect conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, must be worn at all times when condenser, heater, or boiler tubes are being cleaned.

(b) Where it is necessary for employees to work near tube ends during cleaning, shielding must be installed at the tube ends.

(7) Chemical cleaning of boilers and pressure vessels. The following requirements apply to chemical cleaning of boilers and pressure vessels:

(a) Areas where chemical cleaning is in progress must be cordoned off to restrict access during cleaning. If flammable liquids, gases, or vapors or combustible materials will be used or might be produced during the cleaning process, the following requirements also apply:

(A) The area must be posted with signs restricting entry and warning of the hazards of fire and explosion; and

(B) Smoking, welding, and other possible ignition sources are prohibited in these restricted areas.

(b) The number of personnel in the restricted area must be limited to those necessary to accomplish the task safely.

(c) There must be ready access to water or showers for emergency use.

**NOTE** to paragraph (7)(c): See 1910.141 and 437-002-0141 for requirements that apply to the water supply and to washing facilities.

(d) Employees in restricted areas must wear protective equipment meeting the requirements of Division 2/I and including, but not limited to, protective clothing, boots, goggles, and gloves.

(8) Chlorine systems.

(a) Chlorine system enclosures must be posted with signs restricting entry and warning of the hazard to health and the hazards of fire and explosion.

**NOTE** to paragraph (8)(a): See Division 2/Z for requirements necessary to protect the health of employees from the effects of chlorine.

(b) Only designated employees may enter the restricted area. Additionally, the number of personnel must be limited to those necessary to accomplish the task safely.

(c) Emergency repair kits must be available near the shelter or enclosure to allow for the prompt repair of leaks in chlorine lines, equipment, or containers.

(d) Before repair procedures are started, chlorine tanks, pipes, and equipment must be purged with dry air and isolated from other sources of chlorine.

(e) The employer must ensure that chlorine is not mixed with materials that would react with the chlorine in a dangerously exothermic or other hazardous manner.

(9) Boilers.

(a) Before internal furnace or ash hopper repair work is started, overhead areas must be inspected for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets must be provided.

(b) When opening an operating boiler door, employees must stand clear of the opening of the door to avoid the heat blast and gases which may escape from the boiler.

(10) Turbine generators.

(a) Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and signs warning of the danger of explosion and fire must be posted.

(b) Excessive hydrogen makeup or abnormal loss of pressure must be considered as an emergency and must be corrected immediately.

(c) A sufficient quantity of inert gas must be available to purge the hydrogen from the largest generator.

(11) Coal and ash handling.

(a) Only designated persons may operate railroad equipment.

(b) Before a locomotive or locomotive crane is moved, a warning must be given to employees in the area.

(c) Employees engaged in switching or dumping cars may not use their feet to line up drawheads.

(d) Drawheads and knuckles may not be shifted while locomotives or cars are in motion.

(e) When a railroad car is stopped for unloading, the car must be secured from displacement that could endanger employees.

(f) An emergency means of stopping dump operations must be provided at railcar dumps.

(g) The employer must ensure that employees who work in coal- or ash-handling conveyor areas are trained and knowledgeable in conveyor operation and in the requirements of paragraphs (11)(h) through (11)(l) of this rule.

(h) Employees may not ride a coal or ash-handling conveyor belt at any time. Employees may not cross over the conveyor belt, except at walkways, unless the conveyor's energy source has been deenergized and has been locked out or tagged in accordance with paragraph (d) of this rule.

(i) A conveyor that could cause injury when started may not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.

(j) If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device must be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device must be actuated by the device starting the conveyor and must continue for a period of time before the conveyor starts that is long enough to allow employees to move clear of the conveyor system. A visual warning may be used in place of the audible device if the employer can demonstrate that it will provide an equally effective warning in the particular circumstances involved. However if the employer can demonstrate that the system's function would be seriously hindered by the required time delay, warning signs may be provided in place of the audible warning device. If the system was installed before January 31, 1995, warning signs may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These warning signs must be clear, concise, and legible

and must indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These warning signs must be provided along the conveyor at areas not guarded by position or location.

(k) Remotely and automatically controlled conveyors, and conveyors that have operating stations which are not manned or which are beyond voice and visual contact from drive areas, loading areas, transfer points, and other locations on the conveyor path not guarded by location, position, or guards must be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices. However, if the employer can demonstrate that the design, function, and operation of the conveyor do not expose an employee to hazards, an emergency stop device is not required.

(A) Emergency stop devices must be easily identifiable in the immediate vicinity of such locations.

(B) An emergency stop device must act directly on the control of the conveyor involved and may not depend on the stopping of any other equipment.

(C) Emergency stop devices must be installed so that they cannot be overridden from other locations.

(l) Where coal-handling operations may produce a combustible atmosphere from fuel sources or from flammable gases or dust, sources of ignition must be eliminated or safely controlled to prevent ignition of the combustible atmosphere.

**NOTE** to paragraph (1)(l): Locations that are hazardous because of the presence of combustible dust are classified as Class II hazardous locations. See 1910.307.

(m) An employee may not work on or beneath overhanging coal in coal bunkers, coal silos, or coal storage areas, unless the employee is protected from all hazards posed by shifting coal.

(n) An employee entering a bunker or silo to dislodge the contents must wear a body harness with lifeline attached. The lifeline must be secured to a fixed support outside the bunker and must be attended at all times by an employee located outside the bunker or facility.

(12) Hydroplants and equipment. Employees working on or close to water gates, valves, intakes, forebays, flumes, or other locations where increased or decreased water flow or levels may pose a significant hazard must be warned and must vacate such dangerous areas before water flow changes are made.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
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### **437-002-2322**

#### **Special Conditions**

(1) Capacitors. The following additional requirements apply to work on capacitors and on lines connected to capacitors.

**NOTE** to paragraph (1): See 437-002-2312 Deenergizing Lines and Equipment for Employee Protection; and 437-002-2313 Grounding for the Protection of Employees, of Division 2/RR, for requirements pertaining to the deenergizing and grounding of capacitor installations.

(a) Before employees work on capacitors, the employer must disconnect the capacitors from energized sources and short circuit the capacitors. The employer must ensure that the employee short circuiting the capacitors waits at least 5 minutes from the time of disconnection before applying the short circuit.

(b) Before employees handle the units, the employer must short circuit each unit in series-parallel capacitor banks between all terminals and the capacitor case or its rack. If the cases of capacitors are on ungrounded substation racks, the employer must bond the racks to ground.

(c) The employer must short circuit any line connected to capacitors before the line is treated as deenergized.

(2) Current transformer secondaries. The employer must ensure that employees do not open the secondary of a current transformer while the transformer is energized. If the employer cannot deenergize the primary of the current transformer before employees perform work on an instrument, a relay, or other section of a current transformer secondary circuit, the employer must bridge the circuit so that the current transformer secondary does not experience an open-circuit condition.

(3) Series streetlighting.

(a) If the open-circuit voltage exceeds 600 volts, the employer must ensure that employees work on series streetlighting circuits in accordance with 437-002-2316 Overhead Lines; and 437-002-2319 Underground Electrical Installations, of Division 2/RR, as appropriate.

(b) Before any employee opens a series loop, the employer must deenergize the streetlighting transformer and isolate it from the source of supply or must bridge the loop to avoid an open-circuit condition.

(4) Illumination. The employer must provide sufficient illumination to enable the employee to perform the work safely.

(5) Protection against drowning.

(a) Whenever an employee may be pulled or pushed, or might fall, into water where the danger of drowning exists, the employer must provide the employee with, and must ensure that the employee uses, a U.S. Coast Guard approved personal flotation device.

(b) The employer must maintain each personal flotation device in safe condition and must inspect each personal flotation device frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.

(c) An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is available.

(6) Employee protection in public work areas.

(a) Traffic-control signs and traffic-control devices used for the protection of employees must meet 437-003-0424 Traffic Control, of Division 3.

(b) Before employees begin work in the vicinity of vehicular or pedestrian traffic that may endanger them, the employer must place warning signs or flags and other traffic-control devices in conspicuous locations to alert and channel approaching traffic.

(c) The employer must use barricades where additional employee protection is necessary.

(d) The employer must protect excavated areas with barricades.

(e) The employer must display warning lights prominently at night.

(7) Backfeed. When there is a possibility of voltage backfeed from sources of cogeneration or from the secondary system (for example, backfeed from more than one energized phase feeding a common load), the requirements of 437-002-2311 Working On or Near Exposed Energized Parts, of Division 2/RR, apply if employees will work the lines or equipment as energized; and the requirements of 437-002-2312 Deenergizing Lines and Equipment for Employee Protection, and 437-002-2313 Grounding for the Protection of Employees, of Division 2/RR, apply if employees will work the lines or equipment as deenergized.

(8) Lasers. The employer must install, adjust, and operate laser equipment in accordance with 1926.54 Nonionizing Radiation, of Division 3.

(9) Hydraulic fluids. Hydraulic fluids used for the insulated sections of equipment must provide insulation for the voltage involved.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
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### **437-002-2323**

#### **Helicopters**

(1) Definitions:

(a) Designated employees. Those employees selected or designated by the employer to work under or near helicopters who have first been instructed in hooking, unhooking, guiding and securing the load, including the signal person, all of whom have been instructed in the hazards of helicopter work and who know the provisions of this section.

(b) Pilot in Command or Pilot means the person who:

(A) Has the final authority and responsibility for the operation and safety of the flight;

(B) Has been designated as pilot in command before or during the flight; and

(C) Holds the appropriate category, class, and type rating for the conduct of the flight if applicable.



(c) Helicopter Service Operator. Entity that holds the appropriate Federal Aviation Administration (FAA) operating certification and provides helicopter support services.

(d) Downwash. A down and outward air column from the main rotor system.

(e) Ground personnel or crew. Employees who work on or near the equipment and are familiar with the hazards of helicopter use in power distribution and transmission line work and who know these rules and the methods of operation.

(f) Helicopter, helicopter crane, and rotorcraft. A heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors. The use of the word helicopter in these rules also means helicopter crane, rotorcraft, or similar aircraft.

(g) Hooking and unhooking. The process by which an external load is either attached to or detached from the helicopter hook or sling line.

(h) Positive guide system. A system or method of installing a load into position so that the load is capable of being released from the helicopter without being otherwise secured, and the load will remain in position permanently or until otherwise secured by physical means.

(i) Rotors. A system of blades that rotates or revolves to supply lift or direction to the rotorcraft.

(j) Signal person. A member of the ground crew that is designated by an employer to direct, signal and otherwise communicate with the pilot of the helicopter.

(k) Sling. A strap, chain, rope or similar implement used to securely hold something being lifted, lowered, carried or otherwise suspended.

(l) Static charge. An imbalance of electric potential within or on the surface of a material.

(m) Tagline. A rope or similar device used to guide or control the direction or movement of a load.

(2) Helicopter regulations. Helicopter cranes must comply with any applicable regulations of the Federal Aviation Administration (FAA).

(3) Hazard Analysis and Job Briefing.

(a) Before the commencement of any construction, maintenance, or lifting activity using a helicopter, a Job Hazard Analysis (JHA) must be conducted, which, at a minimum, must:

(A) Define the core tasks.

(B) Identify specific hazards.

(C) Identify mission specific tasks.

(D) Describe procedures or controls used to safely manage or mitigate the hazards.

(E) Describe the communication procedure to be used with the crew.

(F) Discuss fatigue, and methods to eliminate or mitigate it.

(G) Specify Minimum Approach Distances (MAD).

(H) Describe a site specific emergency action plan.

(b) A site specific job briefing must be held each day construction, maintenance, or lifting activities using a helicopter are performed. The daily job briefing at a minimum must:

(A) Summarize or recap the content of the JHA as applicable to the day's duties.

(B) Communicate any site specific hazards not identified in the JHA and provide mitigation for those hazards.

(C) Identify or establish roles for each person who will be interfacing with the aircraft or its loads.

(D) Describe the communication procedure to be used with the crew.

(E) Specify Minimum Approach Distances (MAD) from energized electrical lines and equipment in the work area.

(F) Describe the applicable sections of the site specific emergency action plan, such as the locations of first aid equipment and rescue gear.

(c) An additional job briefing must be held immediately if working conditions change during the course of a job. Working conditions would include weather, wind, and visibility. During the job briefing all affected employees and others, including signal persons, ground

workers, pilots, must be advised of the hazards including a change of operation if needed.

(4) Sling and rigging.

(a) The pilot is responsible for the integrity of the rigging for any external load and must ensure safe delivery of the cargo by inspecting and monitoring the security of the rigging throughout the operation. Prior to operations, the pilot must check the condition and application of all rigging gear to ensure serviceability. Prior to commencing operations, determine the complete rigging requirements including slings and taglines.

(b) All personnel involved with rigging activities must receive appropriate rigging training and show proficiency, specific to helicopter operations and the work or task/s being performed.

(c) The slings used for the external load must be inspected each day before use. Slings must be inspected by an employee designated, trained and qualified as a rigger.

(d) No sling can be used unless it has a properly marked minimum tensile strength of five times the load which will be carried or is being carried.

(A) No sling can be used unless upon inspection it is determined to be in good condition and capable of the work which is to be performed, and is properly marked.

(B) Loads must be properly slung so that there will be no slippage or shifting of the load and so that the load will not accidentally be dislodged from the helicopter.

(C) Slings must be the appropriate weight, strength and length to prevent the sling from being lifted and entangled into the aircraft rotor system.

(D) Pressed sleeves, wedged eyes, or equivalent means must be used for all suspended loads using wire rope.

(5) Personal protective equipment when working on, under or in the near vicinity of helicopters:

(a) Personal protective equipment for employees must consist of complete eye protection and hard hats secured by chinstraps.

(b) Loose-fitting clothing likely to flap in the downwash must not be worn.

(6) Loose gear and objects. Every practical precaution must be taken to provide for the protection of the employees from flying objects in the rotor downwash. All loose gear within 100 feet of the place of lifting the load, depositing the load, and all other areas susceptible to rotor downwash must be secured or removed.

(7) Landing Zones.

(a) When establishing the landing zone, the following items must be considered: size and type of helicopter, suitability of the planned activity, physical barriers or obstructions, helicopter touchdown area and congestion in the area.

(b) All helicopter landing, loading and unloading areas must be maintained to reduce the likelihood of flying materials, tripping, or other hazards attendant to the work being performed.

(8) Pilot's responsibility.

(a) The helicopter pilot is responsible for the size, weight and manner in which loads are connected to the helicopter.

(b) No load can be made if the helicopter pilot believes the lift cannot safely be performed. The employer must make certain that the pilot of the helicopter is able to freely exercise their prerogative and judgment as to safe operation of the helicopter itself concerning size, weight and manner by which loads are connected.

(c) The pilot must possess the appropriate ratings for the aircraft and must be competent to safely conduct the assigned tasks. The pilot has the final authority and is solely responsible for the safe operation of the helicopter loads at all times.

(9) Hooking and unhooking loads.

(a) Work performed at an elevated position and directly under hovering helicopters may be performed only by qualified employees.

(A) Work must be limited to the minimum time necessary to guide, secure, hook or unhook the loads.

(B) When an employee is working from the ground under hovering helicopters, the employee must have a safe means of ingress and egress at all times, including readily available escape route or routes in the event of an emergency.

(b) Positive guide systems must be used for the placement of large segments of a primary tower structure and must enable the heavy lift helicopter to temporarily secure and release the load.

(10) Static charge. All loads must be grounded or bonded with a device capable of discharging either the actual or potential static charge before ground personnel either touch or come close enough to touch the suspended load.

(11) Line Stringing.

(a) Weight of the external load must not exceed the manufacturer's load limit.

(b) Each helicopter operator engaged in line stringing must be authorized by the Federal Aviation Administration (FAA) for Part 133 Class C operations.

(c) All line stringing operations must be conducted according to the following requirements:

(A) Stringing tension method must enable a consistent positive control of the cable, rope, or similar lines at all times during pulling operations.

(B) During all pulling operations, the helicopter pilot must maintain an aircraft orientation that allows the pilot to maintain constant visibility in both directions on line.

(C) When pulling from the aircraft belly hook attachment point, a ballast weight of a minimum of 300 pounds must be used. At no time during the pulling operation can the load line that is attached to the helicopter's belly hook attachment point exceed a 30 degree angle from vertical. This does not apply when pulling from the helicopter's approved side pull attachment point.

(12) Visibility. Employees must keep clear of and outside the downwash of the helicopter except as necessary to perform a permitted activity.

(13) Communication.

(a) Communication must be maintained between the air crew and ground personnel at all times by a designated and qualified signal person. There must be a constant, open line of communication, using radios or head and hand signals.

(b) Signal systems must be understood by the air crew and the ground crew, including signal persons, prior to the hoisting of any load.

(c) Signaling and maintaining communications with the pilot are the sole and exclusive function of the signal person during periods of loading and unloading. The signal person must be distinguishable from other members of the ground crew by the pilot of the aircraft. This may be by way of orange-colored gloves, vest, or other apparel.

(d) The lead worker and one top person must also have an operating transmitter and receiver.

(e) Authorized and qualified employees may come within 50 feet of the helicopter when the rotor blades are turning, but no closer, other than to enter the craft or to hook or unhook the load or do other essential functions. Other employees may not come closer than 100 feet of the aircraft when it is operating.

(f) The signals between the signal person and the operator of the helicopter must be those submitted to the Federal Aviation Administration for the particular procedure or job. In the event no signals have been submitted to the Federal Aviation Administration, a system of signaling must be used that has been documented and that is capable of being clearly understood by all employees and others involved in the job. When hand signals are to be used, the qualified worker must use a visually enhanced hard hat or helmet with clear markings to indicate the desired movement. Any signals other than up/down or in/out will require the use of hand signals.

(g) Should a change occur in the hazards, method of performing the job, signals to be used, or other operating conditions during the course of any particular job, a conference must immediately be held at which time all affected employees and others, including signal persons, ground personnel, and pilots, will be advised of such hazards or change of operation. No employee is permitted to work unless such employee and others fully understand the changes that have taken place.

(14) Helicopter Operation.

(a) Whenever approaching or leaving a helicopter with blades rotating, all employees must remain in full view of the pilot and remain in a crouched position while within 50 feet of the helicopter. No employee can approach the rear of the helicopter unless directly authorized and directed by the pilot of such craft. All employees when operating or working within 50 feet of the helicopter with blades turning are subject to the direction of the helicopter pilot.

(b) All materials and equipment loaded in the aircraft must be properly secured for flight.

(c) Long objects, such as shovels and live-line tools, must be carried horizontally and below the waist to avoid contact with the aircraft rotor blades.

(d) The pilot must ensure that all loads are safely secured to the helicopter, or in cargo baskets, and properly loaded with regard to weight and balance.

(e) Never throw anything while loading and unloading the helicopter. Thrown items may come in contact with the aircraft rotor blade, causing damage to the aircraft and possible injury to ground personnel.

(f) While in the helicopter, safety belts must remain fastened at all times except when pilot instructs otherwise or while entering or leaving the helicopter.

(g) Smoking in the helicopter is prohibited at all times.

(15) Helicopter Work Tasks.

(a) Human External Cargo (HEC)

(A) The sling or vertical suspension system for HEC is a vertical system suspended from the helicopter cargo hook. The sling system must comply with FAA regulation 14 CFR Part 133 Class B or D – External Load.

(B) Helicopter operations involving HEC must incorporate the use of a secondary safety device, in addition to the helicopter's primary attachment means, to prevent the inadvertent release of the load. This device must remain able to be jettisoned in accordance with class B load requirements.

(i) HEC lines must be not less than 10:1 safety ratio between the rated breaking strength and the working load.

(ii) All harnesses used for helicopter short-haul operations must meet the ANSI Z359.1-2007 standards for class III (full body) harnesses and must be equipped with both dorsal and sternal D rings.

(iii) All suspension harnesses used for HEC must be adjusted to the user, and the harness must be equipped with an orthostatic shock relief device. Such devices must be used on flights lasting over five minutes.

(b) Hover Transfer.

(A) The qualified line worker must be attached to the helicopter at all times when traveling between the ground and the aerial transfer point or worksite. There must be an FAA approved attachment point on the helicopter for the lineman's safety harness lanyard.

(B) If a platform system is used to transport crews, or if a crewmember performs work from a platform system, the platform system and all aircraft attachment points must comply with applicable FAA regulations and requirements.

(C) All platform operations must be conducted in accordance with the 14 CFR Part 133 Class A – External Load.

(D) Flight and hovering capabilities of the helicopter must not be adversely affected by the design of the platform.

(E) The platform may not adversely affect the auto rotation and emergency capabilities of the helicopter.

(F) The platform and loads may affect the lateral & longitudinal center of gravity weight and balance of the helicopter in flight, therefore an engineered counter-balance system which will ensure stability must be used if the platform exceeds the lateral center of gravity limits of the manufacturer's specifications for the helicopter.

(16) Fires. Open fires are not permitted in any area where fires will be affected by the downwash of the rotors, nor can any employee smoke in an area subject to the downdraft of the rotor.

(17) Refueling operations.

(a) Refueling any helicopter with either aviation gasoline or Jet B (Turbine) type fuel is prohibited while the engines are running.

(b) Fueling of helicopters using Jet A (Turbine-Kerosene) type fuel is allowed with engines running.

(c) All helicopter fueling must comply with the following:

(A) No unauthorized people are allowed within fifty feet of the refueling operation or fueling equipment.

(B) Fire extinguishers must be available and must be in compliance with FAA regulations.

(C) All fueling personnel must be thoroughly trained in the refueling operation and in the use of the available fire extinguishing equipment they may be expected to use.

(D) There must be no smoking, open flames, exposed flame heaters, flare pots, or open flame lights within fifty feet of the refueling area or fueling equipment. The refueling area or the fuel truck must be posted with "no smoking" signs.

(E) Prior to making any fueling connection to the aircraft, the fueling equipment must be bonded to the aircraft by use of a cable, thus providing a conductive path to equalize the potential between the fueling equipment and the aircraft. The bond must be maintained until fueling connections have been removed, thus allowing separated charges that could be generated during the fueling operation to reunite. Grounding during aircraft fueling is not permitted.

(F) To control spills, fuel must be pumped either by hand or power. Pouring or gravity flow is not permitted. Self-closing nozzles or deadman controls must be used and may not be blocked open. Nozzles may not be dragged along the ground.

(G) In case of a spill, the fueling operation must be immediately stopped until such time as the person in charge determines that it is safe to resume the refueling operation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

#### **437-002-2324**

##### **Definitions**

(1) Affected employee. An employee whose job requires him or her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him or her to work in an area in which such servicing or maintenance is being performed.

(2) Attendant. An employee assigned to remain immediately outside the entrance to an enclosed or other space to render assistance as needed to employees inside the space.

(3) Authorized employee. An employee who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under Division 2/RR.

(4) Automatic circuit recloser. A self-controlled device for automatically interrupting and reclosing an alternating-current circuit, with a predetermined sequence of opening and reclosing followed by resetting, hold closed, or lockout.

(5) Barricade. A physical obstruction such as tapes, cones, or A-frame type wood or metal structures that provides a warning about, and limits access to, a hazardous area.

(6) Barrier. A physical obstruction that prevents contact with energized lines or equipment or prevents unauthorized access to a work area.

(7) Bond. The electrical interconnection of conductive parts designed to maintain a common electric potential.

(8) Bus. A conductor or a group of conductors that serve as a common connection for two or more circuits.

(9) Bushing. An insulating structure that includes a through conductor or that provides a passageway for such a conductor, and that, when mounted on a barrier, insulates the conductor from the barrier for the purpose of conducting current from one side of the barrier to the other.

(10) Cable. A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable), or a combination of conductors insulated from one another (multiple-conductor cable).

(11) Cable sheath. A conductive protective covering applied to cables.

**NOTE** to the definition of "cable sheath": A cable sheath may consist of

multiple layers one or more of which is conductive.

(12) Circuit. A conductor or system of conductors through which an electric current is intended to flow.

(13) Clearance (between objects). The clear distance between two objects measured surface to surface.

(14) Clearance (for work). Authorization to perform specified work or permission to enter a restricted area.

(15) Clearance (electrical). Notification from an authorized person that all necessary actions have been taken to de-energize a circuit, line, or equipment and the line or equipment is safe to be worked, so that workers may be authorized to proceed with intended operations.

(16) Communication lines. (See Lines; (a) Communication lines.)

(17) Conductor. A material, usually in the form of a wire, cable, or bus bar, used for carrying an electric current.

(18) Contract employer. An employer, other than a host employer, that performs work covered by this section under contract.

(19) Covered conductor. A conductor covered with a dielectric having no rated insulating strength or having a rated insulating strength less than the voltage of the circuit in which the conductor is used.

(20) Current-carrying part. A conducting part intended to be connected in an electric circuit to a source of voltage. Non-current-carrying parts are those not intended to be so connected.

(21) Deenergized. Free from any electrical connection to a source of potential difference and from electric charge; not having a potential that is different from the potential of the earth.

**Note** to the definition of "deenergized": The term applies only to current-carrying parts, which are sometimes energized (alive).

(22) Designated employee (designated person). An employee (or person) who is assigned by the employer to perform specific duties under the terms of this section and who has sufficient knowledge of the construction and operation of the equipment, and the hazards involved, to perform his or her duties safely.

(23) Drop start (Chain saws). The process of starting a chain saw by simultaneously pushing it away from the body with one hand and pulling the starter cord handle with the other.

(24) Electric line truck. A truck used to transport personnel, tools, and material for electric supply line work.

(25) Electric supply equipment. Equipment that produces, modifies, regulates, controls, or safeguards a supply of electric energy.

(26) Electric supply lines. (See Lines; (b) Electric supply lines.)

(27) Electric utility. An organization responsible for the installation, operation, or maintenance of an electric supply system.

(28) Enclosed space. A working space, such as a manhole, vault, tunnel, or shaft, that has a limited means of egress or entry, that is designed for periodic employee entry under normal operating conditions, and that, under normal conditions, does not contain a hazardous atmosphere, but may contain a hazardous atmosphere under abnormal conditions.

**NOTE** to the definition of "enclosed space": Oregon OSHA does not consider spaces that are enclosed but not designed for employee entry under normal operating conditions to be enclosed spaces for the purposes of this section. Similarly, Oregon OSHA does not consider spaces that are enclosed and that are expected to contain a hazardous atmosphere to be enclosed spaces for the purposes of this Subdivision. Such spaces meet the definition of permit spaces in 1910.146, and entry into them must conform to that standard.

(29) Energized (alive, live). Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of earth in the vicinity.

(30) Energy isolating device. A physical device that prevents the transmission or release of energy, including, but not limited to, the following: a manually operated electric circuit breaker, a disconnect switch, a manually operated switch, a slide gate, a slip blind, a line valve, blocks, and any similar device with a visible indication of the position of the device. (Push buttons, selector switches, and other control-circuit-type devices are not energy isolating devices.)

(31) Energy source. Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, or other energy source that could cause injury to employees.



(32) Entry (as used in 437-002-2304 Enclosed spaces, of Division 2/RR). The action by which a person passes through an opening into an enclosed space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space.

(33) Equipment (electric). A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as part of or in connection with an electrical installation.

(34) Exposed, Exposed to contact (as applied to energized parts). Not isolated or guarded.

(35) Fall restraint system. A fall protection system that prevents the user from falling any distance.

(36) First-aid training. Training in the initial care, including cardiopulmonary resuscitation (which includes chest compressions, rescue breathing, and, as appropriate, other heart and lung resuscitation techniques), performed by a person who is not a medical practitioner, of a sick or injured person until definitive medical treatment can be administered.

(37) Ground. A conducting connection, whether planned or unplanned, between an electric circuit or equipment and the earth, or to some conducting body that serves in place of the earth.

(38) Grounded. Connected to earth or to some conducting body that serves in place of the earth.

(39) Guarded. Covered, fenced, enclosed, or otherwise protected, by means of suitable covers or casings, barrier rails or screens, mats, or platforms, designed to minimize the possibility, under normal conditions, of dangerous approach or inadvertent contact by persons or objects.

**Note** to the definition of "guarded": Wires that are insulated, but not otherwise protected, are not guarded.

(40) Hazardous atmosphere. An atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from an enclosed space), injury, or acute illness from one or more of the following causes:

(a) Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);

(b) Airborne combustible dust at a concentration that meets or exceeds its LFL;

**Note** to the definition of "hazardous atmosphere" (2): This concentration may be approximated as a condition in which the dust obscures vision at a distance of 1.52 meters (5 feet) or less.

(c) Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;

(d) Atmospheric concentration of any substance for which a dose or a permissible exposure limit is in Division 2/G, Occupational Health and Environmental Control; Division 3/D, Occupational Health and Environmental Controls; or in subdivisions Z, Toxic and Hazardous Substances, of Division 2 and Division 3; and which could result in employee exposure in excess of its dose or permissible exposure limit;

**NOTE** to the definition of "hazardous atmosphere" (4): An atmospheric concentration of any substance that is not capable of causing death, incapacitation, impairment of ability to self-rescue, injury, or acute illness due to its health effects is not covered by this provision.

(e) Any other atmospheric condition that is immediately dangerous to life or health.

**NOTE** to the definition of "hazardous atmosphere" (5): For air contaminants for which Oregon OSHA has not determined a dose or permissible exposure limit, other sources of information, such as Safety Data Sheets that comply with the Hazard Communication Standard, 1910.1200 of Division 2, and 1926.1200 of Division 3, published information, and internal documents can provide guidance in establishing acceptable atmospheric conditions.

(41) High-power tests. Tests in which the employer uses fault currents, load currents, magnetizing currents, and line-dropping currents to test equipment, either at the equipment's rated voltage or at lower voltages.

(42) High-voltage tests. Tests in which the employer uses voltages of approximately 1,000 volts as a practical minimum and in which the voltage source has sufficient energy to cause injury.

(43) High wind. A wind of such velocity that one or more of the following hazards would be present:

(a) The wind could blow an employee from an elevated location,

(b) The wind could cause an employee or equipment handling material to lose control of the material, or

(c) The wind would expose an employee to other hazards not controlled by the standard involved.

**NOTE** to the definition of "high wind": Oregon OSHA normally considers winds exceeding 64.4 kilometers per hour (40 miles per hour), or 48.3 kilometers per hour (30 miles per hour) if the work involves material handling, as meeting this criteria, unless the employer takes precautions to protect employees from the hazardous effects of the wind.

(44) Host employer. An employer that operates, or that controls the operating procedures for, an electric power generation, transmission, or distribution installation on which a contract employer is performing work covered by this section.

**NOTE** to the definition of "host employer": Oregon OSHA will treat the electric utility or the owner of the installation as the host employer if it operates or controls operating procedures for the installation. If the electric utility or installation owner neither operates nor controls operating procedures for the installation, Oregon OSHA will treat the employer that the utility or owner has contracted with to operate or control the operating procedures for the installation as the host employer. In no case will there be more than one host employer.

(45) Immediately dangerous to life or health (IDLH). Any condition that poses an immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

**NOTE** to the definition of "immediately dangerous to life or health": Some materials-hydrogen fluoride gas and cadmium vapor, for example-may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health.

(46) Insulated. Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.

**NOTE** to the definition of "insulated": When any object is said to be insulated, it is understood to be insulated for the conditions to which it normally is subjected. Otherwise, it is, for the purpose of this section, uninsulated.

(47) Insulation (cable). Material relied upon to insulate the conductor from other conductors or conducting parts or from ground.

(48) Isolated. Not readily accessible to persons unless special means for access are used.

(49) Line-clearance tree trimmer. An employee who, through related training or on-the-job experience or both, is familiar with the special techniques and hazards involved in line-clearance tree trimming.

**NOTE 1** to the definition of "line-clearance tree trimmer": An employee who is regularly assigned to a line-clearance tree-trimming crew and who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a line-clearance tree trimmer is considered to be a line-clearance tree trimmer for the performance of those duties.

**NOTE 2** to the definition of "line-clearance tree trimmer": A line-clearance tree trimmer is not considered to be a "qualified employee" under Subdivision RR unless he or she has the training required for a qualified employee under 437-002-2300(2)(b), General: Training, of Subdivision RR. However, under the electrical safety-related work practices standard in Division 2/S, a line-clearance tree trimmer is considered to be a "qualified employee". Tree trimming performed by such "qualified employees" is not subject to the electrical safety-related work practice requirements contained in 1910.331 through 1910.335 of Division 2/S when it is directly associated with electric power generation, transmission, or distribution lines or equipment. (See 1910.331 for requirements on the applicability of the electrical safety-related work practice requirements contained in 1910.331 through 1910.335 to line-clearance tree trimming performed by such "qualified employees," and see the note following 1910.332(b)(3) of Division 2/S for information regarding the training an employee must have to be considered a qualified employee under 1910.331 through 1910.335 of Division 2/S.)

(50) Line-clearance tree trimming. The pruning, trimming, repairing, maintaining, removing, or clearing of trees, or the cutting of brush, that is within the following distance of electric supply lines and equipment:

(a) For voltages to ground of 50 kilovolts or less-3.05 meters (10 feet);

(b) For voltages to ground of more than 50 kilovolts-3.05 meters (10 feet) plus 0.10 meters (4 inches) for every 10 kilovolts over 50 kilovolts.

**NOTE** to the definition of “line-clearance tree trimming”: This section applies only to line-clearance tree trimming performed for the purpose of clearing space around electric power generation, transmission, or distribution lines or equipment and on behalf of an organization that operates, or that controls the operating procedures for, those lines or equipment. See paragraph (1) of 437-002-2300. Tree trimming performed on behalf of a homeowner or commercial entity other than an organization that operates, or that controls the operating procedures for, electric power generation, transmission, or distribution lines or equipment is not directly associated with an electric power generation, transmission, or distribution installation and is outside the scope of this section. In addition, tree trimming that is not for the purpose of clearing space around electric power generation, transmission, or distribution lines or equipment is not directly associated with an electric power generation, transmission, or distribution installation and is outside the scope of this section. Such tree trimming may be covered by other applicable standards. See, for example, 437-002-0268 and 1910.331 through 1910.335 of Division 2.

(51) Lines.

(a) Communication lines. The conductors and their supporting or containing structures which are used for public or private signal or communication service, and which operate at potentials not exceeding 400 volts to ground or 750 volts between any two points of the circuit, and the transmitted power of which does not exceed 150 watts. If the lines are operating at less than 150 volts, no limit is placed on the transmitted power of the system. Under certain conditions, communication cables may include communication circuits exceeding these limitations where such circuits are also used to supply power solely to communication equipment.

**NOTE** to the definition of “communication lines”: Telephone, telegraph, railroad signal, data, clock, fire, police alarm, cable television, and other systems conforming to this definition are included. Lines used for signaling purposes, but not included under this definition, are considered as electric supply lines of the same voltage.

(b) Electric supply lines. Conductors used to transmit electric energy and their necessary supporting or containing structures. Signal lines of more than 400 volts are always supply lines within this section, and those of less than 400 volts are considered as supply lines, if so run and operated throughout.

(52) Manhole. A subsurface enclosure that personnel may enter and that is used for installing, operating, and maintaining submersible equipment or cable.

(53) Minimum approach distance. The closest distance an employee may approach an energized or a grounded object.

**NOTE** to the definition of “minimum approach distance”: 437-002-2311

(3)(a). Working on or near exposed energized parts, requires employers to establish minimum approach distances.

(54) Personal fall arrest system. A system used to arrest an employee in a fall from a working level.

(55) Power-line Carrier (PLC). An electric power transmission and distribution conductor that simultaneously carries data, such as internet broadband. Also known as power-line networking (PLN) or power-line communication.

(56) Qualified employee (qualified person). An employee (person) knowledgeable in the construction and operation of the electric power generation, transmission, and distribution equipment involved, along with the associated hazards.

**NOTE** 1 to the definition of “qualified employee (qualified person)”: An employee must have the training required by 437-002-2300(2)(b) General, Training; to be a qualified employee.

**NOTE** 2 to the definition of “qualified employee (qualified person)”: an employee who is undergoing on-the-job training and who has demonstrated, in the course of such training, an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person is a qualified person for the performance of those duties.

(57) Statistical sparkover voltage. A transient overvoltage level that produces a 97.72-percent probability of sparkover (that is, two standard deviations above the voltage at which there is a 50-percent probability of sparkover).

(58) Statistical withstand voltage. A transient overvoltage level that produces a 0.14-percent probability of sparkover (that is, three standard deviations below the voltage at which there is a 50-percent probability of sparkover).

(59) Switch. A device for opening and closing or for changing the connection of a circuit. In this section, a switch is manually operable, unless otherwise stated.

(60) System operator. A qualified person who has been designated by the employer to have authority over switching, clearances, and operation of the system and its parts.

(61) Vault. An enclosure, above or below ground, that personnel may enter and that is used for installing, operating, or maintaining equipment or cable.

(62) Vented vault. A vault that has provision for air changes using exhaust flue stacks and low-level air intakes operating on pressure and temperature differentials that provide for airflow that precludes a hazardous atmosphere from developing.

(63) Voltage. The effective (root mean square, or rms) potential difference between any two conductors or between a conductor and ground. This section expresses voltages in nominal values, unless otherwise indicated. The nominal voltage of a system or circuit is the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation. The operating voltage of the system may vary above or below this value.

(64) Voltage (low). Voltage of 600 volts or less.

(65) Voltage (high). Voltage greater than 600 volts.

(66) Work-positioning equipment. A body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a utility pole or tower leg, and work with both hands free while leaning.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16

## DIVISION 3

### CONSTRUCTION

#### 437-003-0001

##### Adoption by Reference

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, in the Federal Register:

(1) Subdivision A — GENERAL

(a) 29 CFR 1926.1 Purpose and Scope, published 4/6/79, FR vol. 44, p. 20940.

(b) 29 CFR 1926.2 Variances from safety and health standards, published 4/6/79, FR vol. 44, p. 20940.

(c) 29 CFR 1926.3 Inspections — right of entry, published 4/6/79, FR vol. 44, p. 20940.

(d) 29 CFR 1926.4 Rules of practice for administrative adjudications for enforcement of safety and health standards, published 4/6/79, FR vol. 44, p. 20940.

(e) 29 CFR 1926.6 Incorporation by reference, published 3/25/16, FR vol. 81, no. 58, p. 16085.

(2) Subdivision B — GENERAL INTERPRETATIONS

(a) 29 CFR 1926.10 Scope of subpart, published 4/6/79, FR vol. 44, p. 20940.

(b) 29 CFR 1926.11 Coverage under section 103 of the act distinguished, published 4/6/79, FR vol. 44, p. 20940.

(c) 29 CFR 1926.12 Reorganization plan No. 14 of 1950, published 4/6/79, FR vol. 44, p. 20940.

(d) 29 CFR 1926.13 Interpretation of statutory terms, published 4/6/79, FR vol. 44, p. 20940.

(e) 29 CFR 1926.14 Federal contracts for ‘mixed’ types of performance, published 4/6/79, FR vol. 44, p. 20940.

(f) 29 CFR 1926.15 Relationship to the service contract act; Walsh-Healey Public Contracts Act, published 4/6/79, FR vol. 44, p. 20940.

(g) 29 CFR 1926.16 Rules of construction, published 4/6/79, FR vol. 44, p. 20940.

(3) Subdivision C — GENERAL SAFETY AND HEALTH PROVISIONS

(a) 29 CFR 1926.20 General safety and health provisions, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

(b) 29 CFR 1926.21 Safety training and education, published 4/6/79, FR vol. 44, p. 20940; amended with Oregon OSHA AO 6-2012, repealed (b)(6), f. 9/28/12, ef. 4/1/13.

(c) 29 CFR 1926.22 Recording and reporting of injuries (Reserved)

(d) 29 CFR 1926.23 First aid and medical attention, published 4/6/79, FR vol. 44, p. 20940.

(e) 29 CFR 1926.24 Fire protection and prevention, published 4/6/79, FR vol. 44, p. 20940.

(f) 29 CFR 1926.25 Housekeeping, published 4/6/79, FR vol. 44, p. 20940.

(g) 29 CFR 1926.26 Illumination, published 4/6/79, FR vol. 44, p. 20940.

(h) 29 CFR 1926.27 Sanitation, published 4/6/79, FR vol. 44, p. 20940.

(i) 29 CFR 1926.28 Personal protective equipment. REPEALED with Oregon OSHA Admin. Order 2-2013, filed 2/15/13, effective 4/1/13. In Oregon, OAR 437-003-0134 applies.

(j) 29 CFR 1926.29 Acceptable certifications, published 4/6/79, FR vol. 44, p. 20940.

(k) 29 CFR 1926.30 Shipbuilding and ship repairing, published 3/7/96, FR vol. 61, no. 46, p. 9249.

(l) 29 CFR 1926.31 (Reserved).

(m) 29 CFR 1926.32 Definitions, published 6/30/93, FR vol. 58, no. 124, p. 35078.

(n) 29 CFR 1926.33 Access to employee exposure and medical records, published 6/20/96, FR vol. 61, no. 46, p. 31427.

(o) 29 CFR 1926.34 Means of egress, published 6/30/93, Federal Register, vol. 58, no. 124, p. 35083.

(4) Subdivision D — OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS

(a) 29 CFR 1926.50 Medical services and first aid, published 6/18/98, FR vol. 63, no. 117, p. 33469.

(b) 29 CFR 1926.51 Sanitation, published 6/30/93, FR vol. 58, no. 124, p. 35084.

(c) 29 CFR 1926.52 Occupational noise exposure, published 4/6/79, FR vol. 44, p. 20940.

(d) 29 CFR 1926.53 Ionizing radiation, published 4/6/79, FR vol. 44, p. 20940.

(e) 29 CFR 1926.54 Nonionizing radiation, published 4/6/79, FR vol. 44, p. 20940.

(f) 29 CFR 1926.55 Gases, vapors, fumes, dusts, and mists, published 1/10/97, FR vol. 62, no. 7, p. 1619.

(g) 29 CFR 1926.56 Illumination, published 4/6/79, FR vol. 44, p. 20940.

(h) 29 CFR 1926.57 Ventilation, published 1/8/98, FR vol. 63, no. 5, p. 1295.

(i) 29 CFR 1926.58 Reserved, §1926.58, Asbestos, tremolite, anthophyllite and actinolite is redesignated as §1926.1101, Asbestos, and §1926.58 is reserved (8/10/94, FR vol. 59, no. 153, pp. 41131-62).

(j) 29 CFR 1926.59 Hazard Communication, published 6/20/96, FR vol. 61, p. 31427.

(k) 29 CFR 1926.60 Methylenedianiline (MDA), published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

(l) 29 CFR 1926.61 Retention of DOT markings, placards and labels, published 6/20/96, FR vol. 61, p. 31427.

(m) 29 CFR 1926.62 Lead, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

NOTE: Cadmium has been redesignated as §1926.1127.

(n) 29 CFR 1926.65 Hazardous Waste Operations and Emergency Response

NOTE: Division 2/H, 1910.120, Hazardous Waste Operations and Emergency Response, applies to Construction.

(5) Subdivision E — PERSONAL PROTECTIVE AND LIFE SAVING EQUIPMENT

(a) 29 CFR 1926.95 Criteria for personal protective equipment. REPEALED with Oregon OSHA Admin. Order 2-2013, filed 2/15/13, effective 4/1/13. In Oregon, OAR 437-003-0134 applies.

(b) 29 CFR 1926.97 Electrical protective equipment, published 4/11/14, FR vol. 79, no. 70, p. 20316.

(c) 29 CFR 1926.100 Head protection. REPEALED with Oregon OSHA Admin. Order 2-2013, filed 2/15/13, effective 4/1/13. In Oregon, OAR 437-003-0134 applies.

(d) 29 CFR 1926.101 Hearing protection. REPEALED with Oregon OSHA Admin. Order 2-2013, filed 2/15/13, effective 4/1/13. In Oregon, OAR 437-003-0134 applies.

(e) 29 CFR 1926.102 Eye and face protection. REPEALED with Oregon OSHA Admin. Order 2-2013, filed 2/15/13, effective 4/1/13. In Oregon, OAR 437-003-0134 applies.

(f) 29 CFR 1926.103 Respiratory protection, published 1/8/98, FR vol. 63, no. 5, p. 1297.

NOTE: 29 CFR 1926.104 Removed, 8/9/94, FR vol. 59, no. 152, p. 40729.

(g) 29 CFR 1926.105 Reserved, 8/9/94, FR vol. 59, no. 152, p. 40729.

(h) 29 CFR 1926.106 Working over or near water, published 4/6/79, FR vol. 44, p. 20940.

(i) 29 CFR 1926.107 Definitions applicable to this subpart, published 8/9/94, FR vol. 59, no. 152, p. 40729.

(6) Subdivision F — FIRE PROTECTION AND PREVENTION

(a) 29 CFR 1926.150 Fire protection, published 4/6/79, FR vol. 44, p. 20940.

(b) 29 CFR 1926.151 Fire prevention, published 7/11/86, FR vol. 51, p. 25318.

(c) 29 CFR 1926.152 Flammable and combustible liquids, published 6/30/93, FR vol. 58, no. 124, p. 35162.

(d) 29 CFR 1926.153 Liquefied petroleum gas (LP-Gas), published 6/30/93, FR vol. 58, no. 124, p. 35170.

(e) 29 CFR 1926.154 Temporary heating devices, published 4/6/79, FR vol. 44, p. 20940.

(f) 29 CFR 1926.155 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.

(7) Subdivision G — SIGNS, SIGNALS, AND BARRICADES

(a) 29 CFR 1926.200 Accident prevention signs and tags, published 6/13/13, FR vol. 78, no. 114, p. 35559; 11/6/13, FR vol. 78, no. 215, p. 66641.

(b) 29 CFR 1926.201 Signaling, REPEALED with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.

(c) 29 CFR 1926.202 Barricades, REPEALED with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.

(d) 29 CFR 1926.203 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940; amended with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.

(8) Subdivision H — MATERIALS HANDLING, STORAGE, USE AND DISPOSAL

(a) 29 CFR 1926.250 General requirements for storage, published 6/30/93, FR vol. 58, no. 124, p. 35173.

(b) 29 CFR 1926.251 Rigging equipment for material handling, published 6/30/93, FR vol. 58, no. 124, p. 35173.

(c) 29 CFR 1926.252 Disposal of waste materials, published 4/6/79, FR vol. 44, p. 20940.

(9) Subdivision I — TOOLS — HAND AND POWER

(a) 29 CFR 1926.300 General requirements, published 3/7/96, FR vol. 61, no. 46, p. 9250.

(b) 29 CFR 1926.301 Hand tools, published 4/6/79, FR vol. 44, p. 20940.

(c) 29 CFR 1926.302 Power operated hand tools, published 6/30/93, FR vol. 58, no. 124, p. 35175.

(d) 29 CFR 1926.303 Abrasive wheels and tools, published 6/30/93, FR vol. 58, no. 124, p. 35175.

(e) 29 CFR 1926.304 Woodworking tools, published 3/7/96, FR vol. 61, no. 46, p. 9251.

(f) 29 CFR 1926.305 Jacks - lever and ratchet, screw, and hydraulic, published Federal Register vol. 58, no. 124, p. 35176.

(10) Subdivision J — WELDING AND CUTTING

(a) 29 CFR 1926.350 Gas welding and cutting. Repealed. Oregon OSHA Admin. Order 6-2014, f. 10/28/14, ef. 5/1/15. In Oregon, OAR 437-002-2253 applies.

(b) 29 CFR 1926.351 Arc welding and cutting, published 7/11/86, FR vol. 51, p. 25318.



- (c) 29 CFR 1926.352 Fire prevention, published 4/6/79, FR vol. 44, p. 20940.
- (d) 29 CFR 1926.353 Ventilation and protection in welding, cutting, and heating, published 6/30/93, FR vol. 58, no. 124, p. 35179.
- (e) 29 CFR 1926.354 Welding, cutting, and heating in way of preservative coatings, published 4/6/79, FR vol. 44, p. 20940.
- (11) Subdivision K — ELECTRICAL
- (a) 29 CFR 1926.400 Introduction, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (b) 29 CFR 1926.401 (Reserved)
- (c) 29 CFR 1926.402 Applicability, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (d) 29 CFR 1926.403 General requirements, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (e) 29 CFR 1926.404 Wiring design and protection, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335; amended with AO 5-2002, repeal (b)(1), f. 6/28/02, ef. 10/1/03.
- (f) 29 CFR 1926.405 Wiring methods, components, and equipment for general use, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (g) 29 CFR 1926.406 Specific purpose equipment and installations, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (h) 29 CFR 1926.407 Hazardous (classified) locations, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (i) 29 CFR 1926.408 Special systems, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (j) 29 CFR 1926.409 (Reserved)
- (k) 29 CFR 1926.415 (Reserved)
- (l) 29 CFR 1926.416 General requirements, published 8/12/96, FR vol. 61, no. 156, p. 41738.
- (m) 29 CFR 1926.417 Lockout and tagging of circuits, published 8/12/96, FR vol. 61, no. 156, p. 41739.
- (n) 29 CFR 1926.418 (Reserved)
- (o) 29 CFR 1926.430 (Reserved)
- (p) 29 CFR 1926.431 Maintenance of equipment, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (q) 29 CFR 1926.432 Environmental deterioration of equipment, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (r) 29 CFR 1926.433 - 29 CFR 1926.440 (Reserved)
- (s) 29 CFR 1926.441 Battery locations and battery charging, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (t) 29 CFR 1926.442 - 29 CFR 1926.448 (Reserved)
- (u) 29 CFR 1926.449 Definitions applicable to this subpart, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (12) Subdivision L — SCAFFOLDING
- (a) 29 CFR 1926.450 Scope, application and definitions applicable to this subpart, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (b) 29 CFR 1926.451 General requirements, published 11/25/96, FR vol. 61, no. 228, p. 59831.
- (c) 29 CFR 1926.452 Additional requirements applicable to specific types of scaffolds, published 8/30/96, FR vol. 61, no. 170, p. 46113.
- (d) 29 CFR 1926.453 Aerial lifts, published 11/25/96, FR vol. 61, no. 228, p. 59832.
- (e) 29 CFR 1926.454 Training, published 8/30/96, FR vol. 61, no. 170, p. 46117.
- (f) Appendix A to Subpart L Scaffold Specifications, published 8/30/96, FR vol. 61, no. 170, p. 46117.
- (g) Appendix B to Subpart L Criteria for determining the feasibility of providing safe access and fall protection for scaffold erectors and dismantlers (Reserved), published 8/30/96, FR vol. 61, no. 170, p. 46122.
- (h) Appendix C to Subpart L List of National Consensus Standards, published 8/30/96, FR vol. 61, no. 170, p. 46122.
- (i) Appendix D to Subpart L List of training topics for scaffold erectors and dismantlers, published 8/30/96, FR vol. 61, no. 170, p. 46122.
- (j) Appendix E to Subpart L Drawing and illustrations, published 11/25/96, FR vol. 61, no. 228, p. 59832.
- (13) Subdivision M — FALL PROTECTION
- (a) 29 CFR 1926.500 Scope, application, and definitions applicable to this subpart, published 4/11/14, FR vol. 79, no. 70, p. 20316; amended with AO 1-2016, f. 3/1/16, ef. 1/1/17.
- (b) 29 CFR 1926.501 Duty to have fall protection. REPEALED with AO 1-2016, f. 3/1/16, ef. 1/1/17. In Oregon, 437-003-1501 applies.
- (c) 29 CFR 1926.502 Fall protection systems criteria and practices, published 8/9/94, FR vol. 59, no. 152, p. 40733-40738; amended with AO 6-2002, f. and ef. 7/19/02.
- (d) 29 CFR 1926.503 Training requirements. REPEALED with AO 6-2002, f. and ef. 7/19/02, in Oregon, 437-003-0503 applies.
- (e) Appendix A to Subpart M Determining Roof Widths, published 8/9/94, FR vol. 59, no. 152, p. 40738-40742.
- (f) Appendix B to Subpart M Guardrail Systems, published 8/9/94, FR vol. 59, no. 152, p. 40743.
- (g) Appendix C to Subpart M Personal Fall Arrest Systems, published 8/9/94, FR vol. 59, no. 152, p. 40743-40746.
- (h) Appendix D to Subpart M Positioning Device Systems, published 8/9/94, FR vol. 59, no. 152, p. 40746.
- (14) Subdivision N — HELICOPTERS, HOISTS, ELEVATORS, AND CONVEYORS
- (a) 29 CFR 1926.550 (Reserved).
- (b) 29 CFR 1926.551 Helicopters, published 4/6/79, FR vol. 44, p. 20940.
- (c) 29 CFR 1926.552 Material hoists, personnel hoists, and elevators, published 4/6/79, FR vol. 44, p. 20940.
- (d) 29 CFR 1926.553 Base-mounted drum hoist, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (e) 29 CFR 1926.554 Overhead hoists, published 4/6/79, FR vol. 44, p. 20940.
- (f) 29 CFR 1926.555 Conveyors, published 4/6/79, FR vol. 44, p. 20940.
- (15) Subdivision O — MOTOR VEHICLES, MECHANIZED EQUIPMENT, AND MARINE OPERATIONS
- (a) 29 CFR 1926.600 Equipment, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (b) 29 CFR 1926.601 Motor vehicles, REPEALED by OSHA Admin. Order 6-2007, f. 9/26/07, ef. 9/26/07.
- (c) 29 CFR 1926.602 Material handling equipment, published 12/1/98, FR vol. 63, no. 230, p. 66274; amended by AO 7-2003, f. 12/5/03, ef. 12/5/03.
- (d) 29 CFR 1926.603 Pile driving equipment, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.604 Site clearing, published 7/22/77, FR vol. 42, p. 37674.
- (f) 29 CFR 1926.605 Marine operations and equipment, published 4/6/79, FR vol. 44, p. 20940.
- (g) 29 CFR 1926.606 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
- (16) Subdivision P — EXCAVATIONS
- (a) 29 CFR 1926.650 Scope, application, and definitions applicable to this subdivision, published 10/31/89, FR vol. 54, no. 209, pp. 45959-45961.
- (b) 29 CFR 1926.651 General requirements, published 8/9/94, FR vol. 59, no. 152, p. 40730.
- (c) 29 CFR 1926.652 Requirements for protective systems, published 10/31/89, FR vol. 54, no. 209, pp. 45961-45962.
- (d) Appendices A-F to Subdivision P, Excavations, published 10/31/89, FR vol. 54, no. 209, pp. 45962-45991.
- (17) Subdivision Q — CONCRETE AND MASONRY CONSTRUCTION
- (a) 29 CFR 1926.700 Scope, application and definitions applicable to this subpart, published 10/18/90, FR vol. 55, no. 202, p. 42326.
- (b) 29 CFR 1926.701 General requirements, published 8/9/94, FR vol. 59, no. 152, p. 40730.
- (c) 29 CFR 1926.702 Requirements for equipment and tools, published 6/16/88, FR vol. 53, p. 22612.
- (d) 29 CFR 1926.703 Requirements for cast-in-place concrete, published 6/16/88, FR vol. 53, p. 22612.

- (e) 29 CFR 1926.704 Requirements for precast concrete, published 10/5/89, FR vol. 54, no. 192, p. 41088.
- (f) 29 CFR 1926.705 Requirements for lift-slab construction operations, published 10/18/90, FR vol. 55, no. 202, p. 42326.
- (g) Appendix A to 1926.705 Lift-slab operations, published 10/18/90, FR vol. 55, no. 202, p. 42326.
- (h) 29 CFR 1926.706 Requirements for masonry construction, published 6/16/88, FR vol. 53, p. 22612; amended with OR-OSHA Admin. Order 1-2003, f. 1/30/03, ef. 4/30/03.
- (18) Subdivision R — STEEL ERECTION
  - (a) 29 CFR 1926.750 Scope, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (b) 29 CFR 1926.751 Definitions, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
  - (c) 29 CFR 1926.752 Site layout, site-specific erection plan and construction sequence, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (d) 29 CFR 1926.753 Hoisting and rigging, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
  - (e) 29 CFR 1926.754 Structural steel assembly, published 4/3/06, FR vol. 71, no. 63, p. 16669.
  - (f) 29 CFR 1926.755 Column anchorage, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (g) 29 CFR 1926.756 Beams and columns, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (h) 29 CFR 1926.757 Open web steel joists, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
  - (i) 29 CFR 1926.758 Systems-engineered metal buildings, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (j) 29 CFR 1926.759 Falling object protection, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (k) 29 CFR 1926.760 Fall protection, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
  - (l) 29 CFR 1926.761 Training, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
  - (m) Appendix A to Subpart R Guidelines for establishing the components of a site-specific erection plan: Nonmandatory Guidelines for Complying with §1926.752(e), published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (n) Appendix B to Subpart R Reserved.
  - (o) Appendix C to Subpart R Illustrations of bridging terminus points: Nonmandatory Guidelines for Complying with §1926.757(a)(10) and §1926.757(c)(5), published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (p) Appendix D to Subpart R Illustration of the use of control lines to demarcate controlled decking zones (CDZs): Nonmandatory Guidelines for Complying with §1926.760(c)(3), REPEALED with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
  - (q) Appendix E to Subpart R Training: Nonmandatory Guidelines for Complying with §1926.761, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (r) Appendix F to Subpart R Perimeter columns: Nonmandatory Guidelines for Complying with §1926.756(e) to Protect the Unprotected Side or Edge of a Walking/Working Surface, published 7/17/01, FR vol. 66, no. 137, p. 37137.
  - (s) Appendix G to Subpart R Fall protection systems criteria and practices from §1926.502: Nonmandatory Guidelines for Complying with Complying with §1926.760(d), REPEALED with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
  - (t) Appendix H to Subpart R Double connections: Illustration of a clipped end connection and a staggered connection: Non-Mandatory Guidelines for Complying with Complying with §1926.756(c)(1), published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (19) Subdivision S — UNDERGROUND CONSTRUCTION, CAISSONS, COFFERDAMS, AND COMPRESSED AIR
  - (a) 29 CFR 1926.800 Underground construction, published 4/23/13, FR vol. 78, no. 78, p. 23837.
  - (b) 29 CFR 1926.801 Caissons, published 4/6/79, FR vol. 44, p. 20940.
  - (c) 29 CFR 1926.802 Cofferdams, published 4/6/79, FR vol. 44, p. 20940.
  - (d) 29 CFR 1926.803 Compressed air, published 7/11/86, FR vol. 51, p. 25318.
  - (e) 29 CFR 1926.804 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
  - (f) Appendix A to Subpart S Decompression Tables, published 4/6/79, FR vol. 44, p. 20940.
- (20) Subdivision T — DEMOLITION
  - (a) 29 CFR 1926.850 Preparatory operations, published 4/6/79, FR vol. 44, p. 20940.
  - (b) 29 CFR 1926.851 Stairs, passageways, and ladders, published 4/6/79, FR vol. 44, p. 20940.
  - (c) 29 CFR 1926.852 Chutes, published 4/6/79, FR vol. 44, p. 20940.
  - (d) 29 CFR 1926.853 Removal of materials through floor openings, published 4/6/79, FR vol. 44, p. 20940.
  - (e) 29 CFR 1926.854 Removal of walls, masonry sections, and chimneys, published 4/6/79, FR vol. 44, p. 20940.
  - (f) 29 CFR 1926.855 Manual removal of floors, published 4/6/79, FR vol. 44, p. 20940.
  - (g) 29 CFR 1926.856 Removal of walls, floors, and materials with equipment, published 4/23/13, FR vol. 78, no. 78, p. 23837.
  - (h) 29 CFR 1926.857 Storage, published 4/6/79, FR vol. 44, p. 20940.
  - (i) 29 CFR 1926.858 Removal of steel construction, published 4/23/13, FR vol. 78, no. 78, p. 23837.
  - (j) 29 CFR 1926.859 Mechanical demolition, published 4/6/79, FR vol. 44, p. 20940.
  - (k) 29 CFR 1926.860 Selective demolition by explosives, published 4/6/79, FR vol. 44, p. 20940.
- (21) Subdivision U — BLASTING AND USE OF EXPLOSIVES
  - (a) 29 CFR 1926.900 General provisions, published 4/6/79, FR vol. 44, p. 20940.
  - (b) 29 CFR 1926.901 Blaster qualifications, published 4/6/79, FR vol. 44, p. 20940.
  - (c) 29 CFR 1926.902 Surface transportation of explosives, published 6/30/93, FR vol. 58, no. 124, p. 35311.
  - (d) 29 CFR 1926.903 Underground transportation of explosives, published 4/6/79, FR vol. 44, p. 20940.
  - (e) 29 CFR 1926.904 Storage of explosives and blasting agents, published 6/30/93, FR vol. 58, no. 124, p. 35311.
  - (f) 29 CFR 1926.905 Loading of explosives or blasting agents, published 6/30/93, FR vol. 58, no. 124, p. 35184.
  - (g) 29 CFR 1926.906 Initiation of explosive charges — electric blasting, published 6/18/98, FR vol. 63, no. 117, p. 33469.
  - (h) 29 CFR 1926.907 Use of safety fuse, published 4/6/79, FR vol. 44, p. 20940.
  - (i) 29 CFR 1926.908 Use of detonating cord, published 4/6/79, FR vol. 44, p. 20940.
  - (j) 29 CFR 1926.909 Firing the blast, published 4/6/79, FR vol. 44, p. 20940.
  - (k) 29 CFR 1926.910 Inspection after blasting, published 4/6/79, FR vol. 44, p. 20940.
  - (l) 29 CFR 1926.911 Misfires, published 4/6/79, FR vol. 44, p. 20940.
  - (m) 29 CFR 1926.912 Underwater blasting, published 4/6/79, FR vol. 44, p. 20940.
  - (n) 29 CFR 1926.913 Blasting in excavation work under compressed air, published 4/6/79, FR vol. 44, p. 20940.
  - (o) 29 CFR 1926.914 Definitions applicable to this subpart, published 6/30/93, FR vol. 58, no. 124, p. 35184, 35311.
- (22) Subdivision V — POWER TRANSMISSION AND DISTRIBUTION

29 CFR 1926.950 through 1926.960 are repealed with Oregon OSHA Admin. Order 3-2015, f. 10/9/15, ef. 1/1/16. In Oregon, Division 2/RR applies.

**(23) Subdivision W — ROLLOVER PROTECTIVE STRUCTURES: OVERHEAD PROTECTION**

(a) 29 CFR 1926.1000 Rollover protective structures (ROPS) for material handling equipment, published 4/6/79, FR vol. 44, p. 20940.

(b) 29 CFR 1926.1001 Minimum performance criteria for rollover protective structure for designated scrapers, loaders, dozers, graders, and crawler tractors, published 4/6/79, FR vol. 44, p. 20940.

(c) 29 CFR 1926.1002 Protective frame (ROPS) test procedures and performance requirements for wheel-type agricultural and industrial tractors used in construction, published 7/20/06, FR vol. 71, no. 139, p. 41127.

(d) 29 CFR 1926.1003 Overhead protection for operators of agricultural and industrial tractors, published 2/28/06, FR vol. 71, no. 39, p. 9909.

**(24) Subdivision X — STAIRWAYS AND LADDERS**

(a) 29 CFR 1926.1050 Scope, application and definitions applicable to this Subdivision, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(b) 29 CFR 1926.1051 General requirements, published 11/14/90, FR vol. 55, no. 220, p. 47688.

(c) 29 CFR 1926.1052 Stairways, published 8/23/91, FR vol. 56, no. 164, pp. 41793-41794.

(d) 29 CFR 1926.1053 Ladders, published 4/11/14, FR vol. 79, no. 70, p. 20316.

(e) 29 CFR 1926.1054 (Reserved).

(f) 29 CFR 1926.1055 (Reserved).

(g) 29 CFR 1926.1056 (Reserved).

(h) 29 CFR 1926.1057 (Reserved).

(i) 29 CFR 1926.1058 (Reserved).

(j) 29 CFR 1926.1059 (Reserved).

(k) 29 CFR 1926.1060 Training requirements, published 11/14/90, FR vol. 55, no. 220, p. 47691.

**(25) Subdivision Z — TOXIC AND HAZARDOUS SUBSTANCES**

(a) 29 CFR 1926.1101 Asbestos, published 2/8/13, FR vol. 78, no. 27, p. 9311.

(b) 29 CFR 1926.1126 Chromium (VI), published 3/17/10, FR vol. 75, no. 51, pp. 12681-12686.

(c) 29 CFR 1926.1127 Cadmium, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

(d) 29 CFR 1926.1152 Methylene Chloride, published 12/18/97, FR vol. 62, no. 243, p. 66275.

(26) Subdivision AA — (Reserved).

(27) Subdivision BB — (Reserved).

(28) Subdivision CC — Cranes and Derricks in Construction

(a) 29 CFR 1926.1400 Scope, published 4/11/14, FR vol. 79, no. 70, p. 20316.

(b) 29 CFR 1926.1401 Definitions, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(c) 29 CFR 1926.1402 Ground conditions, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(d) 29 CFR 1926.1403 Assembly/Disassembly — selection of manufacturer or employer procedures, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(e) 29 CFR 1926.1404 Assembly/Disassembly — general requirements (applies to all assembly and disassembly operations), published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(f) 29 CFR 1926.1405 Disassembly — additional requirements for dismantling of booms and jibs (applies to both the use of manufacturer procedures and employer procedures), published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(g) 29 CFR 1926.1406 Assembly/Disassembly — employer procedures — general requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(h) 29 CFR 1926.1407 Power line safety (up to 350 kV) — assembly and disassembly, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(i) 29 CFR 1926.1408 Power line safety (up to 350 kV) — equipment operations, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(j) 29 CFR 1926.1409 Power line safety (over 35 kV), published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(k) 29 CFR 1926.1410 Power line safety (all voltages) — equipment operations closer than the Table A zone, published 4/11/14, FR vol. 79, no. 70, p. 20316.

(l) 29 CFR 1926.1411 Power line safety — while traveling, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(m) 29 CFR 1926.1412 Inspections, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(n) 29 CFR 1926.1413 Wire rope — inspection, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(o) 29 CFR 1926.1414 Wire rope — selection and installation criteria, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(p) 29 CFR 1926.1415 Safety devices, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(q) 29 CFR 1926.1416 Operational aids, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(r) 29 CFR 1926.1417 Operation, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(s) 29 CFR 1926.1418 Authority to stop operation, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(t) 29 CFR 1926.1419 Signals — general requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(u) 29 CFR 1926.1420 Signals — radio, telephone or other electronic transmission of signals, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(v) 29 CFR 1926.1421 Signals — voice signals — additional requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(w) 29 CFR 1926.1422 Signals — hand signal chart, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(x) 29 CFR 1926.1423 Fall protection, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(y) 29 CFR 1926.1424 Work area control, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(z) 29 CFR 1926.1425 Keeping clear of the load, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(aa) 29 CFR 1926.1426 Free fall and controlled load lowering, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(bb) 29 CFR 1926.1427 Operator qualification and certification, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(cc) 29 CFR 1926.1428 Signal person qualifications, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(dd) 29 CFR 1926.1429 Qualifications of maintenance & repair employees, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(ee) 29 CFR 1926.1430 Training, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(ff) 29 CFR 1926.1431 Hoisting personnel, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(gg) 29 CFR 1926.1432 Multiple-crane/derrick lifts — supplemental requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(hh) 29 CFR 1926.1433 Design, construction and testing, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(ii) 29 CFR 1926.1434 Equipment modifications, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(jj) 29 CFR 1926.1435 Tower cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(kk) 29 CFR 1926.1436 Derricks, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(ll) 29 CFR 1926.1437 Floating cranes/derricks and land cranes/derricks on barges, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(mm) 29 CFR 1926.1438 Overhead & gantry cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(nn) 29 CFR 1926.1439 Dedicated pile drivers, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.



(oo) 29 CFR 1926.1440 Sideboom cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(pp) 29 CFR 1926.1441 Equipment with a rated hoisting/lifting capacity of 2,000 pounds or less, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(qq) 29 CFR 1926.1442 Severability, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(rr) Appendix A to Subdivision CC of 1926 — Standard Hand Signals, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(ss) Appendix B to Subdivision CC of 1926 — Assembly/Disassembly — Sample Procedures for Minimizing the Risk of Unintended Dangerous Boom Movement, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(tt) Appendix C to Subdivision CC of 1926 — Operator Certification — Written Examination — Technical Knowledge Criteria, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; APD 14-1989(Temp), f. 7-20-89, ef. 8-1-89; APD 15-1989, f. & ef. 9-13-89; OSHA 3-1990(Temp), f. & cert. ef. 1-19-90; OSHA 7-1990, f. & cert. ef. 3-2-90; OSHA 8-1990, f. & cert. ef. 3-30-90; OSHA 13-1990(Temp), f. 6-28-90, ef. 8-1-90; OSHA 19-1990, f. & cert. ef. 8-31-90; OSHA 27-1990, f. 12-12-90, cert. ef. 2-1-91; OSHA 6-1991, f. 3-18-91, cert. ef. 4-15-91; OSHA 7-1991, f. & cert. ef. 4-25-91; OSHA 15-1991, f. & cert. ef. 12-13-91; OSHA 16-1991, f. 12-16-91, cert. ef. 1-1-92; OSHA 6-1992, f. & cert. ef. 5-18-92; OSHA 11-1992, f. & cert. ef. 10-9-92; OSHA 1-1993, f. & cert. ef. 1-22-93; OSHA 16-1993, f. & cert. ef. 11-1-93; OSHA 4-1994, f. & cert. ef. 8-4-94; OSHA 1-1995, f. & cert. ef. 1-19-95; OSHA 3-1995, f. & cert. ef. 2-22-95; OSHA 4-1995, f. & cert. ef. 3-29-95; OSHA 5-1995, f. & cert. ef. 4-6-95; OSHA 6-1995, f. & cert. ef. 4-18-95; OSHA 8-1995, f. & cert. ef. 8-25-95; OSHA 5-1996, f. & cert. ef. 11-29-96; OSHA 6-1996, f. & cert. ef. 11-29-96; OSHA 2-1997, f. & cert. ef. 3-12-97; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 7-1997, f. & cert. ef. 9-15-97; OSHA 3-1998, f. & cert. ef. 7-7-98; OSHA 6-1998, f. & cert. ef. 10-15-98; OSHA 7-1998, f. & cert. ef. 12-18-98; OSHA 2-1999, f. & cert. ef. 4-30-99; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 3-2000, f. & cert. ef. 2-8-00; OSHA 3-2001, f. & cert. ef. 2-5-01; OSHA 3-2002, f. 4-15-02, cert. ef. 4-18-02; OSHA 5-2002, f. 6-28-02 cert. ef. 10-1-03; OSHA 6-2002, f. & cert. ef. 7-19-02; OSHA 1-2003, f. 1-30-03 cert. ef. 4-30-03; OSHA 2-2003, f. & cert. ef. 1-30-03; OSHA 7-2003, f. & cert. ef. 12-5-03; OSHA 8-2003, f. 12-30-03 cert. ef. 1-1-04; OSHA 1-2005, f. & cert. ef. 4-12-05; OSHA 2-2006, f. & cert. ef. 4-28-06; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 5-2006, f. 8-7-06, cert. ef. 1-1-07; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 10-2006, f. & cert. ef. 11-30-06; OSHA 6-2007, f. & cert. ef. 9-26-07; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 3-2010, f. 6-10-10, cert. ef. 6-15-10; OSHA 1-2011, f. & cert. ef. 2-9-11; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 3-2012, f. & cert. ef. 8-20-12; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 6-2012, f. 9-28-12, cert. ef. 4-1-13; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 1-2013, f. & cert. ef. 2-14-13; OSHA 2-2013, f. 2-15-13, cert. ef. 4-1-13; OSHA 4-2013, f. & cert. ef. 7-19-13; OSHA 5-2013, f. & cert. ef. 9-13-13; OSHA 6-2013, f. & cert. ef. 10-9-13; OSHA 7-2013, f. & cert. ef. 12-12-13; OSHA 6-2014, f. 10-28-14, cert. ef. 5-1-15; OSHA 3-2015, f. 10-9-15, cert. ef. 1-1-16; OSHA 1-2016, f. 3-1-16, cert. ef. 1-1-17; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

### **437-003-0003**

#### **Purpose**

The purpose of these rules is to prescribe minimum safety requirements for employees engaged in construction work, including demolition, blasting and use of explosives, and power transmission distribution and maintenance work.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

### **437-003-0005**

#### **Additional Applicability**

If a specific type of equipment, process or practice is not limited to the construction industry, the provisions contained in other divisions of OAR chapter 437, Oregon Occupational Safety and Health Code, shall apply.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

### **437-003-0006**

#### **General Oregon Definitions**

For the purposes of administration of the Oregon Safe Employment Act, the following terms mean:

(1) “Act” means the Oregon Safe Employment Act, ORS Chapter 654.

(2) “Agency” means the Accident Prevention Division, Department of Insurance and Finance.

(3) “Assistant Secretary” means the Administrator of the Accident Prevention Division or designated representative.

(4) “Assistant Secretary of Labor for Occupational Safety and Health” means the Administrator of the Accident Prevention Division or designated representative.

(5) “Office of the Solicitor of Labor” means Legal Counsel for the Accident Prevention Division.

(6) “Occupational Safety and Health Administration” or “OSHA” means the Accident Prevention Division, Department of Insurance and Finance.

(7) “Standards” mean any occupational safety and health standard which has been adopted and promulgated by a nationally-recognized standards-producing organization, the federal government, or the State of Oregon and shall have the same meaning as, and include, the terms “code(s)” and “rule(s).”

(8) “Administrative Rules” means OAR chapter 437, division 001, Rules for the Administration of the Oregon Safe Employment Act, and Oregon Revised Statutes (ORS) Chapter 183.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 8-1989, f. & ef. 7-7-89

### **437-003-0007**

#### **Additional Rules of Practice for Administrative Adjudications**

In addition to and not in lieu of administrative and legal actions outlined in 29 CFR 1926.4, the State of Oregon will use the provisions of ORS Chapter 183 and 654, and OAR chapter 437, division 1, to administer this code.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

### **437-003-0011**

#### **Additional Definitions**

The following definitions are in addition to those found in 29 CFR 1926.32:

(1) “Department” The Department of Insurance and Finance.

(2) “Employee” Any individual, including a minor whether lawfully or unlawfully employed, who engages to furnish his services for a remuneration, financial or otherwise, subject to the direction and control of an employer, and includes salaried, elected and appointed officials of the state, state agencies, counties, cities, school districts and other public corporations, or any individual who is provided with workers’ compensation coverage as a subject worker pursuant to ORS Chapter 656, whether by operation of law or by election.

(3) “Employer” Any person who has one or more employees, or any sole proprietor or member of a partnership who elects workers’ compensation coverage as a subject worker pursuant to ORS 656.128.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

### **437-003-0015**

#### **Drinking Water**

(1) Potable water means water meeting the bacteriological and chemical quality requirements prescribed in the OAR chapter 333, division 61, Public Water Systems, of the Oregon State Health Division.

(2) In addition to and not in lieu of any provisions in 1926.51(a), drinking water containers shall be constructed of materials that maintain water quality, shall be refilled daily or more often as necessary, shall be kept covered, and shall be regularly cleaned.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; OSHA 4-2011, f. & cert. ef. 12-8-11

### **437-003-0017**

#### **Additional Definitions to Concrete and Masonry Construction**

(1) Deadman is a large weight of sufficient mass used to anchor the base of a brace to a masonry wall.

(2) Grout lift is an increment of grout height within the total grout pour.

(3) Grout pour is the total height of a masonry wall to be grouted prior to the erection of additional masonry. A grout pour can consist of one or more grout lifts.

(4) High wind area is where construction activity continues when winds are expected to exceed 35 mph on a regular basis.

(5) Protected area is a location at a jobsite that is not exposed to winds, such as basements and interior areas.

(6) Running bond (half bond) is a bond pattern in which block are placed half way over units directly below creating a staggered look.

(7) Safe location is an area at a jobsite that employees can take refuge in order to avoid hazardous conditions.

(8) Stack bond is a bond pattern in which blocks are stacked directly over each other (not lapped longitudinally) creating continuous joints both vertically and horizontally.

(9) Straight coil loop insert is a wall insert that loops around the structural rebar and is suitable for the attachment of braces in a structural masonry wall. Minimum size of a coil loop insert is 3/4 inch.

(10) Structural rebar is rebar that extends full length or height and can be spliced per required lap.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2003, f. 1-30-03 cert. ef. 4-30-03

### **437-003-0020**

#### **Toilets**

In addition to and not in lieu of any provisions in 26 CFR 1926.51(c):

(1) At the site of every project with an estimated cost of \$500,000 or more, the employer or owner of such place of employment shall provide flush toilet facilities in accordance with Subsection (2) of 29 CFR 1926.51(c) and washing facilities which include wash basins, warm water and soap.

**NOTE:** Section (1) of this rule does not apply to highway construction or maintenance projects or to electricity, water, sewer or gas transmission facility construction or maintenance projects. The director may, by order, exempt or partially exempt, individual or classes of construction projects from the requirements of section (1) of this rule when conditions are such that compliance is impractical or impossible.

(2) Where toilet facilities will not be used by women, urinals may be provided instead of toilets, except that the number of toilets in such cases shall not be reduced to less than 2-3 of the minimum specified.

(3) Toilets and toilet area shall be maintained in good repair and in a clean and sanitary condition.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; OSHA 1-1994, f. & cert. ef. 4-27-96

### **437-003-0027**

#### **Applicable Rules**

Whenever any employee is exposed to noise in the workplace, the requirements of OAR chapter 437, division 2/G, 1910.95, Occupational Noise Exposure shall apply.

**NOTE:** §1926.52 was not adopted by the Department. In Oregon, 437-003-0027 applies.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 8-1989, f. & ef. 7-7-89; OSHA 6-1994, f. & cert. ef. 9-30-94

### **437-003-0037**

#### **Acceptable Equipment**

Respiratory protective devices shall be approved by the National Institute for the Occupational Safety and Health (NIOSH), or

acceptable to the Department of Insurance and Finance, for the specific contaminants to which the employee is exposed.

**NOTE:** §1926.103(a)(2) was not adopted by the Department. In Oregon, OAR 437-003-0037 applies.

#### **NOTES:**

-1- §1926.451(u)(3) was not adopted by the Department. In Oregon, OAR 437-003-0040, applies. See §1926.104 for Oregon-Initiated Rule OAR 437-003-0040, Fall Protection.

-2- Oregon Exception 1: On sloped roofs with a roof slope between 3:12 to and including 6:12, and having a ground-to-eave height not to exceed twenty-five (25) feet, 2 x 6 roofing brackets, with full bearing on a solid surface, may be used for fall protection when performing roofing and sheathing work on residential type structures.

-3- Oregon Exception 2: On residential type structures with a roof slope greater than 6:12 to and including 8:12, and having a ground-to-eave height not to exceed twenty-five (25) feet, roofing brackets may be used when brackets are used in multiples and spaced every eight (8) feet vertically. All brackets shall bear on a solid surface.

-4- Oregon Exception 3: When performing residential type construction work such as leading edge work, top plate work, constructing and setting walls and trusses or doing roofing and sheathing work, the fall distance to a lower level may be increased from 6 feet to 10 feet.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 8-1989, f. & ef. 7-7-89

### **437-003-0045**

#### **Additional Definitions**

The following definitions are in addition to those found in 1926.751:

(1) Certification required by this section means "in writing."

**NOTE:** In Oregon, a competent person is considered to be someone with equivalent skills as a qualified person in identifying existing and potential hazards in the workplace, while also being authorized by the employer or employer's representative to take immediate corrective action to control or eliminate hazards.

(2) Dangerous equipment — Equipment such as pickling or galvanizing tanks, degreasing units, machinery, electrical equipment, and other units which, as a result of form or function, may be hazardous to employees who fall onto or into such equipment.

(3) Lower levels — Those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures.

**NOTE:** Oregon OSHA did not adopt the federal OSHA definition of "Opening." In Oregon, OAR 437-003-0045(4) applies.

(4) Opening means a gap or void 12 inches (30.5 cm) or more in any dimension in a floor, roof or other walking/working surface. For the purposes of this subpart, skylight and smoke domes that do not meet the strength requirements of 1926.754(e)(3) shall be regarded as openings.

(5) Walking/working surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, beams, columns, trusses and concrete reinforcing steel but not ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; OSHA 3-2002, f. 4-15-02, cert. ef. 4-18-02 10-1-03; OSHA 6-2002, f. & cert. ef. 7-19-02

### **437-003-0047**

#### **Working Near Overhead High Voltage Lines and Equipment**

(1) Definitions.

(a) Insulating Barrier or Guard. A structure, installation, barrier, or guard (such as a wall, fence, pole, shield, or something similar) that stops movement and prevents all possible contact with the lines or equipment. Its design, material composition, and installation prevents possible conduction of electricity up to the maximum voltage of the system.

(b) Restricted Space.

(A) For lines rated more than 600 V to 50 kV, restricted space extends 10 feet in all directions from the surface of the line or equipment.

(B) For lines rated over 50 kV, restricted space extends 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the insulator (but never less than 10 feet) in all directions from the surface of the line or equipment.

(C) For equipment or structures in transit, on level surfaces, restricted space extends 4 feet in all directions from lines or equipment rated 50 kV or less, 10 feet in all directions for lines or equipment rated over 50 kV, and 16 feet in all directions for lines or equipment rated over 345 kV up to and including 750 kV.

(c) Proper Notification. The person(s) responsible for the planned activity must notify the owner/operator of the line or equipment, at their business office, at least 2 business days prior to the anticipated beginning of work (business days are Monday through Friday, excluding federal and state holidays). The notification must include:

- (A) The proposed date to start activity within restricted space;
- (B) The location of the planned activity;
- (C) A description of the planned activity; and
- (D) Name and contact information of the contact person.

(2) General requirement. Do not enter, perform any function or activity (such as handling, erecting, operating, transporting, or storing any tools, equipment or materials, moving a building or structure) within the restricted space surrounding an overhead high voltage line or equipment unless:

(a) You are the owner, an authorized employee, or authorized (in writing) agent of the overhead high voltage system; or

(b) Proper notification is provided; and

(A) The line and/or equipment is de-energized and visibly grounded by the owner of the high voltage system or their authorized agent; or

(B) Accidental contact is effectively prevented by use of insulating barriers or guards. Barriers or guards must:

(i) Be erected or installed by the owner of the high voltage system or their authorized agent;

(ii) Not be attached to, or be part of the lines, equipment, or machinery;

**NOTE:** Overhead line covers are only for visual reference, and their use does not allow entry into restricted space. If used, they must be installed by the owner of the high voltage system or their authorized agent.

(iii) Prevent all possible contact with the lines or equipment; and

(iv) Insulate against the system's maximum voltage; or

(c) Insulated lines (not tree wire) and equipment (designed and engineered to allow only incidental contact) are erected or installed by the owner of the high voltage system or their authorized agent.

**NOTE:** Nothing in this standard shifts the responsibility for safe and healthy working conditions from the person(s) responsible for the activity to the owner of the lines or their agent.

**NOTE:** Nothing in this standard mandates that the owner of the lines or equipment, or their authorized agent must agree to de-energize, move, barricade, guard, or insulate lines or equipment, or take other action to allow entry into restricted space.

(3) Do not move, reposition, or reduce restricted space in any direction by applying stress or force to a line, equipment, or supporting structure.

(4) Operation of machinery or equipment.

(a) Do not enter restricted space when using insulating links or proximity warning devices on equipment.

(b) Post a warning sign on each piece of equipment which is capable of vertical, lateral, or swinging motion, such as a crane, derrick, power shovel, drilling rig, or pile driver.

(A) The sign must be made of durable material.

(B) It must be in clear view of the operator.

(C) The message must be legible to the operator when at the controls.

(D) The message must be understood by the operator.

(E) The message must clearly convey that it is "Unlawful to operate the piece of equipment within 10 feet of high voltage lines".

(c) Use an observer to provide audible warning (able to be clearly heard over surrounding noise) when it becomes difficult for an operator to identify restricted space by using visual means. The observer's only task is to watch the clearance and warn the operator if it appears that restricted space will be breached.

(d) Restrict, barricade, or otherwise make it impossible for a machine or piece of equipment to reach into restricted space if it is

reasonable to anticipate that the operator's attention may be focused on the work process rather than the location of an overhead high voltage line or equipment (such as during excavating, or other fast-paced, repetitive work).

(5) Railway and commuter systems

(a) Standard rail equipment used to transport freight and/or passengers, and relief trains or other equipment used in emergencies, may enter restricted space surrounding high voltage lines or equipment.

(b) Qualified employees, authorized and supervised by a person familiar with the hazards of the railway high voltage system, may perform normal repair or construction work within restricted space prior to compliance with the clearance and safeguard requirements in sections (1) through (4).

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; OSHA 2-2007, f. 6-8-07, cert. ef. 6-15-07

### **437-003-0062**

#### **Lead Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 3/D, 1926.62 Lead, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Lead rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

### **437-003-0065**

#### **Extension Ladders**

Extension ladders shall be equipped with necessary guide irons, locks, and hooks and shall be assembled so that the sliding (upper) section shall be on top of the base (lower) section.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

### **437-003-0071**

#### **Manually Propelled Elevating Aerial Platforms**

When using manually propelled elevating aerial platforms as covered by ANSI/SIA A92.3-1990, the manufacturer's operating manual must be with the equipment. You must follow all operating and maintenance instructions and recommendations of the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1997, f. & cert. ef. 3-12-97

### **437-003-0073**

#### **Boom Supported Elevating Work Platforms**

(1) When using boom supported elevating work platforms as covered by ANSI/SIA A92.5-1992, the manufacturer's operating manual must be with the equipment. You must follow all operating and maintenance instructions and recommendations of the manufacturer.

(2) Workers must use personal fall protection that complies with Subdivision M of this division, when working in these devices.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1997, f. & cert. ef. 3-12-97

### **437-003-0074**

#### **Scissor Lifts — Self-Propelled Elevating Work Platforms**

When using self-propelled elevating aerial platforms, scissor lifts, as covered by ANSI/SIA A92.6-1990, the manufacturer's operating manual must be with the equipment. You must follow all operating and maintenance instructions and recommendations of the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-1997, f. & cert. ef. 3-12-97



**437-003-0080**

**Wind Velocity Device**

- (1) The employer shall provide a wind velocity device which will give a visible or audible alarm to the crane operator at a predetermined wind velocity; and
  - (2) The employer shall ensure that:
    - (a) The wind velocity device is compatible with the manufacturer's crane specifications; and
    - (b) The crane operators are fully instructed regarding the maximum permissible wind speeds during operation; and
    - (c) The load chart contains the wind velocity operating limits.
- Stat. Auth.: ORS 643.014(1) & 646.716(2)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 16-1991, f. 12-18-91, cert. ef. 1-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94

**437-003-0081**

**Crane Operator Training Requirements**

- (1) The employer shall establish written procedures for the safe operation of all cranes used in construction.
- (2) The employer shall see that employees who operate cranes are properly trained, have sufficient practical experience, and follow operating procedures for the safe operation of the crane.
- (3) The level of training and experience received by the employee as meeting OAR 437-003-0081(2) shall be recorded in writing.
- (4) The employer shall maintain all written records of the crane operator's safety training and experience as set forth in OAR 437-003-0081, and shall make such records available for review by the Oregon Occupational Safety and Health Division (OR-OSHA) upon request.
- (5) In addition to the basic training and experience required by OAR 437-003-0081(2), all employees engaged in construction work who operate cranes of 5 ton capacity or greater shall have additional training and experience as set forth in Appendices OR-A through OR-E of this Subdivision, and shall possess a valid crane operator's safety training card issued by a training provider or employer.
  - (a) OAR 437-003-0081(5) does not apply to hoists, wreckers, line trucks, cranes used by railroads on railroad right-of-ways, or to cranes while used for handling logs.
 

**NOTE:** The term "line truck" means a truck used to transport workers, tools, and material, and is sometimes equipped with a boom and auxiliary equipment for setting poles, digging holes, and elevating material or personnel.
  - (b) An employee with prior training and experience having a minimum of 1500 hours of prior crane experience on a specific type or type(s) of crane shall be deemed to have met the requirements of OAR 437-003-0081(5) if that person has written records of such training and experience.
  - (c) Upon receipt and verification of such written records of experience, the employer may issue a crane operator's card to the employee.
  - (d) After January 1, 1992, all operators of cranes of 5 ton or greater capacity that are used in construction shall comply with OAR 437-003-0081(5) by successfully completing a training course which meets the provisions of OAR 437-003-0081(2) and Appendices OR-A through OR-E of this Subdivision.
  - (e) A crane operator's safety training card, as required by OAR 437-003-0081(5), need not be in any particular form, but at a minimum shall specify the type or types and size of cranes the operator is trained to operate, a picture of the operator, the original issue date, expiration date, name, signature of the operator, and the name and signature of the training provider or employer.
  - (f) All cards issued after January 1, 1992, shall be laminated in clear plastic to prevent tampering. All cards issued prior to January 1, 1992, shall be laminated in plastic and shall have the operator's picture on the card by April 1, 1992.
  - (g) The crane operator's safety training card required by OAR 437-003-0081(5) shall be renewed and signed every three years by a training institution or employer upon:
    - (A) Verification that the employee has read the current OR-OSHA rules on cranes contained in Division 3, Construction, Subdivision N, Cranes, Derricks, Hoists, Elevators and Conveyors; and

- (B) Completion of crane operator safety training refresher training consisting of 4 hours at a minimum.
- (6) Persons who are in training either through a recognized apprenticeship program, or any other properly supervised program may operate a crane under visual supervision of a crane operator who possesses a current operator's safety training card for that type of crane.
- (7) Any person from another state wishing to operate a crane of 5 ton capacity or greater for the purpose of construction work may be issued an operator's safety training card by the employer or training provider upon:
  - (a) Verification of a minimum of 1500 hours experience on a specific type or types of cranes being operated and is being trained in Oregon for the purpose of operating this type of crane. This temporary operator's safety training card shall be valid for 30 days from the date of issue; or
  - (b) Presenting a valid crane operator's safety training card issued in a state which has crane operator's safety training standards equal to or greater than those listed in Appendices OR-A through OR-E of this Subdivision.

**APPENDIX OR-A**

**Classroom Training: Minimum Training Required for Operating Cranes of 5 Ton Capacity or Greater, Basic and Specialty Basic Core Training Curriculum Unit of Study Instruction**

**SAFETY** — Overview of causes of crane accidents and training in managing the work environment safely.

**OR-OSHA CRANE RULES** — Familiarity with OR-OSHA'S Division 3, Construction, Subdivision N, Cranes, Derricks, Hoists, Elevators, and Conveyors.

**CRANES AND COMPONENTS** — Types of cranes, names of crane components, selection of cranes for job.

**DEFINITIONS OF TERMS** — Center of gravity, radius, gross and net load, static load and dynamic load(s), effective weights, ultimate strength and rated strength, safety factors, stowed and stored, tipping axis, jib angle to ground.

**TECHNICAL DATA** — Leverage: when using the crane in general, the hook, block and the boom hoist. Changes in leverage, rate of tipping, forward stability, backward stability, crane failures, gantries, live and high masts, counterweights, effect of boom angle, effects of jib angle, jib as a boom extension, effect of load on booms, production lifts, rope safety factors.

**QUADRANTS OF OPERATION DEFINITIONS** — Over the rear, over the side, 360 degree rotation.

**WEIGHT OF THE LIFT** — Sources of weight data, calculating weights, principles examples, lifting in water, tests lifts, check lifts.

**CONDITIONS & CAPACITIES** — Summary of conditions affecting crane capacities: off-level, wind, eccentric reeving, swingout, sideload, impact loading, outrigger position, ground conditions, counterweights, gantries and high masts, equipment condition, swing bearing wear, tire condition and inflation, boom pad wear, outrigger and pad condition, bent chords and lacing.

**MULTIPLE CRANE LIFTS** — Types of equalizer beams, pivot points in lines, pivot points not in-line, load as an equalizer beam, necessary calculations.

**CALCULATIONS** — Crane capacities: results of over loading, division of load charts, gross and net capacity, gross and net load, radius between values, boom length between values, boom angle between values, parts of line; calculating capacities: on the boom, on the pinned section, on the extension, on the jib.

**PREPARING FOR A LIFT** — Boom assembly and disassembly, reasons to repair/scrap boom sections, Wire rope installation, reeving, wedge sockets, telescoping booms, setting-up, measuring radius, radius over boom angle, outrigger set-up, block outriggers, leveling methods.

**CONDITIONS DURING LIFTS** — Swingout, slack rope on drums, pick and carry, lifting on tires, protection of personnel around high voltage and results of making contact, working in the vicinity, effects of electrical current, hitting booms, boom over back, causes of two-blocking, shift of center of gravity, cold weather operation, tipping over backwards.

**LEAVING CRANES UNATTENDED** — Short periods, extended periods.

**RESPONSIBILITIES** — Management and operator responsibilities.

**MISCELLANEOUS** — Signals, composition of wire rope, rope strengths, tables of rates and capacities, determine sling loadings, using blocks and tackle.

**CRANE CHECKLIST** — Operator's daily checklist.

**ERECTION, DISMANTLING, TRANSPORT** — Erection checklist, bolting procedures, bolting.

**INSPECTION & TESTING** — Frequency of inspections, testing maintenance, and storage of crane components.

**NOTE:** Complete program includes at least one crane specific class in addition to basic core.

# APPENDIX OR-B

## Training (Crane Specific): Minimum Training Required for Operating Cranes of 5 Ton Capacity or Greater, Hydraulic Cranes

### Unit of Study Instruction

INTRODUCTION — Hydraulic cranes: 5 ton to 50 ton.

ACCIDENTS/SAFETY — Overview of crane accidents and safety awareness.

CRANE NOMENCLATURE — Type of cranes, industrial hydraulic crane (carry deck), commercial mounted boom truck, hydraulic rough terrain crane (exploded view), characteristics, name of components, transporting, erecting & dismantling, hydraulic crane operator checklist (daily inspection).

MACHINE CONDITION — Configuration, repairs/modifications, swing assembly, cab/controls, fluid levels, boom/load hoist, boom/jib extensions, wire rope/load blocks, safety devices, annual inspection.

SAFE OPERATING PRACTICES — Quadrants of operation: over the front, over the rear, over the side, over the outriggers; mobile and rubber-tired cranes; weight of the lift; load charts; calculating capacities.

CONDITIONS & CAPACITIES — Land based, barge mounted.

# APPENDIX OR-C

## Training: Minimum Training Required for Operating Cranes of 5 Ton Capacity or Greater, Tower and Whirley Cranes

### Unit of Study Instruction

ACCIDENTS/SAFETY — Overview of crane accidents and safety awareness.

CRANE NOMENCLATURE — Type of cranes, characteristics, name of components.

### Tower & Whirley Operator Checklist

MACHINE CONDITION — Configuration, repairs/modifications, swing assembly, cab/controls, fluid levels, boom/load hoist, boom/jib extensions, wire rope/load blocks, safety devices.

### Tower Crane Climbing

SAFE OPERATING PRACTICES — Quadrants of operation, weight of the lift, load charts, calculating capacities.

# APPENDIX OR-D

## Training: Minimum Training Required for Operating Cranes of 5 Ton Capacity or Greater, Conventional Cranes

### Unit of Study Instruction

ACCIDENTS/SAFETY — Overview of crane accidents and safety awareness.

CRANE NOMENCLATURE — Type of cranes, truck cranes, crawler, characteristics, name of components, transporting, erecting and dismantling, conventional crane operator checklist (daily inspection).

MACHINE CONDITION — Configuration, repairs/modifications, swing assembly, cab/controls, fluid levels, boom/load hoist, boom/jib extensions, wire rope/load blocks, safety devices, annual inspection

SAFE OPERATING PRACTICES — Quadrants of operation for mobile and rubber-tired cranes: over the rear, over the side, over the outriggers, over the front. Quadrants of operation for crawler cranes: over the side, ends, 360 degree rotation; weight of the lift; load charts; calculating capacities.

CONDITIONS & CAPACITIES — Land base, barge mounted.

# APPENDIX OR-E

## Practical Experience:

### Minimum Training Required for Operating Cranes of 5 Ton Capacity or Greater

#### This Area is Meant to Have an Operator Demonstrate a Minimum Acceptable Level of Competency in the Listed Areas as Appropriate to the Specific Type of Crane Being Operated

(1) Method and sequence of checks to be conducted on cranes prior to operation.

(2) Procedures for assembling and dismantling cranes and their transportation.

(3) Crane Set-Up:

(a) Site preparation

(b) Counterweights

(c) Outriggers

(d) Rigging methods and materials

(4) Crane Operation:

(a) Safe operating procedures

(b) Principles of leverage and power transmission

(c) Purpose and use of load charts and boom angles

(d) Picking loads

(e) Adjacent hazards

(5) Frequency, sequence and methods of inspections.

(6) Maintenance.

(7) Effect of overloading, instability, and structural or functional failure.

(8) Procedures for Tower Crane climbing (as applicable).

(9) Familiarity with OR-OSHA Crane rules and Manufacturer's Operating Manuals.

# APPENDIX OR-F

## Curriculum for Crane Safety Refresher Training

### Unit of Study Instruction

OR-OSHA REQUIREMENTS — Division 3, Subdivision N.

RESPONSIBILITIES — Site supervisor's responsibilities. Crane owner's responsibilities. Operator's responsibilities.

CENTER OF GRAVITY — Crane center of gravity. Load center of gravity. Combined center of gravity. Effect of boom position on combined center of gravity.

RADIUS — Changes in load, boom angle and rotation point.

LOAD — Load on lattice boom cranes. Load on hydraulic cranes. Load on hydraulic crane boom extensions. Load on the jib of lattice and hydraulic boom cranes. Gross capacity vs. net capacity. Static and dynamic loads.

TIPPING AXIS — Rough terrain cranes: Tipping axis. Crawler mounted cranes: Tipping axis.

CALCULATIONS — Overloads and tipping. Division of load charts. Main boom capacity — lattice booms. Values of boom angle, boom length and load radius between chart listings. Parts of line. Crane capacities. Range diagrams.

ACCIDENT PREVENTION — Common causes of tower whirley accidents. Rigging the load. Handling the load. Electrical hazards. Review/analysis of known incidents/accidents.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 16-1991, f. 12-16-91, cert. ef. 1-1-92; OSHA 6-1994, f. & cert. ef. 9-30-94; OSHA 3-2002, f. 4-15-02, cert. ef. 4-18-02

## 437-003-0085

### General Requirement

An unimpaired horizontal clearance or not less than three feet shall be maintained between the rotating superstructure of any mechanical equipment and any adjacent object or surface. If this clearance cannot be maintained, barricades shall be installed to isolate the hazardous area.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

## 437-003-0090

### Pinchpoints

To protect against workers being exposed to the hazardous pinchpoint area between the rotating superstructure and the non-rotating undercarriage of any mechanical equipment:

(1) Signs shall be conspicuously posted on all sides of any mechanical equipment warning workers:

#### Danger — Stay Clear

(2) Items of personal property, tools, or other miscellaneous materials shall not be stored on or near any mechanical equipment if retrieval of such items would expose a worker to the hazardous pinchpoint.

(3) Workers shall approach the hazardous pinchpoint area only after informing the operator of his intent and receiving acknowledgement from the operator that the operator understands his intention. All mechanical equipment shall be stopped while any worker is in the hazardous pinchpoint area; and

(4) When the nature of the work requires a person to work within three feet of the swing radius of the rotating upper structure, a warning barricade shall be provided. This requirement shall not apply to mechanical equipment when:

(a) The distance from the highest point of the undercarriage to the lowest point of the rotating superstructure is greater than 18 inches. This applies only to that portion of the rotating superstructure that swings directly over the undercarriage;

(b) The distance from the ground to the lowest point of the rotating superstructure is greater than five feet six inches. This applies only to that portion of the rotating superstructure that swings directly over the undercarriage; or

(c) On crawler-type track-mounted mechanical equipment only, the rotating superstructure is positioned at a right angle to the tracks, and the distance from the side of the cab to the extreme end of the track is four feet or less. This exemption shall apply to side barricades only; barricades between the tracks at both ends of any crawler-type mechanical equipment are required regardless of the right angle dimension.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989, f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

NOTE: §1910.501(a) was NOT adopted by OR-OSHA. In Oregon, OAR 437-002-0093 applies:

**437-003-0094****Personnel Platforms**

Whenever a lift truck is used for lifting personnel without controls at the platform, the following precautions shall be taken for the protection of personnel being elevated:

(1) A work platform equipped with standard guardrails or equivalent means, and firmly secured to the lifting carriage or forks, shall be used.

(2) The hydraulic system shall be so designed that the lift mechanism will not drop faster than 135 feet per minute in the event of a failure in any part of the system.

(3) An operator shall attend the lift equipment while workers are on the platform.

(4) The operator shall be in the normal operating position while raising or lowering the platform.

(5) The vehicle shall not travel from point to point with the work platform elevated at a height greater than 4 feet while workers are on the platform. When necessary at heights greater than 4 feet, inching may be permitted provided it is done at a very slow speed.

(6) If workers on the platform can contact the lift chains or other dangerous pinch or shear points on the mast or carriage, the platform must have a screen or guard that prevents contact.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-1999, f. & cert. ef. 5-26-99

**437-003-0096****Underground Installations**

In addition to and not in lieu of any rules relating to “underground installations” adopted in Oregon Administrative Rules, Chapter 437, the following Oregon Revised Statutes and Oregon Administrative Rules administered by the Oregon Public Utility Commission (PUC) shall apply:

(1) ORS 757.541 through 757.571; and

(2) OAR 952-001-0050 and 860-024-0007.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-1990, f. 3-30-90, cert. ef. 9-1-90; OSHA 4-2011, f. & cert. ef. 12-8-11

**437-003-0134****Personal Protective Equipment**

Application. This rule applies to personal protective equipment and other protective equipment for the eyes, face, head, extremities and torso to include protective clothing, respiratory devices, and protective shields and barriers, wherever employees encounter hazardous processes or environments, chemical hazards, radiological hazards, or mechanical irritants that are capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

(1) Hazard assessment and equipment selection. The employer must assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE) or other protective equipment. If such hazards are present, or likely to be present, the employer must:

(a) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;

(A) All protective equipment must be of safe design and construction for the work to be performed.

(B) Protective equipment must be worn and used in a manner which will make full use of its protective properties.

(b) Communicate selection decisions to each affected employee; and,

(c) Select PPE that properly fits each affected employee.

**NOTE:** Non-mandatory Appendix B to Subdivision 2/I, contains an example of procedures that would comply with the requirement for a hazard assessment.

(2) Equipment.

(a) Where employees provide their own protective equipment, the employer is responsible to assure its adequacy, including proper maintenance, and sanitation of such equipment.

(b) All personal protective equipment must be provided, used, and maintained in a sanitary and reliable condition.

(c) Defective or damaged personal protective equipment must not be used.

(d) Each employer must maintain a regular system of inspection and maintenance of personal protective equipment furnished to workers.

(3) Training.

(a) The employer must provide training to each employee who is required by this section to use PPE and each employee that is provided training must know at least the following:

(A) When PPE is necessary;

(B) What PPE is necessary;

(C) How to properly don, doff, adjust, and wear PPE;

(D) The limitations of the PPE; and,

(E) The proper care, maintenance, useful life and disposal of the PPE.

(b) Each affected employee must demonstrate an understanding of the training specified in paragraph (3)(a) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (3)(b) of this section, the employer must retrain each such employee. Circumstances where retraining is required include, but are not limited to situations where:

(A) Changes in the workplace render previous training obsolete; or

(B) Changes in the types of PPE to be used render previous training obsolete; or

(C) Inadequacies in an affected employee’s knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

(4) Payment for protective equipment.

(a) Except as provided by paragraphs (4)(b) through (4)(f) of this section, the protective equipment, including personal protective equipment (PPE), used to comply with this part, must be provided by the employer at no cost to employees.

(b) The employer is not required to pay for non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, provided that the employer permits such items to be worn off the job-site.

(c) When the employer provides metatarsal guards and allows the employee, at his or her request, to use shoes or boots with built-in metatarsal protection, the employer is not required to reimburse the employee for the shoes or boots.

(d) The employer is not required to pay for:

(A) The logging boots required by OAR 437-007-0330 in Division 7.

(B) Everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots; or

(C) Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, and sunscreen.

(e) The employer must pay for replacement PPE, except when the employee has lost or intentionally damaged the PPE.

(f) Where an employee provides adequate protective equipment he or she owns pursuant to paragraph (2)(a) of this section, the employer may allow the employee to use it and is not required to reimburse the employee for that equipment. The employer must not require an employee to provide or pay for his or her own PPE, unless the PPE is excepted by paragraphs (4)(b) through (4)(e) of this section.

(5) Fall Protection.

(a) All employees must be protected from fall hazards when working on unguarded surfaces more than 10 feet above a lower level or at any height above dangerous equipment.

(b) The employer must ensure that fall protection systems are provided, installed, and used according to the criteria in 1926.502(d), and 437-003-0502 in Division 3/M, Construction/Fall Protection.



**(6) Work Clothing.**

(a) Clothing must be worn which is appropriate to the work performed and conditions encountered.

(b) Appropriate high temperature protective clothing must be worn by workers who are exposed to possible contact with molten metals or other substances that can cause burns.

(c) Loose sleeves, ties, lapels, cuffs, or other loose clothing must not be worn near moving machinery.

(d) Clothing saturated or impregnated with flammable liquids, corrosive or toxic substances, irritants, or oxidizing agents must be removed immediately and not worn again until properly cleaned.

(e) Rings, wristwatches, earrings, bracelets, and other jewelry which might contact power driven machinery or electric circuitry, must not be worn.

(7) High Visibility Garments. Employees exposed to hazards caused by on highway type moving vehicles in construction zones and street/highway traffic must wear highly visible upper body garments. The colors must contrast with other colors in the area sufficiently to make the worker stand out. Colors equivalent to strong red, strong orange, strong yellow, strong yellow-green or fluorescent versions of these colors are acceptable. During hours of darkness, the garments must also have reflective material visible from all sides for 1000 feet.

**(8) Eye And Face Protection.**

(a) The employer must ensure that each affected employee uses appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation.

(b) The employer must ensure that each affected employee uses eye protection that provides side protection when there is a hazard from flying objects. Detachable side protectors (e.g., clip-on or slide-on side shields) meeting the pertinent requirements of this section are acceptable.

(c) The employer must ensure that each affected employee who wears prescription lenses while engaged in operations that involve eye hazards wears eye protection that incorporates the prescription in its design, or shall wear eye protection that can be worn over the prescription lenses without disturbing the proper position of the prescription lenses or the protective lenses.

(d) Eye and face PPE must be distinctly marked to facilitate identification of the manufacturer.

(e) The employer must ensure that each affected employee uses equipment with filter lenses that have a shade number appropriate for the work being performed for protection from injurious light radiation. Table 1 to 437-003-0134(8)(e), Table 2 to 437-003-0134(8)(e)

(f) Protective eye and face protection devices must comply with any of the following consensus Standards.

(A) ANSI/ISEA Z87.1-2010, Occupational and Educational Personal Eye and Face Protection Devices, incorporated by reference in 1926.6;

(B) ANSI Z87.1-2003, American National Standard Practice for Occupational and Educational Eye and Face Protection, which is incorporated by reference in 1926.6; or

(C) ANSI Z87.1-1989 (R-1998), American National Standard Practice for Occupational and Educational Eye and Face Protection, which is incorporated by reference in 1926.6.

(g) Protective eye and face protection devices that the employer demonstrates are at least as effective as protective eye and face protection devices that are constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(h) Employees whose occupation or assignment requires exposure to laser beams shall be furnished laser safety goggles as required by Occupational Health Regulations which will protect for the specific wavelength of the laser and be of optical density adequate for the energy involved.

**(9) Head Protection.**

(a) The employer must ensure that each affected employee wears a protective helmet when working in areas where there is a potential for injury to the head from falling or flying objects.

(b) The employer must ensure that a protective helmet designed to reduce electrical shock hazard is worn by each such affected employee when near exposed electrical conductors which could contact the head.

(c) Head protection must comply with any of the following consensus standards:

(A) ANSI Z89.1-2009, American National Standard for Industrial Head Protection, which is incorporated by reference in 1926.6;

(B) ANSI Z89.1-2003, American National Standard for Industrial Head Protection, which is incorporated by reference in 1926.6;

(C) ANSI Z89.1-1997, American National Standard for Industrial Head Protection, which is incorporated by reference in 1926.6; or

(d) Head protection devices that the employer demonstrates are at least as effective as head protection devices that are constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(e) Employees who are exposed to power-driven machinery or to sources of ignition shall wear caps or other head covering which completely covers the hair.

**(10) Foot Protection.**

(a) The employer must ensure that each affected employee use protective footwear when working in areas where there is a danger of foot injuries due to falling or rolling objects, or objects piercing the sole, and where such employee's feet are exposed to electrical hazards.

(b) Protective footwear must comply with any of the following consensus standards:

(A) ASTM F-2412-2005, Standard Test Methods for Foot Protection, and ASTM F-2413-2005, Standard Specification for Performance Requirements for Protective Footwear, which are incorporated by reference in 1926.6;

(B) ANSI Z41-1999, American National Standard for Personal Protection –Protective Footwear, which is incorporated by reference in 1926.6; or

(C) ANSI Z41-1991, American National Standard for Personal Protection –Protective Footwear, which is incorporated by reference in §1926.6.

(c) Protective footwear that the employer demonstrates is at least as effective as protective footwear that is constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(d) Special types or designs of shoes or foot guards are required where conditions exist that make their use necessary for the safety of workers.

**(11) Leg protection.**

(a) Leggings or high boots of leather, rubber, or other suitable material must be worn by persons exposed to hot substances or dangerous chemical spills.

(b) Employees using chain saws must wear chaps or leg protectors that cover the leg from the upper thigh to mid-calf. The protector must be material designed to resist cuts from the chain saw. Employers must provide this protection at no cost to the employee.

**(12) Hand Protection.**

(a) Employers must select and require employees to use appropriate hand protection when employees' hands are exposed to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns; and harmful temperature extremes.

(b) Employers must base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.

(c) Gloves must not be worn by persons whose hands are exposed to moving parts in which they could be caught.

(13) Skin protection. Where the need for their use is necessary, protective covering, ointments, gloves, or other effective protection must be provided for and used by persons exposed to materials which are hazardous to the skin.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2002, f. 6-28-02 cert. ef. 10-1-03; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

**437-003-0420****Traffic Control**

(1) Adequate and appropriate traffic controls must be provided for all operations on or adjacent to a highway, street, or roadway. The traffic controls must conform to the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

(2) Signaling by flaggers and the use of flaggers, including warning garments worn by flaggers must conform to the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

(3) Barricades for protection of employees must conform to the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

**NOTE:** You may obtain a copy of the Millennium Edition from the following organizations: American Traffic Safety Services Association, 15 Riverside Parkway, Suite 100, Fredericksburg, VA 22406-1022; Telephone: 1-800-231-3475; Fax: (540) 368-1722; www.atssa.com; Institute of Transportation Engineers, 1099 14th Street, NW., Suite 300 West, Washington, DC 20005-3438; Fax: (202) 289-7722; www.ite.org; and American Association of State Highway and Transportation Officials; www.aashto; Telephone: 1-800-525-5562.

**NOTE:** Electronic copies of the MUTCD 2000 are available for downloading at <http://mutcd.fhwa.dot.gov/kno-millennium>.

**NOTE:** A copy of the MUTCD 2000 is available for inspection at the Oregon OSHA Resource Center, 350 Winter Street NE, Basement - Room 26, Salem, Oregon 97301-3882; Telephone: (503) 378-3272, or toll free in Oregon 1-800-922-2689.

**NOTE:** Employers who are following the most current edition of the Oregon Department of Transportation's Short Term Traffic Control Handbook will be considered to be in compliance with this requirement.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89; APD 16-1989(Temp), f. & ef. 9-13-89; OSHA 2-1989, f. & ef. 10-17-89; OSHA 2-2003, f. & cert. ef. 1-30-03

**437-003-0502****Personal Fall Restraint**

Fall restraint systems and their use shall conform to the following provisions:

(1) Personal fall restraint systems shall be rigged to prevent the user from falling any distance.

(2) Fall restraint systems must use fall arrest system components that conform to the criteria in 1926.502, except as otherwise provided for in this section.

**EXCEPTION:** A body belt may be used in fall restraint systems.

(3) The attachment point to the body belt or full body harness may be at the back, front or side dee-rings.

(4) Anchorages used for attachment of personal fall restraint equipment shall be independent of any anchorage being used to support or suspend platforms and shall be capable of supporting 3000 pounds (13.3kN) per employee attached, or be designed, installed and used as follows:

(a) As part of a complete personal fall restraint system which maintains a safety factor of at least two; and

(b) Under the supervision of a qualified person.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist: OSHA 6-2002, f. & cert. ef. 7-19-02

**437-003-0503****Training Requirements**

(1) Training Program.

(a) The employer shall provide a training program for each employee who might be exposed to fall hazards. The program shall enable each employee to recognize the hazards of falling and shall train each employee in the procedures to be followed in order to minimize these hazards.

(b) The employer shall assure that each employee has been trained, as necessary, by a competent person qualified in the following areas:

(A) The nature of fall hazards in the work area;

(B) The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;

(C) The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, personal fall restraint systems, positioning devices, and other appropriate protection to be used;

(D) The role of each employee in the safety monitoring system when this system is used;

(E) The limitations on the use of mechanical equipment during the performance of roofing work;

(F) The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and

(G) The role of employees in the fall protection work plan;

(H) The standards contained in this subpart.

(2) Certification of training.

(a) The employer shall verify compliance with paragraph (a) of this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

(b) The latest training certification shall be maintained.

(3) Retraining. When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (a) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(a) Changes in the workplace render previous training obsolete;

or

(b) Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

(c) Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist: OSHA 6-2002, f. & cert. ef. 7-19-02; OSHA 2-2016, f. 3-1-16, cert. ef. 10-1-17

**437-003-0706****Protection of Employees On or Near Masonry Walls**

(1) Nonreinforced Masonry Walls. The limited access zone for a masonry wall that is not reinforced and braced in accordance with 437-003-0706(3) must run the entire length of the wall, and extend away from the wall a distance equal to the height of the wall plus four feet.

(2) Limited Access Zone for Masonry Walls. The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse unless the height of wall is over eight feet, in which case, the limited access zone shall remain in place until the requirements of 437-003-0706(3) of this section have been met.

(3) Bracing for Masonry Walls. All masonry walls over eight feet in height must be adequately braced to prevent overturning and collapse unless the wall is adequately supported. Bracing must remain in place until permanent supporting elements of the structure are in place. The bracing system must be designed by a registered professional engineer, or follow the requirements of 437-003-0706(4).

(4) Protection of Employees On or Near Braced Masonry Walls.

(a) A limited access zone must be established when constructing a reinforced masonry wall.

(A) A limited access zone must be established before construction of the wall begins.

(B) A limited access zone must run the entire length of the wall, and extend away from the wall a distance equal to the height of the grout pour plus four feet.

(C) A limited access zone must be located on the side of the wall not scaffolded.

(D) All activity within the limited access zone is under the direction and control of a competent person.

(E) Entry into the limited access zone is limited to employees actively engaged in construction of the wall. No other employees are allowed to enter the zone without permission from a competent person.

(F) A competent person is responsible for monitoring wind speeds. When speeds reach 25 mph all braces must be examined and the site made secure.

(G) When wind speeds reach 35 mph, all employees in the limited access zone and in proximity to the wall under construction must move to a safe location.

(H) The limited access zone must remain in place until any wall over 8 feet in height is adequately braced as per paragraph 437-003-0706(4)(e) of this section or supported to prevent overturning and to prevent collapse.

(b) During construction of a masonry wall, adequate bracing must be in place to prevent the wall from overturning or collapse. If any of these conditions exist, the bracing is not needed:

(A) The wall is 8 feet or less in height.

(B) A qualified person demonstrates that modifications to paragraph 437-003-0706(4)(e) are adequate when addressing these or other inherently more stable conditions:

(i) Shafts;

(ii) Infills in existing walls;

(iii) Construction in protected areas;

(iv) Changes in wall thickness;

(v) Masonry pilasters; or

(vi) Corner returns, intersecting walls.

(C) Permanent supporting elements of the structure are in place.

(c) Design bracing systems according to paragraphs 437-003-0706(4)(d) and (e) of this section and install them under the direction of a competent person.

(d) A registered professional engineer must design bracing when there is one or more of the following:

(A) The wall is more than 24 feet in height;

(B) the minimum requirements of 437-003-0706(4)(e)(A) or (B) are not met;

(C) Stack bond; or

(D) High wind areas.

(e) A structural masonry wall bracing system must be designed by a qualified person. The design and installation of the bracing system must comply with the following requirements:

(A) Minimum design requirements, including minimum requirements per chapter 26 of the Uniform Building Code, for use in Options 1 or 2:

**NOTE:** This information may be included in the blueprints.

(i) F'm 1500 psi, concrete block laid in running bond pattern.

(ii) Type S mortar.

(iii) 60 ksi rebar, with minimum placement of 2 - #4 horizontally and 1 - #5 vertically at 48 inches on center.

(iv) 2,000 psi grout required at reinforced areas.

(v) Straight coil loop insert with coil bolts (safe working load = 2250 lb.).

(vi) Metal concrete tilt braces.

(vii) Wall height not to exceed 24 feet.

(B) Minimum field requirements for use in Options 1 or 2:

(i) The horizontal spacing distance between two or more braces must not exceed 20 feet;

(ii) The horizontal bracing distance from an end of wall or control joint must not exceed 10 feet;

(iii) A qualified person must determine if walls less than 20 feet in length require two braces;

(iv) The connection of the brace to the masonry wall must consist of a minimum 3/4 inch straight coil loop insert, placed around a structural rebar located at an ungrouted bond beam;

(v) At least one structural rebar must be located between the attached bar and face shell that receives brace (see figure 1);

(vi) The base connection of brace must consist of a minimum 3/4 inch anchor attached to either a 4 inch minimum thick slab or deadman;

(vii) The brace angle must not be greater than 60 degrees from the horizontal;

(viii) The slab or deadman connection must resist a minimum 3,400 lbs. pullout force.

(C) Option 1 — Bracing structural masonry walls when grout pours are limited to 5 feet 4 inches or less in height.

(i) A maximum 8 feet of initial wall height may be laid with minimum reinforcement and then grouted.

(ii) A maximum 5 feet, 4 inches of additional wall may be laid with reinforcement located to receive straight coil loop inserts at the bond beam location.

(iii) The first brace must be connected to the wall insert and attached to slab or deadman at base of wall.

(iv) The reinforced section must be grouted.

(v) Additional wall may be constructed following steps 437-003-0706(4)(e)(C)(ii) through (iv).

(D) Option 2 — Bracing structural masonry walls with grout pours up to 8 feet in height.

(i) A maximum 8 feet of the initial wall height may be laid with minimum reinforcement and then grouted.

(ii) A maximum 5 feet, 4 inches of additional wall may be laid with reinforcement located to receive straight coil loop inserts at a bond beam location.

(iii) Braces must be connected to coil loop inserts in the wall and attached at the base to either a slab or deadman.

(iv) The wall may be laid and reinforced up to the grout pour.

(v) No more than 4 feet of ungrouted wall above the brace point is permitted.

(vi) Grouting may be done after each section of wall is adequately braced.

(vii) A maximum of 8 feet of additional wall height may be constructed and braced following steps 437-003-0706(4)(e)(D)(ii) through (iv). **Figure 1:** [Figure not included, see ED. NOTE.] Straight coil loop insert attached to rebar with perpendicular rebar between it and face shell to receive brace.

[ED. NOTE: Figure referenced is available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2003, f. 1-30-03 cert. ef. 4-30-03

### **437-003-0752**

#### **Site-Specific Erection Plan**

In addition to and not in lieu of the provisions of **29 CFR 1926.752(e)**, the steel erection contractor must develop and implement a written site-specific erection plan.

(1) The site-specific erection plan must:

(a) Be developed by a qualified person;

(b) Identify the site;

(c) Be available at the work site; and

(d) Be signed by the qualified person responsible for its development and any modification(s).

**NOTE:** The site-specific erection plan does not have to be developed by an engineer, or resemble an engineering report.

(2) The site-specific erection plan must contain the following:

(a) A description of the procedures that will be used to comply with 1926.754(a). Consider the dead weight of the structure, the weight and working reactions of all static and dynamic loads placed on it, and all external forces that may be applied such as wind and reactions by erection equipment.

**NOTE:** There is a presumption that some form of temporary guying or bracing is necessary to provide lateral stability to the structural steel framing as it is being erected. Accordingly, the employer has the burden of establishing that the structural steel framing is inherently stable during erection and/or the sequence of erection, plumbing, bolting and decking is such that structural stability is maintained at all times and no temporary guying or bracing is needed. Such determination must be documented in the site-specific erection plan.

(b) A description of the procedures and work practices that will be used to protect employees from falls and other hazards where it is necessary to walk/work on suspended loads. Employee(s) are allowed on suspended loads only when a competent person has deter-



mined that it is the safest way to accomplish a specific task or there is no other way to do the work.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 3-2002, f. 4-15-02, cert. ef. 4-18-02

**437-003-0753****Tag Lines**

Tag lines shall be used to control loads except when it is determined, by a qualified rigger, that they create a hazard.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02

**437-003-0761****Additional Training Requirements**

(1) Certification of training.

(a) The employer shall verify compliance with this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

(b) The latest training certification shall be maintained.

(2) Retraining. When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by this section, the employer shall retain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

(a) Changes in the workplace render previous training obsolete; or

(b) Changes in the types of fall protection systems or equipment to be used render previous training obsolete; or

(c) Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02

**437-003-0905****Flooring**

In buildings or other structures of wood floor construction, the under-flooring shall be laid on each tier of joists as the structure progresses, or if double floors are not to be used, the tier of joists next below where work is being performed shall be entirely floored over except for such spaces as are required for ladders and shaftways.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

**437-003-0910****Temporary Floors**

Temporary floors shall be of sufficient strength to support expected loading.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

**437-003-0915****Shoring, Bracing or Guying of Structures**

During erection, alteration, or repair, structures, including each part thereof, shall be braced or guyed as necessary to prevent overturning or collapse. All temporary shoring, bracing, or guying used for this purpose shall be maintained until the structure or any part of same is otherwise secured against overturning or collapse.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89

**437-003-0920****Project Plans**

The Administrator of the Accident Prevention Division may require plans and specifications of temporary shoring and bracing used in the construction or alteration of any building, structure, or excavation project. Required plans shall be certified by a qualified engineer, whenever there is a question as to compliance with requirements of this code.

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: APD 5-1989(Temp), f. 3-31-89, ef. 5-1-89; APD 8-1989, f. & ef. 7-7-89  
**NOTE:** This rule was NOT adopted by OR-OSHA. In Oregon, OAR 437-003-0925 applies.

**437-003-0925****Powder-Actuated Tools**

Powder-actuated tools used by employees shall meet all other applicable requirements of American National Standards Institute, ANSI A10.3-1985, Safety Requirements for Powder-Actuated Fastening Systems.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 8-1990, f. 3-30-90, cert. ef. 9-1-90

**437-003-1000****Oregon Rules for Air Contaminants**

An employee's exposure to any substance listed in Oregon Tables Z-1, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.

(1) Oregon Table Z-1.

(a) Substances with limits preceded by "C" — Ceiling Values.

An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is preceded by a "C", shall at no time exceed the exposure limit given for that substance. If instantaneous monitoring is not feasible, then the ceiling shall be assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day.

(b) Other substances — 8-hour Time Weighted Averages. An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is not preceded by a "C", shall not exceed the 8-hour Time Weighted Average given for that substance in any 8-hour work shift of a 40-hour work week.

(c) Other Substances — Excursion Limits. Excursions in worker exposure levels may exceed 3 times the PEL-TWA for no more than a total of 30 minutes during a workday, and under no circumstances should they exceed 5 times the PEL-TWA, provided that the PEL-TWA is not exceeded.

(d) Skin Designation. To prevent or reduce skin absorption, an employee's skin exposure to substances listed in Oregon Table Z-1 with an "X" in the Skin Designation column following the substance name shall be prevented or reduced to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

(2) Oregon Table Z-2. An employee's exposure to any substance listed in Oregon Table Z-2 shall not exceed the exposure limits specified as follows:

(a) 8-hour time weighted averages. An employee's exposure to any substance listed in Oregon Table Z-2, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in Oregon Table Z-2.

(b) Acceptable ceiling concentrations. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable ceiling concentration for the given substance in the table at any time during an 8-hour shift except:

(i) Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. An employee's exposure to a substance listed in Oregon Table Z-2 shall not exceed the acceptable maximum peak above the acceptable ceiling concentration, and shall not exceed the maximum duration for the given substance during an 8-hour shift.

(c) Example. Table. During an 8-hour work shift, an employee exposed to benzene may be exposed to an 8-hour time weighted aver-

age (TWA) of 10 ppm. Concentrations of benzene during the 8-hour work shift may not exceed 25 ppm, unless that exposure is no more than 50 ppm and does not exceed 10 minutes during an 8-hour work shift. Such exposures must be compensated by exposures to concentrations below 10 ppm so that the 8-hour time-weighted average is less than 10 ppm.

(3) Oregon Table Z-3. An employee's exposure to any substance listed in Oregon Table Z 3, in any 8-hour work shift of a 40-hour work week, shall not exceed the 8-hour time weighted average limit given for that substance in the table.

(4) Computation formulae. The computation formula which shall apply to employee exposure to more than one substance for which 8-hour time weighted averages are included in OAR 437, Division 2/Z, Toxic and Hazardous Substances, in order to determine whether an employee is exposed over the regulatory limit is as follows:

(a) Cumulative Exposures.

(i) The cumulative exposure for an 8-hour work shift shall be computed as follows:

$$E = (CaTa + CbTb + \dots CnTn) \div 8$$

Where:

E is the equivalent exposure for the working shift.

C is the concentration during any period of time T where the concentration remain constant.

T is the duration in hours of the exposure at the concentration C.

The value of E shall not exceed the 8-hour time weighted average specified in subpart Z of 29 CFR part 1910 for the substance involved.

(ii) To illustrate the formula prescribed in paragraph (4)(a)(i) of this section, assume that Substance A has an 8-hour time weighted average limit of 100 ppm (Oregon Table Z-1). Assume that an employee is subject to the following exposure:

Two hours exposure at 150 ppm

Two hours exposure at 75 ppm

Four hours exposure at 50 ppm

Substituting this information in the formula, we have

$$[(2 \times 150) + (2 \times 75) + (4 \times 50)] \div 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, the 8-hour time weighted average limit, the exposure is acceptable.

(b) Mixtures.

(i) In case of a mixture of air contaminants an employer shall compute the equivalent exposure as follows:

$$Em = (C1 \div L1) + (C2 \div L2) + \dots (Cn \div Ln)$$

Where:

Em is the equivalent exposure for the mixture.

C is the concentration of a particular contaminant.

L is the exposure limit for that substance specified in Subpart Z of 29 CFR Part 1910.

The value of Em shall not exceed unity (1).

(ii) To illustrate the formula prescribed in paragraph (4)(b)(i) of this section, consider the following exposures:

Table.

Substituting in the formula, we have:

$$Em = (500 \div 1000) + (45 \div 200) + (40 \div 200)$$

$$Em = 0.500 + 0.225 + 0.200$$

$$Em = 0.925$$

Since Em is less than unity (1), the exposure combination is within acceptable limits.

(5) To achieve compliance with paragraphs (1) through (4) of this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be approved for each particular use by a competent industrial hygienist or other technically qualified person. Whenever respirators are used, their use shall comply with 1910.134.

Table Z-1, Notes, Footnotes; Table Z-2, Note, Footnotes; Table Z-3, Notes, Footnotes.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 4-2001, f. & cert. ef. 2-5-01;

OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 6-2008, f. 5-13-08, cert. ef. 7-1-08;

OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

### **437-003-1101**

#### **Asbestos Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 3/Z, 1926.1101 Asbestos, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Asbestos rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

### **437-003-1127**

#### **Cadmium Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 3/Z, 1926.1127 Cadmium, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Cadmium rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

### **437-003-1423**

#### **Fall Protection**

(1) Personal fall arrest and fall restraint systems must use personal fall arrest components that conform to the criteria in Division 3/M Fall Protection.

**NOTE:** Except that 1926.502(d)(15), Fall Protection Systems Criteria and Practices/Personal fall arrest systems (anchors), does not apply to components used in personal fall arrest and fall restraint systems. (See 1926.1423(g) and 437-003-1423(3))

(2) When employees are assembling, disassembling or otherwise performing work on a walking/working surface of a crane with an unprotected side or edge more than 10 feet above a lower level, the employer must provide fall protection systems and ensure they are installed and used according to the criteria in Division 3/M, Fall Protection.

(a) When moving point-to-point:

(A) On non-lattice booms (whether horizontal or not horizontal).

(B) On lattice booms that are not horizontal.

(C) On horizontal lattice booms where the fall distance is 10 feet or more.

(b) While at a work station on any part of the equipment (including the boom, of any type), except when the employee is at or near draw-works (when the equipment is running), in the cab, or on the deck.

(3) Anchorage criteria. 1926.502(d)(15), 1926.502(e)(2), and 437-003-0502(4) apply to equipment covered by this subdivision only to the extent delineated in paragraphs 1926.1423(g)(2) and (3).

(4) Tower cranes. When employees are erecting, climbing, dismantling or otherwise performing work on a walking/working surface of a tower crane with an unprotected side or edge more than 10 feet above a lower level, employers must ensure that fall protection systems are provided, installed, and used according to the criteria in Division 3/M, Fall Protection.

(5) Anchoring to the load line. A personal fall arrest system is permitted to be anchored to the crane/derrick's hook or other part of the load line when all of the following requirements are met:

(a) A qualified person determines that the set up and rated capacity of the crane/derrick, including the hook, load line and rigging, meets or exceeds the requirements in 1926.502(d)(15).

(b) The operator is informed that it is being used for this purpose and is in view of and no more than 25 feet from the operator station/cab.

(c) No load is suspended from the crane/derrick when the personal fall arrest system is anchored and used.

(d) The crane/derrick is not moved when the personal fall arrest system is anchored and being used.

(6) Training. The employer must train each employee who may be exposed to fall hazards while on, or hoisted by, equipment covered by this subdivision on the applicable requirements in OARs 437-003-1599 and 437-003-0502.

Stat. Auth.: ORS 654.025(2) & 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 1-2011, f. & cert. ef. 2-9-11

#### **437-003-1500**

##### **Additional Definitions**

(1) Body belt means a Type 1 safety belt used in conjunction with lanyard or lifeline for fall restraint only.

(2) Fall protection system means personal fall arrest system, personal fall restraint system, positioning device system, guardrail system, safety net system, warning line system, or safety monitoring system.

(3) Personal fall restraint system means a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness, along with an anchorage, connectors and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices.

(4) Rake edge means the inclined roof edges, such as those on the gable end of a building.

(5) Roofing work means the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck and leading edge work.

(6) Walking/working surface means any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork, beams, columns, trusses and concrete reinforcing steel but not ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02; OSHA 2-2016, f. 3-1-16, cert. ef. 10-1-17

#### **437-003-1501**

##### **Fall Protection**

(1) General. Except where permitted by another standard, when employees are exposed to a hazard of falling 6 feet or more to a lower level, the employer must ensure that fall protection systems are provided, installed, and implemented according to the criteria in 1926.502, 437-003-0502, 437-003-1502, and 437-003-2502.

(2) Walking/working surfaces. The employer must determine if the walking/working surfaces on which its employees are to work have the strength and structural integrity to safely support employees. Employees may work on those surfaces only when the surfaces have the requisite strength and structural integrity.

(3) Holes. Regardless of height, each employee on a walking/working surface must be protected from tripping in or stepping into or through holes (including skylights) by covers, or equivalent.

**NOTE:** Smoke domes or skylight fixtures are not considered covers for the purpose of this section unless they meet the strength requirements of 1926.502(i).

(4) Wall openings. Each employee working on, at, above, or near wall openings (including those with chutes attached) where the inside bottom edge of the wall opening is less than 39 inches above the walking/working surface and the outside bottom edge of the wall opening is 6 feet or more above lower levels, must be protected from falling by the use of guardrail systems, safety net systems, personal fall arrest systems, or personal fall restraint systems.

(5) Excavations.

(a) Employers must use guardrail systems, fences, or barricades to protect any employee who might approach the edge of an excavation, when the excavation is 6 feet or more in depth and is not readily seen because of plant growth or other visual barrier.

(b) Employers must use guardrail systems, fences, barricades, or covers to protect any employee who might approach the edge of a well, pit, shaft, or other similar excavation, when the excavation is 6 feet or more in depth.

(6) Dangerous equipment. In addition to the fall protection requirements under 437-003-1501(1), each employee working less than 6 feet above dangerous equipment must be protected from falls into or onto dangerous equipment by guardrail systems or equipment guards.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02; OSHA 1-2016, f. 3-1-16, cert. ef. 1-1-17

#### **437-003-1502**

##### **Warning Line Systems for Roofing Work**

(1) A warning line system shall not be used as fall protection on roof slopes greater than 2 in 12 (vertical to horizontal).

(2) Employees performing roofing work between a roof edge and a warning line must be protected by a personal fall arrest system, personal fall restraint system, guardrail system, safety net system, or safety monitoring system.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02

#### **437-003-1752**

##### **Written Notifications**

A copy of the written notification(s) required by this section must be maintained on the site by the controlling contractor for review until completion of the project.

Stat. Auth.: ORS 654.025(2)-656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02

#### **437-003-1754**

##### **Roof and floor holes and openings**

Roof and floor holes and openings shall be decked over. Where large size configuration or other structural design does not allow openings to be decked over (such as elevator shafts, stairwells, etc.) employees shall be protected by covers or guardrail systems erected around such openings as soon as the openings are created.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 8-2003, f. 12-30-03 cert. ef. 1-1-04

#### **437-003-2501**

##### **Protection From Falling Objects**

(1) General. Except as otherwise provided in paragraph (2) of this section, when employees are exposed to falling objects, the employer must have each employee wear a hard hat and must implement one of the following measures in accordance with the criteria in 1926.502(j):

(a) Erect toeboards, screens, or guardrail systems to prevent objects from falling from higher levels; or,

(b) Erect a canopy structure and keep potential fall objects far enough from the edge of the higher level so that those objects would not go over the edge if they were accidentally displaced; or,

(c) Barricade the area to which objects could fall, prohibit employees from entering the barricaded area, and keep objects that may fall far enough away from the edge of a higher level so that those objects would not go over the edge if they were accidentally displaced.

(2) Holes. Employees working below walking/working surface holes (including skylights) must be protected from objects falling through by covers meeting the criteria in 1926.502(i), or equivalent.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2016, f. 3-1-16, cert. ef. 1-1-17

#### **437-003-2502**

##### **Safety Monitoring Systems**

Safety monitoring systems for roofing work and their use shall comply with the following provisions.

(1) A safety monitoring system shall not be used as a fall protection system for any work other than roofing work on roof slopes of 2 in 12 (vertical to horizontal) or less.



(2) The use of a safety monitoring system alone (i.e., without the warning line system) is not permitted on roofs more than 50 feet (15.25 m) in width (see Appendix A of this subdivision).

(3) The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements:

(a) The safety monitor shall be competent to recognize fall hazards;

(b) The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;

(c) The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;

(d) The safety monitor shall be close enough to communicate orally with the employee; and

(e) The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function.

(4) Mechanical equipment shall not be used or stored in areas where safety monitoring systems are being used to monitor employees engaged in roofing operations.

(5) No employee, other than an employee engaged in roofing work shall be allowed in an area where an employee is being protected by a safety monitoring system.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2002, f. & cert. ef. 7-19-02

#### **437-003-3060**

##### **Methylenedianiline Respiratory Protection Program**

The employer must implement a respiratory protection program in accordance with Division 2/I, 1910.134(b) through (d) (except (d)(1)(iii)), and (e) through (m) and (o), which covers each employee required by Division 3/D, 1926.60 Methylenedianiline, to use a respirator.

**NOTE:** This is in addition to other respiratory protection and medical surveillance requirements specified in these Methylenedianiline rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2011, f. 12-8-11, cert. ef. 7-1-12

#### **437-003-3224**

##### **Vehicle Drivers and Riders**

(1) Scope. This rule applies, without regard to vehicle ownership when your employees drive or ride as part of their employment.

**NOTE:** The Oregon Bureau of Labor and Industries (BOLI) administers rules about using minors as drivers. Please contact the nearest BOLI office for more information.

(2) Driver Qualifications. You must not allow an employee to drive a vehicle on a public highway or road unless they have a valid driver's license appropriate for that type vehicle.

(3) General Safety.

(a) Do not allow employees to drive or ride in any vehicle known to be unsafe.

(b) Require employees to report any safety problems effecting vehicles you own or provide.

(4) Rider Safety — General.

(a) Except as in (5), (6) and (7), do not allow employees to occupy a vehicle in excess of its seating capacity.

(b) Require employees to comply with all applicable seatbelt and traffic safety laws.

(5) Rider Safety in the Bed of Dump Trucks, Pickups and Similar Vehicles. Do not transport workers in the beds of dump trucks, pickups or similar vehicles unless these conditions are met when applicable:

(a) When seating is available, it must be secure to the floor and passengers may not stand.

(b) The bed is secure to the frame. Beds that tilt or slide must be secure from movement.

(c) Dump beds must be secure or the activating lever locked.

(d) The total height of the sides of the transport area must be at least 42 inches. If riders sit on the floor, the height must be at least 24 inches.

(e) There must be a tailgate the same height as the sides or three evenly spaced chains, cables or ropes taut across the back.

(f) Not more than 4 workers may ride on a flatbed without sides or a tailgate and then only when the speed will not be more than 30 mph. There must be two handholds for each rider.

(g) Workers must not ride in space with cargo unless it is secure from movement.

(6) Standing Rider Safety — Buses. Riders must not sit on the floor while the vehicle is moving. Riders may stand if these conditions are met:

(a) There must be an aisle at least 12 inches wide leading to the emergency exit.

(b) There are no seats in or boards across the aisle.

(c) There must be handholds for standing riders.

(d) Not more than one rider per row of seats may stand.

(e) Riders may not sit or stand near the driver and not ahead of the forward-most row of seats.

(f) Workers in transit must not stand for more than one hour or 45 miles, whichever is less. At the end of that period, the standing workers must get a seat or the vehicle must stop for a 15-minute rest allowing the workers to get out.

(7) Fueling.

(a) There must be no smoking or other source of ignition within 25 feet of any refueling operation.

(b) Do not fill any container that is not bonded or grounded while it is inside the vehicle, in the pickup bed or anyplace other than on the ground.

(c) Stop the engine (except diesels) during fueling.

(d) Refueling vehicles with LPG must be outdoors.

(8) Hauling gasoline or flammable liquid.

(a) For buses, vehicles that carry 16 or more, crew trucks, vans and passenger cars, use only DOT or UL approved containers that hold 5 gallons or less and secure them in an area separate from passengers.

(b) For pickups, flatbeds and other vehicles not in (a), there is no container size limit as long it is not in an enclosed passenger area.

(9) Hauling Explosives. When hauling explosives, only the driver and one qualified person may be in the vehicle. Comply with OAR 437-002-1910.109 and 437-002-0109.

(10) Loading or Unloading. When loading or unloading vehicles in a manner that is likely to cause the vehicle to move, set the brakes and chock the wheels.

(11) High Voltage Clearances. When operating a vehicle near overhead lines carrying more than 600v, OAR 437-002-0047 applies for general industry employers and OAR 437-003-0047 applies for Construction employers.

(12) Traffic Control. You must require employees to set up appropriate traffic controls when they stop on or adjacent to a highway, street, or road in a way that creates a hazard and when traffic cannot adjust safely on its own. The controls must conform to the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

**NOTE:** Get a copy of the Millennium Edition from the following organizations: American Traffic Safety Services Association, 15 Riverside Parkway, Suite 100, Fredericksburg, VA 22406-1022; Telephone: 1-800-231-3475; Fax: (540) 368-1722; [www.atssa.com](http://www.atssa.com); Institute of Transportation Engineers, 1099 14th Street, NW., Suite 300 West, Washington, DC 20005-3438; Fax: (202) 289-7722; [www.ite.org](http://www.ite.org); and American Association of State Highway and Transportation Officials; [www.aashto.org](http://www.aashto.org); Telephone: 1-800-525-5562. OR: Download the MUTCD 2000 at <http://mutcd.fhwa.dot.gov/kno-millennium>. OR: The MUTCD 2000 is available for review at the Oregon OSHA Resource Center, 350 Winter Street NE, Basement - Room 26, Salem, Oregon 97301-3882; Telephone: (503) 378-3272, or toll free in Oregon 1-800-922-2689.

**NOTE:** Employers who follow the most current edition of the Oregon Temporary Traffic Control Handbook for Operations of 3 Days or Less comply with this requirement.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

**437-003-3225****Vehicles for Highway and Road Operation Characteristics and Maintenance**

(1) Scope. This applies to employer-owned vehicles licensed for highway and road use, driven and/or maintained by employees on public or private property, except the following:

(a) Powered Industrial Trucks covered by OR-OSHA standard 1910.178 and OAR 437-002-0227.

(b) Earth moving equipment (scrapers, loaders, bulldozers and graders) covered by OAR 437-003-1926.602.

(c) Manufactured structures, ATVs, golf carts and other similar devices not intended for highway or road use.

**NOTE:** When operating a vehicle near overhead power lines more than 600 volts, OAR 437-002-0047 applies for General Industry employers and OAR 437-003-0047 applies for Construction employers.

(2) Vehicle Components.

(a) The engine start/stop control must be within reach of the driver.

(b) There must be steps, ladders and railings to allow safe access to and exit from areas on vehicles where employees must access. Steps and rungs must be slip resistant.

(c) Vehicles whose cargo is loaded by cranes, power shovels or other powered loaders must have a cab or cab shield that protects the occupants from the impact of falling material.

(d) Secure all material, equipment or tools to prevent movement or a barrier must be in place to protect the occupants from moving items.

(e) Vehicles with cabs must have a door or doors for entry and exit.

(f) Vehicle cargo must not prevent occupants from exiting under any condition.

(g) Vehicles must comply with ORS 811.225, Failure to Maintain Safety Belts in Working Order.

(3) Flashing Warning Lights. Buses with a capacity of 16 or more passengers must have a working flashing light system that complies with ORS 816.260 if they load or unload passengers on a public highway or road.

(4) Buses and Crew Trucks.

(a) Buses and crew trucks must have a secure seat with back rest for each occupant.

(b) Buses with an enclosed seating area for 12 or more workers, unless loaded from the rear, must have an emergency exit not less than 24 inches wide by not less than 48 inches high on the left side or rear of the vehicle. It must open easily from inside or outside the vehicle.

(5) Passenger Compartments.

(a) Floors and decks must be slip resistant.

(b) Seal openings between the engine compartment and muffler area to prevent carbon monoxide from entering the enclosed passenger compartment.

(c) Enclosed passenger compartment must be substantially dust proof and watertight.

(d) Areas where workers sit or stand must be free of protruding nails, screws, splinters or similar physical hazards.

(e) Protect riders from inclement weather by enclosing riding areas as necessary.

(6) Steering. Do not allow spinner knobs on vehicles without power steering. Spinner knobs must be on the inside of the steering wheel.

(7) Lighting. Where general lighting in vehicle operating areas is less than 2 footcandles per square foot, vehicles must have working lights that sufficiently light the travel path.

(8) Testing, Maintenance, and Repair.

(a) Block or crib heavy machinery, equipment or parts supported by slings, hoists, jacks or otherwise prevent it from falling before employees work underneath or between such objects.

(b) During repair or maintenance set all controls in neutral, stop the motor and set the brakes unless the work requires otherwise.

(c) During maintenance or inspection on vehicles with dump bins, use an attached, lockable support that prevents unintentional lowering of the bin.

(d) Disconnect the vehicle battery when the work allows and the energized system could cause injury.

(9) Warning Devices.

(a) All vehicles must have a working horn that can be heard above surrounding area noise. Paragraph (b) does not apply when the vehicle backs up with an observer or when the operator verifies that there is nobody behind the vehicle or when nobody may enter the danger area without the operator's knowledge.

(b) Vehicles with an obstructed view to the rear must have a backup alarm that can be heard over the surrounding noise. If surrounding noise prevents this or if there are so many vehicles using backup alarms that they cannot be distinguished from each other, flashing or strobe lights are acceptable.

(10) Control of Exhaust Gases.

(a) Vehicles must have a working muffler.

(b) Exhaust pipes must direct the gasses away from occupants.

(c) Insulate or otherwise protect exhaust pipes exposed to work-er contact.

(11) First Aid Kits. Vehicles for transport of 16 or more workers must have a clean, stocked first aid kit with enough supplies for the number of workers usually transported.

**NOTE:** Laws and/or administrative rules administered by other government agencies require fire extinguishers in vehicles under specifically defined circumstances.

(12) Controls.

(a) Levers that control dump or hoist devices must have a latch or other device that prevents accidental starting or tripping of the mechanism.

(b) The operator of a dump truck must be able to operate the tailgate trip handle from a position clear of the dumping load.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

**437-003-3226****Vehicles for Use on Property Other Than Public Roads and Highways Operation, Characteristics and Maintenance**

(1) Scope. This rule applies to employer-owned vehicles, not licensed or normally operated on public highways or roads, except the following:

(a) Powered Industrial Trucks covered in OR-OSHA standard 1910.178 and OAR 437-002-0227.

(b) Earth moving equipment, (scrapers, loaders, bulldozers and graders) covered by OAR 437-003-1926.602.

(c) Manufactured structures, ATVs, golf carts and other similar devices not intended for highway or road use.

(2) Safe Operation. You must require the driver to:

(a) Look in the direction of travel and have a clear view unless being guided by somebody with a clear view of the route.

(b) Slow or stop as appropriate at intersections and not drive in marked pedestrian lanes.

(c) Not drive a vehicle up to a person standing in front of a stationary object.

(d) Manually control all towed or pushed vehicles unless they use a towbar.

(3) Vehicle Loads. You must protect employees from hazardous vehicle loads by requiring that they:

(a) Not load a vehicle beyond its rated capacity.

(b) Stabilize, lash down or otherwise secure the load.

(c) Never be under an elevated load.

(4) Basic Equipment Requirements. You must assure your vehicles comply with the following:

(a) Vehicles with windshields must have working powered wipers and an effective defroster.

(b) There must be no broken glass that impairs the driver's vision.

(c) When the load or passengers obstruct the use of the interior rear view mirror, there must be an outside rear view mirror on each side of the vehicle.

(d) Vehicle brakes must be effective when the vehicle is fully loaded. The parking brake must hold the loaded vehicle on any slope which it may operate.

**NOTE:** The rules on safety chains do not apply to saddle-mount towing, or to a semitrailer coupled to a towing vehicle with a fifth wheel and king-pin assembly so designed that the upper and lower halves may not separate without being manually released onto a dolly without a tow bar.

(5) Uncoupled towing. You must assure that:

(a) Towed vehicles with a gross weight of 5,000 pounds or less must have at least one safety chain or cable. Towed vehicles with a gross weight more than 5,000 pounds must have at least two safety chains or cables.

(b) Safety chains or cables must be strong enough to control the towed vehicle in event the tow bar or coupling device fails.

(c) Safety chains or cables must connect to the towed and towing vehicles and to the tow bar so as to prevent the tow bar from dropping to the ground if it or the coupling device fails.

(d) There must be only enough slack in safety chains or cables to permit proper turning.

(6) Coupled towing. You must assure that:

(a) Drawbar, coupling device, and other connections for towing of trailers must be strong enough to hold the weight of the towed vehicle on any grade over which it may operate.

(b) Any coupling device on any towing vehicle used as a connection for the tow bar on any towed vehicle with a gross weight more than 5,000 pounds must be firmly attached to the frame or to a solid connection to the frame.

(c) There must be a suitable locking means to prevent accidental separation of the towed and towing vehicles.

(d) Connections must have only enough slack to allow for universal action of the connections.

**NOTE:** When operating a vehicle near overhead power lines more than 600 volts, OAR 437-002-0047 applies for General Industry employers and OAR 437-003-0047 applies for Construction employers.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 6-2007, f. & cert. ef. 9-26-07

### **437-003-3600**

#### **Equipment**

(1) For lines rated 50 kV or below, minimum clearance between the lines and any part of the equipment or load must be 10 feet.

(2) For lines rated over 50 kV, minimum clearance between the lines and any part of the equipment or load must be 10 feet plus 0.4 inch for each 1 kV over 50 kV, or twice the length of the line insulator, but never less than 10 feet.

(3) Cage-type boom guards, insulating links, or proximity warning devices may be used on equipment but the use of such devices must not alter the requirements of any other regulation of this part even if such device is required by law or regulation.

Stat. Auth.: ORS 654.025(2) & 656.726(4).

Stats. Implemented: ORS 654.001 & 654.295.

Hist.: OSHA 1-2011, f. & cert. ef. 2-9-11

## **DIVISION 4**

### **AGRICULTURE**

#### **437-004-0001**

##### **Application**

Everything in this standard is the responsibility of the employer. It is the responsibility of the employer to assure that their workers, facilities and equipment comply with this standard.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0002**

##### **Scope**

Standard Industrial Classifications — division 004, Agriculture, applies only to employers with the following Standard Industrial Classifications (SIC) or North American Industrial Classification system (NAICS) codes.

**NOTE:** If you don't know your code, contact your Workers' Compensation Insurance carrier.

SIC NAICS

01 111 — All Groups.

02 112 — All Groups.

0711 115112 — Soil Preparation Services.

0721 115112 — Crop Planting, Cultivating, and Protection.

0722 115113 — Crop Harvesting, Primarily by Machine.

0723 115114 — Crop Preparation Services for Market: Except Cotton Ginning.

**NOTE:** SIC 0723 (NAICS 115114), Division 4, Agriculture covers growers who:

Buy farm products for resale to the general public. These products may be cleaned, sorted, graded, dried whole, bagged or packaged, but are not processed. Examples of processing include cutting, canning, freezing, pasteurizing and homogenizing.

Grow 51 percent or more of the sold crops themselves, but also buy farm products for resale to anyone other than the general public. These products may be cleaned, sorted, graded, dried whole, bagged, or packaged, but are not processed. Examples of processing include cutting, canning, freezing, pasteurizing and homogenizing.

0761 115115 — Farm Labor Contractors and Crew Leaders.

0762 115116 — Farm Management Services.

0811 111421 — Christmas Tree Growing and Harvest.

0831 113210 — Forest Nurseries and Gathering of Forest Products.

**NOTE:** Division 4, Agriculture, covers forest nursery employers growing:

- Seedlings for reforestation.

- Trees for purposes other than lumber, pulp, or other wood products.

Division 7, Forest Activities, covers employers:

- Growing trees for lumber, pulp, or other wood products.

- Gathering seeds, needles, bark, and other secondary forest products.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

#### **437-004-0003**

##### **Exclusive Coverage**

(1) Division 4, Agriculture, and parts of division 1, General Administrative Rules, are the only Oregon OSHA standards that apply to employers in 437-004-0002. Employers in 437-004-0002 will not be cited from standards in division 2 or division 3, Construction, unless division 4 states they are applicable.

(2) The following parts of division 1 DO NOT apply to Agriculture. This division has language covering their subjects.

(a) 437-001-0760 Rules for all Workplaces. 437-004-0099 General Standards applies instead.

(b) 437-001-0765 Safety Committees and Safety Meetings. 437-004-0251 Safety Committees and Safety Meetings applies instead.

**NOTE:** ORS 654 (The Oregon Safe Employment Act) and specifically 654.010, commonly referred to as the General Duty Clause, applies to all places of employment in Oregon.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

#### **437-004-0005**

##### **Access to Employee Exposure and Medical Records**

For agricultural employers, OAR 437-002-1910.1020 applies.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0099**

##### **General Standards**

(1) Miscellaneous.

(a) Conspicuously post warning signs, danger signs, warning flags, warning lights, or similar devices where hazards not otherwise adequately guarded warrant their use.

(b) Keep all safeguards or devices operating properly and fully effective at providing the protection originally intended.

(c) Erect protective barriers or suitable guards when covers over openings are removed or excavations made in places accessible to workers or vehicles.

(d) Do not allow the use of intoxicating liquor or drugs on the job. Do not allow anyone to work with impaired ability to work safely.

(e) Do not allow horseplay, scuffling, practical jokes or any other similar activity.

(2) Supervision and competency.



(a) Require employees to demonstrate their ability to work safely.

(b) Provide enough supervision over employees to ensure and enforce compliance with safe operating procedures and practices.

**NOTE:** It is not the meaning of this rule to require a supervisor on every part of any operation, nor to prohibit workers from working alone.

(c) Take all reasonable means to require employees:

(A) To work and act in a safe and healthful manner;

(B) To work in compliance with all applicable safety and health rules;

(C) To use all means and methods, including but not limited to, ladders, scaffolds, guardrails, machine guards, safety belts and lifelines, necessary to work safely where employees are exposed to a hazard;

(D) Not to remove, displace, damage, destroy or carry off any safety device, guard, notice or warning provided for use in any employment or place of employment where safety and health rules require such use.

(d) Use a procedure, appropriate for the work, to check on the well-being of workers whose duties require them to work alone or in isolation. Instruct all workers about the procedure.

**NOTE:** A two-way system of signals, thoroughly understood by both parties or other form of two-way communication is acceptable. Motor noise is not acceptable as contact or as an indication of well-being.

(e) Employers must provide all health hazard control measures necessary to protect the employees' health from harmful or hazardous conditions and must maintain those control measures in good working order and assure their use.

(f) Employers must inform their employees about the known health hazards to which they are exposed, the measures taken for the prevention and control of those hazards, and the proper methods for using the control measures.

(3) Inspections. A competent person or persons must inspect every place of employment at least quarterly. OAR 437-004-0251 has other requirements related to these inspections.

(4) Investigations.

(a) The employer must investigate every work-related lost time injury. The object of the investigation is to determine how to prevent recurrence. OAR 437-004-0251 has other requirements related to these investigations.

**NOTE:** As mentioned above, "lost time injury" is the same as the ORS 656.005(7)(c) definition of "disabling compensable injury." That is: an injury that entitles the worker to compensation for disability or death. To fall into this category the employee must miss three consecutive calendar days beginning with the day the worker first loses time or wages from work as a result of the compensable injury. This includes weekends and holidays when they might normally be off.

(b) At the request of authorized OR-OSHA representatives, you or your superintendents, supervisors and employees must furnish all evidence and names of known witnesses to an accident.

(c) Employees in charge of work are agents of the employer in the discharge of their authorized duties, and are always responsible for:

(A) The safe performance of the work under their supervision; and

(B) The safe conduct of the crew under their supervision; and

(C) The safety of all workers under their supervision.

(5) Extraordinary hazards. When conditions arise that cause unusual or extraordinary hazards to workers, take additional means and precautions to protect workers or to control the hazardous exposure. If you cannot make the operation reasonably safe, stop work while the abnormal conditions exist or until the work is safe.

(6) Signals and signal systems.

(a) Give control signals by only one person at a time.

(A) When given, make signals clear and distinct.

(B) The person receiving the signals must understand their meaning before taking action.

(b) Act immediately on emergency stop signals from whatever source.

(c) Do not throw any type of material that can produce injury, such as rocks, wooden or metal objects, etc., as a signal.

(d) Do not give signals for the movement of materials or equipment until all persons who might be in danger by the movement are in the clear.

Employment of Minors.

**NOTE:** Information on current regulations about the employment of minors is available from the local office of the Oregon Bureau of Labor and Industries, or by writing to: Wage and Hour Division, Oregon Bureau of Labor, 800 NE Oregon Street, Suite 1045, Portland, OR 97232. Phone: 971-673-0761. Fax: 971-673-0769.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

## **437-004-0100**

### **Universal Definitions**

(1) These definitions apply throughout Division 4, Agriculture, except that the definitions in Subdivision 4/W, adopted from 40 CFR 170, Worker Protection Standard, apply to the rules within that Subdivision.

(a) Accepted — Something is accepted if:

(A) A nationally recognized testing laboratory has inspected it and found it to conform to specified plans or to procedures of applicable codes; or

(B) It is verified by design, evaluation, or inspection by a registered professional engineer; or

(C) It is acknowledged by the authority having jurisdiction, the agency, office, or organization that is responsible for approving specific equipment, materials, installations, or procedures. (Examples of such authorities include the U.S. Department of Transportation, the U.S. Coast Guard, the Oregon Building Codes Division, and the Office of the State Fire Marshal.)

(b) Agricultural employer — means any person, corporation, association, or other legal entity who meets the definition of an employer in ORS 654.005(5) and who:

(A) Owns or operates an agricultural establishment; or

(B) Recruits and supervises employees who work for an agricultural establishment; or

(C) Is responsible for the management or condition of, or exercises direction and control over the production on, an agricultural establishment.

(c) Agricultural establishment — means a farm, ranch, nursery, greenhouse, or production facility that is a place of employment and is engaged in the activities described in Division 4/A, 437-004-0002 Scope.

(d) Approved — means acceptable for the purposes of rule compliance, under the following criteria:

(A) It is accepted, or certified, or listed, or labeled or otherwise determined to be safe by a nationally recognized testing laboratory; or

(B) If an installation or equipment is of a kind which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe, it has been inspected or tested by another authority having jurisdiction and found to be in compliance with the provisions of the applicable code; or

(C) Custom-made equipment or related installations that are designed and fabricated for a certain intended use by its manufacturer. The employer must keep and make available the test data that is used as the basis of this approval, for inspection.)

(e) Boiling point — The temperature at which the liquid form of a substance changes into a vapor, at a standard atmospheric pressure. The initial boiling point of a substance is determined according to test methods specified in Appendix B to Division 2/Z, 1910.1200, Hazard Communication Standard.

(f) CAS — is the Chemical Abstracts Service Registry Number, a unique numerical identifier assigned by the Chemical Abstracts Service to every chemical described in the open scientific literature.

(g) Capacity — is the maximum load or severity of service (determined by the manufacturer or a qualified engineer) that a tool, machine, equipment, structure, or material is expected to withstand without failure, deformation, separation or fracture.

(h) Certified — is something that:

(A) Was tested and found by a nationally recognized testing laboratory to meet recognized standards or to be safe for use in a specified manner, or

(B) Is of a kind whose production is periodically inspected by a nationally recognized testing laboratory, and

(C) Shows a label, tag, or other record of certification.

(i) Combustible — A substance or material that is able or likely to catch fire and burn.

(j) Combustible liquid — The “combustible liquid” classification is no longer used in Division 4 rules because it was eliminated by the globally harmonized classification and labeling system (GHS) adopted in OSHA’s Hazard Communication Standard. Any liquid with a flash point of 199.4°F (93 degrees C.) or less is considered to be one of the four categories of flammable liquids. (See “Flammable liquids,” below.)

**NOTE:** The term “combustible liquid” is still used by the National Fire Protection Association (NFPA) system of classification and by the Oregon State Fire Marshal to classify liquids that will burn but do not ignite as easily as flammable liquids. The NFPA system defines some chemicals as “combustible liquids” that would be included as a category of “flammable liquid” in the OSHA/GHS classification system. (See Appendix A to Subdivision 4/H, 437-004-0720 Flammable Liquids, for a comparison of the GHS and NFPA systems of classification of flammable/combustible liquids.)

(k) Competent person — is a person who, because of training and experience, can identify existing and predictable hazards in equipment, material, conditions or practices; and, who has the knowledge and authority to take corrective steps.

(l) Explosive — something capable of causing damage to the surroundings by chemical reaction. Explosives are defined in Appendix B to 1910.1200 — Physical Hazard Criteria at B.1 EXPLOSIVES.

(m) Farming — Is the production of agricultural field crops, tree crops; horticultural specialties, greenhouse crops; and the production of livestock and animal specialties. Farming includes farm labor and management services; agricultural services and support activities (such as soil preparation; crop cultivation, protection, and harvesting;) and, the basic preparation of the crop or commodity for market. The farming production process is typically completed at the “farm gate” — that is, at the point of first sale or price determination.

**NOTE:** Throughout this division, the term “farming,” “agriculture,” “production agriculture,” and “agricultural operations” are synonymous.

(n) Flammable — Capable of being easily ignited, burning intensely, or having a rapid rate of flame spread. Flammable substances are defined in Appendix B to 1910.1200 — Physical Hazard Criteria at B.2 FLAMMABLE GASES, B.3 FLAMMABLE AEROSOLS, B.6 FLAMMABLE LIQUIDS, and B.7 FLAMMABLE SOLIDS.

(o) Flammable liquids — are liquids having a flash point at or below 199.4 degrees F. (93 degrees C.) As defined in the globally harmonized system of classification and labeling (GHS) adopted in OSHA’s Hazard Communication Standard, flammable liquids are divided into four categories as follows:

(A) Category 1 includes liquids that have a flashpoint below 73.4 degrees F. (23 degrees C.) and have a boiling point at or below 95 degrees F. (35 degrees C.)

(B) Category 2 includes liquids that have a flashpoint below 73.4 degrees F. (23 degrees C.) and have a boiling point above 95 degrees F. (35 degrees C.)

(C) Category 3 includes liquids that have a flashpoint in a temperature range from at or above 73.4 degrees F. (23 degrees C.) to at or below 140 degrees F. (60 degrees C.)

(D) Category 4 includes liquids that have a flashpoint in a temperature range from above 140 degrees F. (60 degrees C.) to at or below 199.4 degrees F. (93 degrees C.)

**NOTE:** Examples of some common flammable liquids are:

Category 1: Diethyl ether (solvent sometimes used in starting fluid).

Category 2: Gasoline (Benzene, Ethanol).

Category 3: Kerosene, Stoddard Solvent.

Category 4: Diesel fuel, Naphthalene.

(p) Flashpoint — is the minimum temperature at which a liquid gives off vapor within a test vessel in sufficient concentration to form an ignitable mixture with air near the surface of the liquid, as determined by specific testing methods. These test methods are specified

in Appendix B to Division 2/Z, 1910.1200, Hazard Communication Standard.

(q) Hazardous Chemical — is any chemical which is classified, under the requirements of the Hazard Communication Standard, as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

**NOTE:** See Division 2/Z, 1910.1200 Hazard Communication Standard, for more information.

(r) Ignition source — the origin of something that results in a fire or an explosion. Examples include open flames; smoking; cutting and welding; hot surfaces and radiant heat; frictional heat; static, electrical, and mechanical sparks; chemical and physical-chemical reactions; spontaneous ignition; and lightning.

(s) Labeled — Something is labeled if:

(A) It has an attached label, symbol, or other identifying mark of a nationally recognized testing laboratory that makes periodic inspections of the production of such equipment; or

(B) The attached information indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.

(t) Listed — is something mentioned in a list that:

(A) Is published by a nationally recognized laboratory that makes periodic inspection of the production of such equipment, and

(B) States such equipment meets nationally recognized standards or was tested and found safe for use in a specified manner.

(u) Nationally Recognized Testing Laboratory — (NRTL) is defined in 1910.7 Definition and Requirements for a Nationally Recognized Testing Laboratory and OAR 437-002-0007 Oregon Rule on Testing and Certification Program. (Examples of organizations in this category are Factory Mutual Engineering Corporation, and Underwriters’ Laboratories.)

(v) Place of employment — is every place (fixed, movable or moving) where an employee works or is intended to work. It includes every place where (either temporarily or permanently) there is any activity related to an employer’s business, including a labor camp.

**NOTE:** “Place of employment” does not include a place where the only employment involves nonsubject workers employed in or about a private home; or a farm where only the farm’s family members are employed.

(w) Qualified person — is a person who has a recognized degree, certification, professional standing, knowledge, training or experience; and has successfully demonstrated the ability to perform the work, or solve or resolve problems relating to the work, subject matter, or project.

(x) Reasonable means — is what a prudent person, familiar with the circumstances of the industry would do to work in a safe and healthful manner.

(y) Safeguard — is any form of safety device or equipment; personal protective equipment; guard or barricade; warning device, sign, or method; or a process prescribed or adopted for the protection of an employee.

(z) Substantial — means constructed with sufficient strength or installed to provide ample support to withstand loads to which the structure or device may be subjected.

(aa) Worker — is identical in every respect to “employee” as defined in ORS 654.005(4) including:

(A) Any individual, including a minor, whether lawfully or unlawfully employed, who engages to furnish services for a remuneration, financial or otherwise, subject to the direction and control of an employer; and

(B) Any individual who is provided with workers’ compensation coverage as a subject worker pursuant to ORS chapter 656, whether by operation of law or by election.

(bb) Workplace — See “Place of Employment,” above.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

## **437-004-0150**

### **Standards Organizations**

Division 4 references various standards from the following organizations. More information is available from:

(1) (ACGIH) American Conference of Governmental Industrial Hygienists <http://www.acgih.org/> 1330 Kemper Meadow Drive Cincinnati, Ohio 45240, USA Customers/Members Phone: 513-742-2020 Fax: 513-742-3355

(2) (ANSI) American National Standards Institute <http://www.ansi.org/> ANSI Standards Store Customer Service Department 25 W 43rd St, 4th Floor New York, NY 10036 Phone: (212) 642-4980 Fax: (212) 302-1286

(3) (API) American Petroleum Institute <http://www.api.org/> 1220 L Street, NW Washington, DC 20005-4070 (202) 682-8000

(4) (ASABE) American Society of Agricultural and Biological Engineers <http://www.asabe.org/standards.aspx> 2950 Niles Rd St. Joseph, MI 49085 Toll-Free: (800) 371-2723 Fax: (269) 429-3852

(5) (ASHRAE) American Society of Heating, Refrigeration, and Air Conditioning Engineers [www.ashrae.org](http://www.ashrae.org) ASHRAE Bookstore <http://www.techstreet.com/ashrae/index.html> 3916 Ranchero Dr Ann Arbor, MI 48108 Phone: (800) 699-9277 Fax: (734) 780-2046

(6) (ASME) American Society of Mechanical Engineers <http://www.asme.org/> Two Park Avenue New York, NY 10016-5990 Phone: (800) 843-2763

(7) ASTM International (Formerly American Society for Testing and Materials) <http://www.astm.org> Sales and Customer Support PO Box C700 West Conshohocken, PA 19428-2959 Phone: (877) 909-2786

(8) (AWS) American Welding Society <http://www.aws.org> AWS Bookstore/Customer Service 13301 NW 47th Ave Miami, FL 33054 Toll-free: 888-WELDING Fax: (305) 826-6195

(9) (CGA) Compressed Gas Association <http://www.cganet.com> Customer Service 14501 George Carter Way Suite 103 Chantilly VA 20151 Phone: (703) 788-2700 Fax: (703) 961-1831

(10) (CMAA) Crane Manufacturers Association of America <http://www.mhi.org/cmaa> 8720 Red Oak Blvd Suite 201 Charlotte, NC 28217 Phone: (704) 676-1190 Fax: (704) 676-1199

(11) FM Global (Formerly Factory Mutual Engineering Corporation) [www.fmglobal.com](http://www.fmglobal.com) Customer Service (Resource Catalog) Phone: (877) 364-6726

(12) (IAPMO) International Association of Plumbing and Mechanical Officials <http://www.iapmo.org> 4755 E Philadelphia St Ontario, CA 91761 Phone: (909) 472-4100 Fax: (909) 472-4150

(13) (NFPA) National Fire Protection Association <http://www.nfpa.org> 1 Batterymarch Park Quincy, MA 02169-7471 Customer Sales/Membership Services Phone: (800) 344-3555 Fax: (800) 593-6372

(14) (NIOSH) National Institute of Occupational Safety and Health <http://www.cdc.gov/niosh/> Centers for Disease Control and Prevention Clifton Rd. Atlanta Atlanta, GA 30333 1-800-CDC-INFO (1-800-232-4636)

(15) (RMA) Rubber Manufacturers Association <http://www.rma.org/publications/> 1400 K Street, NW, Suite 900 Washington, DC 20005 (202) 682-4800

(16) SAE International (Formerly Society of Automotive Engineers) <http://www.sae.org> 400 Commonwealth Dr. Warrendale, PA 15096 Phone: (877) 606-7323 Fax: (724) 776-0790

(17) (UL) Underwriters Laboratories [www.ul.com/](http://www.ul.com/) 333 Pfingsten Rd. Northbrook, IL 60062 (847) 272-8800

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### **437-004-0240**

##### **Safety Orientation for Seasonal Workers**

###### **Definitions:**

Hand-labor operations, (as defined in OAR 437-004-1110(3) and reprinted here for ease of the reader) means agricultural activities or agricultural operations performed by hand or with hand tools, including:

- (a) Hand-cultivation, hand-weeding, hand-planting, and hand-harvesting of vegetables, nuts, fruits, seedlings, or other crops (including mushrooms);
- (b) Hand packing or sorting, whether done on the ground, on a moving machine, or in a temporary packing shed in the field.

Seasonal workers are employed in a job tied to a certain time of year by an event or pattern and for not more than 10 months in a calendar year.

**NOTE:** The following are only minimum requirements. Other parts of the agriculture standard require training for certain types of work in addition to these general orientation requirements.

(1) Application: This applies to agricultural employers with seasonal workers.

(2) Basic Safety Awareness Requirements.

(a) You must provide seasonal workers with at least the following information:

At their orientation meeting before beginning work for the first time, and; When work conditions or locations change in a way that could reasonably affect their safety or health.

(A) Safety and health rules for their work.

(B) Procedures for workers to contact supervisors or managers in case of accident, illness, or problems related to safety or health.

(C) Procedures for treating injured or sick workers and for summoning emergency assistance.

(D) The location of posted safety and health information.

(b) If you have employees with language barriers, you must communicate safety awareness information in a manner that workers can understand. Include content that is either translated into the language used to hire and supervise these employees or that is otherwise effectively conveyed, such as through visual media.

**NOTES:** Division 4/Z, Hazard Communication, OAR 437-004-9800(7)(d), requires employers to give a copy of the Oregon OSHA's *Safe Practices When Working Around Hazardous Agricultural Chemicals* (#1951) to every employee. This publication provides an outline of the information that agricultural employers must provide during the initial training for workers under both the hazard communication rules and the pesticide worker protection standard (WPS) as covered in Division 4/W, 170.130(c). Contact Oregon OSHA for copies of this publication and information about available language formats.

You must provide the initial WPS training if pesticide products labeled with "agricultural use requirements" have been used at the place of employment during the 30 days prior to the worker's first day of employment or will be used during the worker's period of employment. Additional WPS training requirements apply on the sixth day of employment, and in other work situations that fall under the definition of "pesticide handler." See Division 4/W for these additional training requirements.

For seasonal workers doing hand-labor operations only, you must provide all of the following to meet the initial training requirements under the WPS, this safety awareness orientation rule, and the hazard communication rule.

- The training outlined in *Safe Practices When Working Around Hazardous Agricultural Chemicals* publication.

- The basic safety awareness requirements information in OAR 437-004-0240.

- Access to material safety data sheet information for the hazardous chemicals to which they reasonably may be exposed.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1999, f. & cert. ef. 4-30-99; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

#### **437-004-0251**

##### **Safety Committees and Safety Meetings**

###### **Definitions:**

Management — includes all supervisors and persons who regularly exercise direction and control over workers.

Workers — for the purposes of determining the need for a safety committee, include both full and part-time employees.

**Purpose.** The purpose of safety committees and safety meetings is to bring workers and management together in a non-adversarial, cooperative effort to promote safety and health in each workplace. A safety committee assists the employer by establishing procedures, performing inspections, evaluating safety and health programs, and recommending changes in workplace conditions and practices. By participating in safety meetings, workers and management work together to recognize hazards and to make safety and health improvements at the workplace.

(1) Application: This applies to agriculture employers with workers other than seasonal workers covered in OAR 437-004-0240.

(2) General Requirements.

(a) You must either have an effective safety committee or hold effective safety meetings. (See Table 1.)

(b) If you have employees with language barriers, you must communicate safety awareness information in a manner that workers can understand. Include content that is either translated into the language used to hire and supervise these employees or that is otherwise effectively conveyed, such as through visual media.



(c) If you are a labor contractor, you must have a committee or meetings based on the number of employees that you direct and control.

**NOTE:** Nothing in these rules prevents you from having seasonal workers attend safety meetings.

Table 1

IF:	You can have a safety committee	You can have safety meetings instead of a safety committee
You have 10 or fewer workers at a location:	Yes	Yes
You have more than 10 workers at a location:	Yes	No
You have satellite or auxiliary worksites with 10 or fewer workers at each location:	Yes	Yes

**(3) Safety Committees.**

**(a) Management's Duties.**

(A) Pay members at their regular rate of pay for attending the meetings, trainings, inspections, and other functions required by this rule.

(B) Provide committee members with timely access to these rules (OAR 437-004-0251) and to all Oregon OSHA standards that apply to their work.

(C) Respond to safety committee recommendations within a reasonable time.

(b) Effective Safety Committees. You must ensure that the committee produces at least the following results:

(A) Employees are aware of the committee, who is on it, when it meets and how information is shared between management and workers.

(B) Employees are aware of their right to have their safety and health concerns heard by the committee.

(C) Employees know the employer's method or system for reporting safety and health concerns, incidents, and accidents.

(c) Centralized Safety Committee. You may choose a centralized safety committee if all of the following apply:

(A) You have more than one geographic employment location.

(B) The locations are close enough to ensure that a joint committee meets the requirements in OAR 437-004-0251(2)(b), Effective Safety Committees.

(C) The joint committee represents the safety and health concerns of all employees at all locations.

**(d) Membership and Training.**

(A) Have at least two members on your committee if you have 20 or fewer workers. Have at least four members if you have more than 20 workers. Members should represent the major activities of your business.

(B) Have an equal number of employer-selected members and worker-elected or volunteer members. If both parties agree, the committee may have more worker-elected or volunteer members.

**NOTE:** Management can select a supervisor or other employee to represent them. Workers can volunteer or elect any peer as a representative.

(C) Provide training on the purpose and operation of the safety committee, in hazard identification, and in the principles of accident investigation.

**NOTE:** Oregon OSHA provides no-cost, safety committee-related training available through the web site at [www.orosha.org/education.html](http://www.orosha.org/education.html).

(D) Have members serve a minimum of one year, when possible.

(E) Have a majority agree on a chairperson.

(e) Safety Committee Functions. Ensure that the committee does all of the following:

(A) Meets at least monthly, except in those months when quarterly inspections occur.

(B) Establishes procedures for doing the quarterly safety and health inspections required by OAR 437-004-0099(3). Persons performing inspections must be trained in hazard identification.

(C) Reviews all quarterly safety and health inspection reports and makes recommendations to eliminate identified hazards.

(D) Works with management to establish procedures for investigating all safety incidents, accidents, work-related illnesses, and fatalities. Persons investigating these events must be trained in the principles of accident investigation.

**NOTE:** OAR 437-004-0099(4) requires agricultural employers to investigate every work-related lost-time injury.

(E) Evaluates all investigation reports and makes recommendations for ways to prevent recurrence.

(F) Sets guidelines for the training of safety committee members.

(G) Evaluates the accident and illness prevention programs at the workplace.

**(f) Safety Committee Records.**

(A) Ensure that records have at least the following information.

(i) Meeting date.

(ii) Names of those attending.

(iii) All reports, inspections, evaluations, recommendations, management responses, and other safety and health-related items brought before the committee.

(iv) The date that management agrees to respond to specific recommendations.

(B) Make these records available to all employees and to Oregon OSHA representatives, upon request.

(C) Maintain these records for at least three years.

**(4) Safety Meetings**

(a) Effective Safety Meetings. You must ensure that safety meetings produce at least the following results:

(A) Employees are aware of safety meetings, when and where they are held, and how information is shared between management and workers.

(B) Employees know that they have a right to have their safety and health concerns heard and questions answered at safety meetings.

(C) Employees know the employer's method or system for reporting safety and health concerns, incidents, and accidents.

(b) Meeting Requirements. Safety meetings must have all of the following characteristics:

(A) Include all available employees.

(B) Include at least one employer representative.

(C) Be on company time with attendees paid at their regular rate of pay.

**NOTE:** If you have questions about this, contact the Oregon Bureau of Labor and Industries.

(D) Occur at least monthly.

(c) Meeting content. Safety meetings must include the following:

(A) Information about safety and health issues relevant to the workplace.

(B) Reports from quarterly workplace safety inspections and from investigations of any work-related, time-lost injuries, including suggested corrective measures.

**NOTE:** OAR 437-004-0099(3) requires a competent person to inspect the agricultural workplace at least quarterly. OAR 437-004-0099(4) requires agricultural employers to investigate every work-related lost-time injury. See Division 4/A for details.

(C) Opportunities for employees to ask questions, bring up safety and health concerns, and make suggestions.

(D) Information that is presented in a manner that can be understood by all employees.

**(d) Meeting Records.**

(A) Meeting notes must include the following information:

(i) Meeting date.

(ii) Names of those attending.

(iii) Topics discussed.

(B) Keep the records for at least 3 years.

(C) Make the records available to your employees and to Oregon OSHA representatives, upon request.

**NOTE:** If all your employees attend a safety meeting, you are only required to record the meeting date and a list of the employees attending.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

**437-004-0310**

**Working Surfaces**

(1) Scope. This section applies to all places of agricultural employment. Measures to control toxic materials are outside the scope of this section.

(2) Housekeeping. Floors, work areas, aisles and passageways must be in good repair and must not have protruding nails, unevenness, obstructions, debris or loose boards that create a hazard.

(3) Aisles, walkways, inclines and passageways.

(a) There must be sufficient clearance for safe operation of mechanical handling equipment in aisles, at loading docks, through doorways and at turns. Aisles and passageways must be clear and in good repair with no obstructions that could be a hazard.

(b) Mark permanent aisles and passageways.

(c) Aisles, passageways, and walkways must be wide enough for safe work but never less than 22 inches wide. Passageways more than 4 feet above the ground or floor level must have standard guardrails.

(d) Fixed inclined walkways must be at least 22 inches wide, incline at no more than 24 degrees and be securely fastened at the top and bottom. They must have guardrails on each open side.

(e) Inclined walkways that may be slippery must have anti-slip surfaces or cleats secured at uniform intervals of not more than 18 inches, and extending the full width of the walkway.

(f) Inclines from floor to floor, without open sides, used instead of stairways must have standard railings according to the requirements for stairways.

(g) Ramps for wheelbarrows, if made of planking, must have an odd number of planks with no cleats on the center plank.

(4) Covers and guardrails. There must be covers and/or guardrails to protect people from the hazards of open pits, tanks, vats, excavations, etc.

(5) Surface loads. For all new and remodel construction after December 1, 1997, post the load capacities on overhead storage areas. Do not allow overloading.

(6) Barriers. There must be protective barriers or suitable guards for uncovered openings or excavations that are accessible to vehicle or pedestrian traffic. Use warning lights or flares if working at night.

(7) Vertical clearances. There must be a vertical clearance of at least 6-1/2 feet over work areas. Where it is impractical to provide this clearance, use padding, contrasting paint or similar warnings on overhead obstructions.

**NOTE:** This does not apply to crop storage areas where people are there for short periods.

(8) Working above other workers. Areas above other workers, for handling or mixing acids, caustics, or other harmful materials must have water-tight floors that drain to a safe location, except where workers underneath wear personal protective equipment suitable for the hazard.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0320**

##### **Guarding Floor and Wall Openings and Holes**

(1) Definitions: Unless otherwise stated, these terms mean:

(a) Floor hole. An opening less than 12 inches but more than 1 inch in its least dimension, in any walking surface, through which materials but not persons may fall. This includes belt holes, pipe openings, or slot openings.

(b) Floor opening. An opening 12 inches or more in its least dimension, in any walking surface through which persons may fall including hatchways, stairs or ladder openings, pits, or large manholes. Floor openings occupied by elevators, dumb waiters, conveyors, machinery, or containers are excluded from this subdivision.

(c) Handrail. A single bar or pipe supported on brackets from a wall or partition, and used as a handhold for persons on stairs or ramps.

(d) Platform. An elevated work space; such as a balcony or mezzanine for the operation of machinery and equipment.

(e) Runway. An elevated passageway, such as a footwalk along shafting or a walkway between buildings.

(f) Stair railing. A vertical barrier along exposed sides of a stairway to prevent people from falling.

(g) Standard railing. A vertical barrier along exposed edges of a floor opening, wall opening, ramp, platform, or runway to prevent people from falling.

(h) Standard strength and construction. Any construction of railings, covers, or other guards that meets the requirements of OAR 437-004-0320(6).

(i) Toeboard. A vertical barrier at floor level along exposed edges of a floor opening, wall opening, platform, runway, or ramp to prevent things from falling.

(j) Wall hole. An opening less than 30 inches but more than 1 inch high, of unrestricted width, in any wall or partition; such as a ventilation hole.

(k) Wall opening. An opening at least 30 inches high and 18 inches wide, in any wall or partition, through which persons may fall; such as a window, doorway or chute opening.

(2) Floor openings and floor holes.

(a) Stairway floor openings must have a standard railing, that complies with OAR 437-004-0320(6), on all exposed sides (except at entrance to the stairway). For infrequently used stairways where traffic across the opening prevents the use of fixed standard railing, the guard must be a hinged floor opening cover of sufficient strength and removable standard railings on all exposed sides (except at entrance to the stairway).

(b) Ladder way floor openings or platforms must have a standard railing with standard toeboard on all exposed sides (except at entrance to opening). The passage through the railing must either have a swinging gate or be offset so that a person cannot walk directly into the opening.

(c) Hatchways and chute floor openings must have one of the following:

(A) Hinged floor opening cover with standard railings. When the opening is not in use, close the cover or guard the exposed sides at both top and intermediate positions by removable standard railings.

(B) A removable railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all other exposed sides. The removable railings must be in place when the opening is not in use.

(C) Where operating conditions necessitate the feeding of material into any hatchway or chute opening, protection must prevent a person from falling through the opening.

(d) Skylight floor openings and holes must have a standard skylight screen or a fixed standard railing on all exposed sides.

(e) Pit and trapdoor floor openings must have a floor opening cover of sufficient strength. While the cover is not on, an attendant must be at the pit or trap opening or there must be removable standard railings on all sides.

(f) Manhole floor openings must have a standard manhole cover that need not be hinged in place. While the cover is off, there must be an attendant at the manhole opening or it must have removable standard railings.

(g) Temporary floor openings must have standard railings, or an attendant.

(h) Floor holes into which persons can accidentally walk must have either:

(A) A standard railing with standard toeboard on all exposed sides; or

(B) A floor hole cover of sufficient strength. While the cover is off, the floor hole must have an attendant or a removable standard railing.

(i) Floor holes into which persons cannot accidentally walk must have a cover that leaves no openings more than 1 inch wide. The cover must be securely held in place to prevent tools or materials from falling through.

(j) Where doors or gates open directly on a stairway, there must be a platform, and the swing of the door must not reduce the effective width to less than 20 inches.

(3) Wall openings and holes.

(a) Wall openings with a drop of more than 4 feet must have one of the following:

(A) Rail, roller, picket fence, half door, or equivalent barrier. Where there is exposure below to falling materials, there must be a toe board or the equivalent. When the opening is not in use for handling materials, the guard must be in position regardless of a door on

the opening. In addition, there must be a grab handle on each side of the opening with its center about 4 feet above floor level and of standard strength and mounting.

(B) Extension platform to receive hoisted materials for handling. It must have side rails or equivalent guards of standard specifications.

(b) Chute wall openings with a drop of more than 4 feet must have one or more of the barriers in (3)(a) above or as required by the conditions.

(c) Window wall openings at a stairway landing, floor, platform, or balcony, with a drop of more than 4 feet, and where the bottom of the opening is less than 3 feet above the platform or landing, must have a guard of standard slats, standard grill work (as in OAR 437-004-0320(6)(k)), or standard railing.

(d) Where the window opening is below the landing, or platform, there must be a standard toeboard.

(e) Every temporary wall opening must have adequate guards but these need not be of standard construction.

(f) Where there is a hazard of materials falling through a wall hole, and the lower edge of the near side of the hole is less than 4 inches above the floor, and the far side of the hole more than 5 feet above the next lower level, the hole must have a standard toeboard, or a solid enclosing screen, or one as described in OAR 437-004-0320(6)(k).

(4) Open-sided floors, platforms, and runways.

(a)(A) Open-sided floors or platforms 4 feet or more above adjacent floor or ground level must have a standard railing (or the equivalent from OAR 437-004-0320(6)(c)) on all open sides except where there is entrance to a ramp, stairway, or fixed ladder. The railing must have a toeboard where, beneath the open sides:

- (i) Persons can pass;
- (ii) There is moving machinery; or
- (iii) There is equipment with which falling materials could create a hazard.

(B) When operating conditions make it necessary, the railing may be left off of one side if the platform is at least 18 inches wide.

**EXCEPTION:** When things regularly have to be passed over the edge of the floor, as in hay storage, there is no requirement for the intermediate railing and toeboard. This exception applies also where the railing is set back from the edge 12 inches or more. There is no requirement for any railing when the employer can show that it creates a greater hazard than working without one.

(b) Runways must have a standard railing (or the equivalent from OAR 437-004-0320(6)(c)) on all open sides 4 feet or more above floor or ground level. Where the use of tools, machine parts, or materials on the runway is likely, there must be a toeboard on each exposed side.

**NOTE:** Runways exclusively for special purposes may omit the railing on one side when operating conditions make it necessary, if the runway is at least 18 inches wide. Where persons entering runways have exposure to machinery, electrical equipment, or other dangers, additional guarding may be required for protection.

(c) Regardless of height, open-sided floors, walkways, platforms, or runways above or adjacent to dangerous equipment must have a standard railing and toeboard.

(5) Stairway railings and guards.

(a) Stairs with four or more risers must have standard stair railings or standard handrails from (A) through (E) below. Measure the width of the stairs clear of all obstructions except handrails:

(A) On stairways less than 44 inches wide with both sides enclosed, at least one handrail, preferably on the right side descending.

(B) On stairways less than 44 inches wide with one side open, at least one stair railing on open side.

(C) On stairways less than 44 inches wide with both sides open, one stair railing on each side.

(D) On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one stair railing on each open side.

(E) On stairways 88 or more inches wide, one handrail on each enclosed side, one stair railing on each open side, and one intermediate stair railing approximately midway of the width.

(b) Winding stairs must have a handrail offset to prevent walking on any treads less than 6 inches wide.

(6) Railing, toeboards, and cover specifications.

(a) A standard railing must have a top rail, intermediate rail, and posts, and must be between 36 and 44 inches high from the upper surface of the top rail to the walking surface. The top rail must be smooth. The intermediate rail must be about halfway between the top rail and the floor, platform, runway, or ramp. The ends of the rails must not overhang the terminal posts except where such overhang is not a projection hazard.

(b) A stair railing must be similar to a standard railing but the height must be between 30 and 36 inches from upper surface of top rail to surface of tread in line with face of the riser at the forward edge of tread.

(c)(A) For wood railings, the posts must be at least 2-inch by 4-inch stock spaced not to exceed 6 feet; the top and intermediate rails must be at least 2-inch by 4-inch stock. If top rail is made of two right-angle pieces of 1-inch by 4-inch stock, posts may be spaced on 8-foot centers, with 2-inch by 4-inch intermediate rail.

(B) For pipe railings, posts and top and intermediate railings must be at least 1-1/2 inches nominal diameter with posts spaced not more than 8 feet on center.

(C) For structural steel railings, posts and top and intermediate rails must be of 2-inch by 2-inch by 3/8-inch angles or other metal shapes of equivalent bending strength with posts spaced not more than 8 feet on center.

(D) The anchoring of posts and framing of members for railings of all types must be strong enough that the completed structure can withstand a load of at least 200 pounds applied in any direction at any point on the top rail.

(E) Other types, sizes, and arrangements of railing construction are acceptable if they meet the following conditions:

(i) A smooth-surfaced top rail at a height above floor, platform, runway, or ramp level of 42 inches nominal;

(ii) A strength to withstand at least the minimum requirement of 200 pounds top rail pressure;

(iii) Protection between top rail and floor, platform, runway, ramp, or stair treads, equivalent at least to that afforded by a standard intermediate rail.

(d) A standard toeboard must be 4 inches nominal in height from its top edge to the level of the floor, platform, runway, or ramp. It must be securely fastened in place and with not more than 1/4-inch clearance above floor level. It may be made of any material either solid or with openings not more than 1 inch in greatest dimension. Where material can fall through the space between the standard toeboard and mid rail, there must be paneling or screen from floor to the mid rail. If material can fall through the space between the mid rail and top rail, there also must be paneling or screen there.

(e)(A) A handrail must have a lengthwise member mounted directly on a wall or partition. Mounting brackets must attach to the lower side of the handrail so that the top and sides are smooth. The handrail must furnish an adequate handhold for anyone grasping it to avoid falling.

(B) The height of handrails must be 30 to 34 inches from upper surface of handrail to surface of tread in line with face of a riser or to surface of the ramp.

(C) Hardwood handrails must be at least 2 inches in diameter. Metal pipe handrails must be at least 1-1/2 inches in diameter. Brackets must be long enough to give at least 1-1/2 inches clearance between handrail and wall. Bracket spacing must be not more than 8 feet.

(D) Handrails must be able to withstand a load of at least 200 pounds applied in any direction at any point on the rail.

(f) All handrails and railings must have a clearance of at least 1-1/2 inches between the handrail or railing and any other object.

(g) Floor opening covers may be of any material that meets the following strength requirements:

(A) Trench or conduit covers and their supports must be able to stand a truck rear-axle load of at least 20,000 pounds if they are where vehicles can pass over them.



(B) Floor opening covers may be made of any material strong enough to handle the load. Covers may project not more than 1 inch above the floor level if all edges are beveled to an angle with the horizontal of not more than 30 degrees. All hinges, handles, bolts, or other parts must be flush with the floor or cover surface.

(h) Skylight screens must be capable of withstanding a load of at least 200 pounds applied perpendicularly on the screen. They must be strong enough that under ordinary loads or impacts, they will not deflect downward sufficiently to break the glass below them. Those with grillwork must have openings not more than 4 inches long. Those of slatwork must have openings not more than 2 inches wide with length unrestricted.

(i) Wall opening barriers (rails, rollers, picket fences, and half doors) must be capable of withstanding a load of at least 200 pounds applied in any direction (except upward) on the top rail or corresponding member.

(j) Wall opening grab handles must be not less than 12 inches long and mounted to give 3 inches clearance from the side framing of the wall opening. The size, material, and anchoring of the grab handle must be such that it can withstand a load of at least 200 pounds applied in any direction.

(k) Wall opening screens must be able to withstand a load of at least 200 pounds applied horizontally on the near side of the screen. They may be solid, grillwork with openings not more than 8 inches long, or slatwork with openings not more than 4 inches wide with length unrestricted.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0330**

##### **Fixed Industrial Stairs**

(1) Definitions. Unless otherwise stated, fixed industrial stair terms mean:

(a) Handrail. A single bar or pipe supported on brackets from a wall or partition, and used as a handhold for persons on stairs or ramps.

(b) Nose, nosing. That part of a tread projecting beyond the face of the riser.

(c) Open riser. The space between the treads of stairways without upright parts (risers).

(d) Platform. An extended step or landing breaking a continuous run of stairs.

(e) Railing. A vertical barrier along exposed sides of stairs and platforms to prevent people from falling. The top rail usually serves as a handrail.

(f) Rise. The vertical distance from the top of a tread to the top of the next higher tread.

(g) Riser. The upright part of a step at the back of a lower tread and near the leading edge of the next higher tread.

(h) Stairs, stairway. A set of steps with three or more risers, from one level or floor to another, or leading to platforms, pits or around machinery, tanks, and other equipment.

(i) Tread. The horizontal part of a step.

(j) Tread run. The horizontal distance from the leading edge of a tread to the leading edge of an adjacent tread.

(k) Tread width. The horizontal distance from front to back of tread including nosing.

(2) Application. This section has specifications for the safe design and construction of fixed stairs. This includes interior and exterior stairs around machinery, tanks, and other equipment, and stairs leading to or from floors, platforms, or pits. This section does not apply to stairs used for fire exits, private residences or articulated stairs, the angle of which changes with the rise and fall of the base support.

(3) Where fixed stairs are required. There must be fixed stairs where work requires regular travel between floors or levels, and access to operating platforms at any equipment that requires frequent attention. There also must be fixed stairs for daily access to elevations or for access at each shift for such purposes as inspection, regular maintenance, etc. There must be fixed stairs where work may expose employees to acids, caustics, gases, or other harmful sub-

stances, or where employees normally must carry tools or equipment by hand. (It is not the intent of this section to preclude using fixed ladders for access to elevated tanks, towers, and similar structures, etc., where their use is common practice.) Spiral stairs are not legal except for special limited use and secondary access situations where it is not practical to provide a conventional stairway. Winding stairs are acceptable on tanks and similar round structures where the diameter of the structure is at least five (5) feet.

(4) Stair strength. Fixed stairs must be able to carry a load of five times the normal live load anticipated but never less than a moving concentrated load of 1,000 pounds.

(5) Stair width. Fixed stairs must be at least 22 inches wide.

(6) Angle of stairway rise. Fixed stairs must be at angles to the horizontal of between 30° and 50°. Use any uniform combination of rise/tread dimensions that will result in stairs at an angle to the horizontal between 30° and 50°. Table 1 gives rise/tread dimensions that will produce stairs within this range. However, other allowable rise/tread combinations are possible. [Table not included. See ED. NOTE.]

(7) Stair treads. All treads must be slip-resistant and the nosings must be a nonslip finish. Welded bar grating treads without nosings are acceptable if the leading edge can be readily identified by people descending the stairs and if the tread is serrated or is of nonslip design. Rise height and tread width must be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs. Treads must not be loose. Replace or repair defective treads quickly.

(8) Stairway platforms. Stairway platforms must be no less than the width of the stairway and a minimum of 30 inches long measured in the direction of travel.

(9) Railings and handrails. There must be standard railings on the open sides of exposed stairs and stair platforms. There must be handrails on at least one side of closed stairs preferably on the right side going down. Stair railings and handrails must comply with OAR 437-004-0320.

(10) Vertical clearance. Vertical clearance above any stair tread to an overhead obstruction must be at least 6-1/2 feet measured from the leading edge of the tread.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001-654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0340**

##### **Portable Ladders**

(1) Definitions. Portable ladder terms mean:

(a) Check. A lengthwise separation of the wood, most of which occurs across the rings of annual growth.

(b) Compression failure. A deformation (buckling) of the fibers due to excessive compression along the grain.

(c) Decay. Disintegration of wood substance due to action of wood-destroying fungi. It is also known as rot and rot.

(d) Extension ladder. A nonself-supporting portable ladder of adjustable length. It has two or more sections that adjust to varied lengths.

(e) Extension trestle ladder. An adjustable, self-supporting portable ladder made of a trestle ladder base and a vertical extension section.

(f) Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

(g) Low density wood. Exceptionally light in weight and usually deficient in strength for the species.

(h) Platform ladder. A fixed length, self-supporting portable ladder with a platform at the highest permissible standing level.

(i) Platform. A landing surface for working or standing.

(j) Reinforced plastic. A plastic made stronger than its base by the addition of high strength fillers, usually fibers, fabrics or mats.

(k) Section.

(A) Bottom or base section. The lowest section of a nonself-supporting portable ladder.

(B) Middle or intermediate section. The section(s) between the top (fly) and bottom (base) sections of a nonself-supporting portable ladder.

(C) Top or fly section. The uppermost section of a nonself-supporting portable ladder.

(l) Sectional ladder. A nonself-supporting, fixed length, portable ladder, with two or more sections of ladder that may combine to work as a single ladder. Its size is the length of the assembled sections.

(m) Shake. A separation along the grain, most of which occurs between the rings of annual growth.

(n) Single section ladder. A fixed length, nonself-supporting portable ladder made of one section.

(o) Stepladder. A fixed length, self-supporting portable ladder with a hinged back.

(p) Top cap. The very top part of a stepladder.

(q) Top step. The first step below the top cap of a stepladder. If the ladder has no top cap, the top step is the first one below the top of the rails.

(r) Trestle ladder. A fixed length, self-supporting portable ladder made of two sections and hinged at the top. It can be climbed by two people at once, one per side.

(s) Wane. Bark, or the lack of wood from any cause, on the corner of a piece.

(t) Wood irregularities. Natural characteristics in or on wood that may lower its durability, strength, or utility.

(u) Working Load Rating. The maximum load authorized by the manufacturer for the ladder.

(2) Application. This standard covers the selection, use and care of portable ladders used in agriculture. It does not cover orchard ladders, special ladders, combination step and extension ladders, aisle way stepladders, and shelf ladders.

(3) Ladder selection. Portable reinforced plastic (fiberglass) ladders must comply with American National Standard A14.5-1992. Wood ladders must comply with American National Standard A14.1-1994. Metal ladders must comply with American National Standard A14.2-1990.

**NOTE:** Unaltered and properly maintained ladders that meet the ANSI standard in effect at the time of their manufacture comply with this standard as do ladders that comply with newer versions of the particular ANSI standard.

(4) Condition of wood ladders. There must be no sharp edges or splinters on wood parts. Visual inspection must show no check, shake, wane, compression failures, decay, or other wood irregularities. Ladders may not be made of low density wood.

(5) General requirements — all ladders.

(a) Step spacing must be uniform and not more than 12 inches. Steps must be parallel and level when the ladder is in the normal use position.

(b) All joints, attachments and working parts of ladders must be tight and not worn to a point that causes a hazard. Do not use ladders with damaged or bent parts.

(c) Replace frayed or badly worn rope.

(d) Safety feet and other auxiliary equipment must in good condition.

(e) Inspect ladders and remove from use any with defects. Ladders awaiting repair must be tagged, "Dangerous, Do Not Use."

(f) There can be no dents, breaks or bends in the side rails or rungs;

(g) Do not make ladders by fastening cleats across a single rail.

(h) Portable ladders must have nonslip bases.

(6) General requirements — portable stepladders.

(a) The minimum width between side rails at the top, inside to inside, must be not less than 11 1/2 inches. From top to bottom, the side rails must spread at least 1-inch for each foot of length of the stepladder.

(b) The bottoms of the four rails must have insulating nonslip material.

(c) There must be a metal spreader or locking device strong enough to hold the ladder open. The spreader must have no sharp points or edges. For Type III ladders, the pail shelf and spreader can be one unit (a shelf-lock ladder).

(7) Use — all ladders. Use ladders only for purposes approved or recommended by the manufacturer.

(a) Do not load ladders beyond their working load rating. Do not allow more than one person at a time on ladders not intended by the manufacturer to hold more than one person.

(b) Do not use ladders in front of doors that open toward the ladder without blocking, locking or guarding the door.

(c) Do not use ladders placed on boxes, barrels, or other unstable bases to obtain additional height.

(d) Do not use ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty parts.

(e) Do not splice sections of short ladders together to make a long one.

(f) When used, metal reinforcers must be on the underside of rails of portable rung ladders.

(g) A ladder for access to a roof must extend at least 3 feet above the top support point, at the eave, gutter, or roof line.

(h) Secure ladders as necessary when used on surfaces that may allow slipping or movement. Use one of the following methods:

(A) non-slip bases on the ladder feet; or,

(B) steel points or safety shoes on the ladder feet, designed for the type of surface the ladder is on; or

(C) nail the ladder to the floor, or set it against secured blocks or chocks.

**NOTE:** Non-slip bases are not a substitute for care in safely placing, lashing, or holding a ladder on oily, metal, concrete, or slippery surfaces.

(i) Use portable ladders only on a surface that gives stable, level footing.

(j) The climber must face the ladder and have free use of both hands when climbing up or down.

(k) Do not step or jump between erected ladders.

(l) There must be only one person at a time on a ladder unless its labeling specifically allows use by more than one person.

(m) Do not use ladders as planks or bridges between walking surfaces or in other horizontal applications.

(n) Do not use ladders to gain additional height from elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.

(o) Do not use metal ladders or wood ladders with vertical metal parts for electrical work or where they may contact electric conductors. This type ladder must have markings reading "WARNING — do not use around energized electrical equipment" or words of equal meaning.

(8) Use of specific types of ladders.

(a) Portable stepladders. Do not use stepladders more than 20 feet long.

(A) Do not climb on the back section of the ladder unless it has steps meant for climbing. Do not stand on the top step or top cap of stepladders.

(B) There must be only one person at a time on the ladder.

(C) Do not use stepladders in freestanding positions when not fully opened. Do not use them as supports for working platforms or scaffolding planks.

(b) Portable rung ladders.

(A) Single ladder.

(i) Do not use single ladders more than 30 feet long.

(ii) Place these ladders at an angle shown in Figure 1.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Single ladders are acceptable as fixed ladders only when they comply with 437-004-0360.

(B) Two-section ladder.

(i) Do not use two-section extension ladders more than 60 feet long. All ladders of this type must have two sections, one to fit within the side rails of the other, and arranged so that the upper section will raise and lower.

(ii) Set up and use extension ladders so that the top section or fly is resting on the bottom section or base. Rung locks must be in the proper position.

(iii) Place these ladders at an angle shown in **Figure 1**.

(iv) The tops must be tied down or secured if there is a possibility of sliding or movement.

(v) On two-section extension ladders the minimum overlap for the two sections in use must be as follows: [Figure not included. See ED. NOTE.]

(C) Sectional ladder.

(i) Do not use assembled combinations of sectional ladders longer than lengths allowed in this subdivision.

(ii) Place these ladders at an angle shown in **Figure 1**.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Do not use three section extension ladders longer than 72 feet.

(D) Trestle and extension trestle ladder. Do not use trestle ladders, or extension sections or base sections of extension trestle ladders more than 20 feet long.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-0350**

##### **Orchard Ladders**

Definition: Orchard Ladder. A self-supporting portable tripod ladder of fixed length. It has two front side rails and a single back support leg.

(1) Application. This covers the maintenance, use and care of orchard ladders.

(2) Maintenance.

(a) Each step of wooden orchard ladders must have these reinforcements:

(A) A steel rod not less than 0.160 inch in diameter, that passes through metal washers big enough to prevent pressing into the side rails, and through a truss block between the rod and the center of each step; or

(B) A metal angle brace on each end firmly secured to the steps and side rails; or

(C) Construction of equivalent strength and safety.

(b) If the ladder has rod reinforcement, the bottom step must also have a metal angle brace on each end securely attached to the bottom step and side rails.

(c) All steps 27 inches or longer must have a metal angle brace at each end securely attached to the step and rail.

(d) The minimum width between side rails at the highest step for standing, inside to inside, is 9-1/2 inches. From top to bottom the side rails must spread at least an average of 2-1/2 inches for each foot of ladder length.

(e) All orchard ladders must have a top with tightly secured wood or metal brackets or fittings, side rails and back leg. The back leg must swing freely without excessive play or wear at the joints.

(f) Do not make ladders by fastening cleats across a single rail.

(g) There must be no dents, breaks or bends in the side rails or rungs.

(3) Training.

(a) Prior to assigning an employee to work with orchard ladders, the employer must assure that they have the necessary skills and knowledge to use the ladder safely; or

(b) The employer must train new employees about the requirements of this standard and the special procedures and cautions associated with using an orchard ladder.

(4) Use and care.

(a) Do not use orchard ladders longer than 16 feet.

(b) Do not use the top as a step.

(c) Do not allow more than one person at a time on ladders.

(d) Do not step or jump between two or more erected ladders.

(e) Do not use ladders to gain additional height from already elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.

(f) Inspect ladders before each use. Do not use any with defects, loose, warped, bent or broken parts. Tag these ladders, "Dangerous, Do Not Use" until they are fixed.

(g) Do not use metal ladders or wood ladders with vertical metal parts for electrical work or where they may contact electric con-

ductors. This type ladder must have markings reading "WARNING — do not use around energized electrical equipment" or words of equal meaning.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0360**

##### **Fixed Ladders**

(1) Definitions. Fixed ladder terms mean:

(a) Cage. A guard sometimes referred to as a basket guard that is an enclosure fastened to the side rails of a fixed ladder or to a structure to encircle the climbing space of the ladder.

(b) Cleats. Ladder cross-pieces of rectangular cross-section placed on edge on which a person may step when climbing up or down.

(c) Fastenings. A device to attach a ladder to a structure, building, or equipment.

(d) Fixed ladder. A ladder permanently attached to a structure, building, or equipment.

(e) Grab bars. Individual handholds adjacent to or as an extension above ladders to provide access beyond the limits of the ladder.

(f) Individual-rung ladder. A fixed ladder with each rung individually attached to a structure, building, or equipment.

(g) Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

(h) Ladder safety device. Any device, other than a cage or well, designed to eliminate or reduce the possibility of accidental falls, that may use life belts, friction brakes, and sliding attachments.

(i) Pitch. The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

(j) Rail ladder. A fixed ladder with side rails joined at regular intervals by rungs or cleats and fastened in full length or in sections to a building, structure, or equipment.

(k) Railings. Any one or a combination of those railings made according to OAR 437-004-0320. A standard railing is a vertical barrier along exposed edges of walking surfaces to prevent people from falling.

(l) Rungs. Ladder cross-pieces of circular or oval cross-section on which a person may step when climbing up or down.

(m) Side-step ladder. One from which a person getting off at the top must step sideways to reach the landing.

(n) Steps. The flat cross-pieces of a ladder on which a person may step when climbing up or down.

(o) Through ladder. A ladder from which a person getting off at the top must step through to reach the landing.

(p) Well. A permanent complete enclosure around a fixed ladder, that is attached to the walls of the well. Proper clearances for a well will give the climber the same protection as a cage.

(2) Design requirements. Design considerations: All ladders, appurtenances, and fastenings must meet these load requirements:

(a) The minimum design live load must be a single concentrated load of 200 pounds.

(b) Design consideration must include the number and position of additional concentrated live load units of 200 pounds each as determined from anticipated use.

(c) Consider the live loads caused by persons on the ladder to be concentrated at such points as will cause the maximum stress in the structural member being under evaluation.

(d) Use the weight of the ladder and attachments together with the live load when designing rails and fastenings.

(e) All wood parts of fixed ladders must meet the requirements of OAR 437-004-0340(3).

(f) For fixed ladders with wood side rails and wood rungs or cleats, used at an angle between 75° and 90°, and intended for use by no more than one person per section, single ladders in OAR 437-004-0340(8)(b)(A) are acceptable.

(3) Specific features.

(a) Rungs and cleats.



(A) All rungs must have a minimum diameter of 3/4 inch for metal ladders, except as in paragraph OAR 437-004-0360(3)(g)(A) and a minimum diameter of 1-1/8 inches for wood ladders.

(B) The distance between rungs, cleats, and steps must be uniform and not more than 12 inches.

(C) The minimum clear length of rungs or cleats must be 16 inches.

(D) Rungs, cleats, and steps must not have splinters, sharp edges, burrs, or projections.

(E) The rungs of an individual rung ladder must not allow the climber's foot to slide off the end. Figure 2 shows a suggested design. [Figure not included. See ED. NOTE.]

(b) Side rails. Side rails that might be used as a climbing aid must be of such cross sections as to afford adequate gripping surface without sharp edges, splinters, or burrs.

(c) Fastenings. Fastenings must be an integral part of fixed ladder design.

(d) Splices. All splices must meet design requirements noted in (a) above. All splices and connections must have smooth transition with original members and no sharp or extensive projections.

(e) Electrolytic action. Protect dissimilar metals from electrolytic action when they are joined.

(f) Welding. All welding must be according to the "Code for Welding in Building Construction" (AWS D1.0-1966).

(g) Protection from deterioration. Paint or treat metal ladders and attachments to resist corrosion and rusting when necessary. Ladders with individual metal rungs imbedded in concrete, that serve as access to pits and to other areas under floors, must have rungs with a minimum diameter of 1 inch or paint or treatment to resist corrosion and rusting.

(4) Clearance. [Figure not included. See ED. NOTE.]

(a) Climbing side. On fixed ladders, the perpendicular distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder must be 36 inches for a pitch of 76°, and 30 inches for a pitch of 90° (fig. 3), with minimum clearances for intermediate pitches varying between these two limits in proportion to the slope, except as in (4)(c) and (e) below.

(b) Ladders without cages or wells. There must be a clear width of at least 15 inches each way from the centerline of the ladder in the climbing space, except when cages or wells are necessary.

(c) Ladders with cages or baskets. Subparagraphs (4)(a) and (b) above do not cover ladders with a cage or basket. They must conform to (5)(a)(E). Subparagraph (4)(a) above does not cover fixed ladders in smooth-walled wells. They must conform to (5)(a)(F).

(d) Clearance in back of ladder. The distance from the centerline of rungs, cleats, or steps to the nearest permanent object in back of the ladder must be not less than 7 inches, except that when there are unavoidable obstructions, there must be minimum clearances shown in Figure 4. [Figure not included. See ED. NOTE.]

(e) Clearance in back of grab bar. The distance from the centerline of the grab bar to the nearest permanent object in back of the grab bars must be not less than 4 inches. Grab bars must not protrude on the climbing side beyond the rungs of the ladder that they serve.

(f) Step-across distance. The step-across distance from the nearest edge of the ladder to the nearest edge of equipment or structure must be not more than 12 inches, or less than 2-1/2 inches (fig. 5). [Figure not included. See ED. NOTE.]

(g) Hatch cover. Counterweighted hatch covers must open a minimum of 60° from the horizontal. The distance from the centerline of rungs or cleats to the edge of the hatch opening on the climbing side must be not less than 24 inches for offset wells or 30 inches for straight wells. There must be no protruding potential hazards within 24 inches of the centerline of rungs or cleats; any such hazards within 30 inches of the centerline of the rungs or cleats must have deflector plates at an angle of 60° from the horizontal as shown in figure 6. The relationship of a fixed ladder to an acceptable counterweighted hatch cover is shown in figure 7. [Figures not included. See ED. NOTE.]

(5) Special requirements.

(a) Cages, Wells and Ladder Climbing Safety systems.

(A) Cages, wells or ladders climbing safety systems must be on all ladders (except chimneys) where the length of climb is more than 24 feet but not more than 50 feet or the top of the ladder is more than 24 feet above the ground or nearest lower landing surface.

NOTE: Design specifications for cages and wells are in Figures 8, 9 and 10.

(B) Ladders with a length of climb more than 50 feet (except chimneys) must have a cage, well or climbing safety system and must meet one of the following two requirements:

(i) When using a cage or well the ladder must be in sections, horizontally offset, with real platforms at least every 50 feet.

(ii) When using a climbing safety system the ladder must have rest platforms at least every 150 feet. [Figure not included. See ED. NOTE.]

(C) Cages must extend at least 42 inches above the top of the landing, unless there is other acceptable protection.

(D) Cages must extend down the ladder to a point not less than 7 feet nor more than 8 feet above the base of the ladder. The bottom must flare not less than 4 inches or a portion of the cage opposite ladder must extend to the base.

(E) Cages must not extend less than 27 nor more than 28 inches from the center line of the rungs of the ladder. Cages must not be less than 27 inches in width. The inside must be clear of projections. Vertical bars must be at a maximum spacing of 40 degrees around the circumference of the cage; this will give a maximum spacing of approximately 9-1/2 inches, center to center.

(F) Ladder wells must have a clear width of at least 15 inches measured each way from the center line of the ladder. Smooth-walled wells must be a minimum of 27 inches from the center line of rungs to the well wall on the climbing side of the ladder. Where other obstructions on the climbing side of the ladder exist, there must be a minimum of 30 inches from the centerline of the rungs. [Figures not included. See ED. NOTE.]

(b) Landing platforms.

(A) Where a person has to step a distance more than 12 inches from the center line of the rung of a ladder to the nearest edge of a structure or equipment, there must be a landing platform. The minimum step-across distance is 2-1/2 inches.

(B) All landings must have standard railings and toeboards, that give safe access to the ladder. Platforms must be not less than 24 inches wide and 30 inches long.

(C) One rung of any section of ladder must be at the level of the landing laterally served by the ladder. Where access to the landing is through the ladder, the rung spacing from the landing platform to the first rung below the landing must be the same as on the ladder.

(c) Ladder extensions. The side rails of through or side step ladder extensions must extend 3-1/2 feet above parapets and landings. For through ladder extensions, omit the rungs from the extension. There must be not less than 18 nor more than 24 inches clearance between rails. For side step or offset fixed ladder sections, at landings, the side rails and rungs must extend to the next regular rung beyond or above the 3-1/2 foot minimum (fig.11). [Figure not included. See ED. NOTE.]

(d) Grab bars. Space grab bars by a continuation of the rung spacing when they are horizontal. Vertical grab bars must have the same spacing as the ladder side rails. Grab bar diameters must be the equivalent of the round rung diameters.

(6) Pitch.

(a) Preferred pitch. The preferred pitch of fixed ladders is between 75° and 90° with the horizontal (fig. 12). [Figure not included. See ED. NOTE.]

(b) Substandard pitch. Fixed ladders are substandard if they are between 60° and 75° with the horizontal. Substandard fixed ladders are allowed only where necessary to meet conditions of installation.

(c) Scope of coverage in this section. This section covers only fixed ladders between 60° and 90° with the horizontal.

(d) Pitch more than 90°. No ladder may be more than 90° with the horizontal.

(7) Maintenance. All ladders must be in safe condition. Inspect ladders at intervals determined by use and exposure.

[ED. NOTE: Figures referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

**437-004-0370****Scaffolding**

- (1) Scope. This section has safety requirements for scaffolds.
- (2) Definitions. Scaffolding terms mean:
  - (a) Bearer. A horizontal part of a scaffold on which the platform rests and which may use ledgers as support.
  - (b) Boatswain's chair. A seat supported by slings attached to a suspended rope, designed to accommodate one worker in a sitting position.
  - (c) Brace. A tie that holds one scaffold part in a fixed position with respect to another.
  - (d) Crawling board or chicken ladder. A plank with cleats spaced and secured at equal intervals, for use on roofs, not designed to carry any material.
  - (e) Double pole or independent pole scaffold. A scaffold supported from the base by a double row of uprights, independent of support from the walls and constructed of uprights, ledgers, horizontal platform bearers, and diagonal bracing.
  - (f) Guardrail. A rail secured to uprights that run along the exposed sides and ends of platforms.
  - (g) Heavy duty scaffold. A scaffold built to carry a working load of not more than 75 pounds per square foot.
  - (h) Horse scaffold. A scaffold for light or medium duty, made of horses supporting a work platform.
  - (i) Ladder jack scaffold. A light duty scaffold supported by brackets attached to ladders.
  - (j) Ledger (stringer). A horizontal scaffold member that extends from post to post and supports the putlogs or bearer forming a tie between the posts.
  - (k) Light duty scaffold. A scaffold built to carry a working load not more than 25 pounds per square foot.
  - (l) Manually propelled mobile scaffold. A portable rolling scaffold mounted on casters.
  - (m) Maximum intended load. The total of all loads including the working load, the weight of the scaffold, and such other loads as may be reasonably anticipated.
  - (n) Medium duty scaffold. A scaffold built to carry a working load not more than 50 pounds per square foot.
  - (o) Mid-rail. A rail approximately midway between the guardrail and platform and secured to the uprights along the exposed sides and ends of platforms.
  - (p) Putlog. A scaffold part on which the platform rests.
  - (q) Roofing bracket. A bracket used in sloped roof construction. It has a way for fastening to the roof or is supported by ropes fastened over the ridge and secured to some suitable object.
  - (r) Runner. The lengthwise horizontal bracing or bearing parts or both.
  - (s) Scaffold. Any temporary elevated platform and its supporting structure used for supporting workers or materials or both.
  - (t) Single pole scaffold. Platforms resting on putlogs or cross-beams, the outside ends of which are on ledgers secured to a single row of posts or uprights and the inner ends of which are on or in a wall.
  - (u) Toeboard. A barrier secured along the sides and ends of a platform, to keep material from falling.
  - (v) Tubular welded frame scaffold. A sectional, panel, or frame metal scaffold made of prefabricated welded sections, that has posts and bearers with intermediate connecting members, braced with diagonal or cross braces.
  - (w) Working load. Load imposed by workers, material and equipment.
- (3) General requirements for all scaffolds.
  - (a) The footing or anchorage for scaffolds must be sound, rigid, and able to carry the maximum intended load without settling or displacement. Do not use unstable objects such as barrels, boxes, loose brick, or concrete blocks to support scaffolds or planks.
  - (b) Scaffolds and their components must be able to support at least four times the maximum intended load.

- (c) Scaffolds and other devices mentioned here must be in safe condition. Do not alter or move an occupied stationary scaffold.
- (d) Remove from use any damaged or weakened scaffold until repairs are done.
- (e) Do not overload scaffolds. Follow manufacturers' instructions.
- (f) Loaded planks or platforms must not deflect more than 1/60th of the span (2 inches in 10 feet).
- (g) Nails or bolts used to make scaffolds must be strong enough and in sufficient numbers at each connection to assure the designed strength of the scaffold. Do not subject nails to a straight pull. Drive all nails completely.
- (h) Overlap all planking or platforms (minimum 12 inches) or secure them from movement.
- (i) There must be a ladder or equivalent safe access.
- (j) Scaffold planks must extend over their end supports not less than 6 inches nor more than 18 inches.
- (k) The poles, legs, or uprights of scaffolds must be plumb, and securely and rigidly braced to prevent swaying and displacement.
- (l) Use a tag line when hoisting materials onto a scaffold.
- (m) There must be overhead protection for employees exposed to overhead hazards.
- (n) If persons work or pass under the scaffolds there must be a screen between the toeboard and the guardrail, along the entire opening. The screen must be No. 18 gauge U.S. Standard Wire 1/2-inch mesh or the equivalent.
- (o) Employees must not work on scaffolds during storms or high winds.
- (p) Employees must not work on scaffolds covered with ice or snow or that have slippery surfaces.
- (q) Accumulations of tools, materials, and debris must not cause a hazard.
- (r) Wire or fiber rope for scaffold suspension must be able to support at least six times the intended load.
- (s) Do not use shore scaffolds or lean-to scaffolds.
- (t) Lumber sizes, used here, refer to nominal sizes except where otherwise stated.
- (u) Use anchor bolts, reveal bolts, or other equivalent means to secure scaffolds to permanent structures. Do not use window cleaners' anchor bolts.
- (v) Take special precautions to protect scaffold members, including any wire or fiber ropes, when using a heat-producing process.
- (4) General requirements for wood pole scaffolds.
  - (a) Scaffold poles must be plumb and on a foundation that prevents settling.
  - (b) Where wood poles are spliced, the ends must be square and the upper section must rest squarely on the lower section. There must be wood splice plates, at least 4 feet long, on at least two adjacent sides and overlapping the abutted ends equally. These plates must be the same width as the pole. Splice plates of other materials of equivalent strength are acceptable.
  - (c) Set independent pole scaffolds as near to the wall of the building as practicable.
  - (d) Guy or tie pole scaffolds to the building or structure. If they are more than 25 feet high or long, secure them at intervals not more than 25 feet vertically and horizontally.
  - (e) Set putlogs or bearers with their greater dimensions vertical, long enough to project over the ledgers of the inner and outer rows of poles at least 3 inches for proper support.
  - (f) Reinforce every wooden putlog on single pole scaffolds with a 3/16 x 2-inch steel strip or equivalent secured to its lower edge throughout its length.
  - (g) Ledgers must be long enough to extend over two pole spaces. Do not splice ledgers between the poles. Reinforce ledgers with bearing blocks securely nailed to the side of the pole to form a support for the ledger.
  - (h) Use diagonal bracing to prevent the poles from moving in a direction parallel with the wall of the building, or from buckling.

(i) Use cross bracing between the inner and outer sets of poles in independent pole scaffolds. Cross brace the free ends of pole scaffolds.

(j) There must be full diagonal face bracing across the entire face of pole scaffolds in both directions. Splice the braces at the poles.

(k) Lay platform planks with their edges close together so the platform will be tight with no spaces through which tools or material can fall.

(l) When lapped, each plank must lap its end supports at least 12 inches. Where the ends of planks abut each other to form a flush floor, the butt joint must be at the centerline of a pole. Rest abutted ends on separate bearers. Use intermediate beams where necessary to prevent dislodgment of planks due to deflection. Nail or cleat the ends to prevent their dislodgment.

(m) When a scaffold turns a corner, lay the platform planks to prevent tipping. The planks that meet the corner putlog at an angle must be laid first, extending over the diagonally placed putlog far enough to have a safe bearing, but not far enough to involve any danger from tipping. The planking running in the opposite direction at right angles must be laid to extend over and rest on the first layer of planking.

(n) When moving platforms to the next level, leave the old platform undisturbed until the new putlogs or bearers are in place.

(o) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The mid-rail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph OAR 437-004-0370(3)(o).

(p) All wood pole scaffolds 60 feet or less in height must be built according to tables 1 through 6. If they are more than 60 feet high, a registered professional engineer must design them. A copy of the typical drawings and specifications must be available to the employer and for inspection purposes. [Tables not included. See ED. NOTE.]

(5) Tubular welded frame scaffolds.

(a) Metal tubular frame scaffolds, including accessories such as braces, brackets, trusses, screw legs, ladders, etc., must be able to safely support four times the maximum intended load.

(b) Spacing of panels or frames must be consistent with the loads imposed.

(c) Scaffolds must have cross bracing or diagonal braces, or both, to secure vertical members together laterally. The cross braces must be long enough to automatically square and align vertical members so that the erected scaffold is always plumb, square, and rigid. All brace connections must be secure.

(d) Scaffold legs must be on adjustable bases or plain bases on mud sills or other foundations adequate to support the maximum intended load.

(e) The frames must be one on top of the other with coupling or stacking pins to provide proper vertical alignment of the legs.

(f) Where uplift may occur, lock panels together vertically with pins or other equivalent means.

(g) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The mid-rail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph OAR 437-004-0370(3)(o).

(h) All tubular metal scaffolds must be able to support four times the maximum intended loads.

(i) To prevent movement, secure the scaffold to the building or structure at intervals not more than 30 feet horizontally and 26 feet vertically.

(j) Maximum permissible spans of planking must conform with paragraph OAR 437-004-0370(3)(g).

(k) A registered professional engineer must design drawings and specifications for frame scaffolds more than 125 feet high above the base plates. Copies must be available to the employer and for inspection purposes.

(l) Only competent and experienced personnel may set up tubular welded frame scaffolds.

(m) Frames and accessories for scaffolds must be in good repair. Remove them from use until they have no defects, unsafe conditions and are in compliance with this section. Do not use any broken, bent, excessively rusted, altered, or otherwise structurally damaged frames or accessories.

(n) Make periodic inspections of all welded frames and accessories. Complete any maintenance, including painting, or minor corrections recommended by the manufacturer, before further use.

(6) Boatswain's chairs.

(a) The chair seat must be not less than 12 by 24 inches, and 1-inch thick. Use a seat with reinforcement on the underside to prevent the board from splitting.

(b) The two fiber rope seat slings must be 5/8-inch diameter, reeved through the four seat holes to cross each other on the underside of the seat.

(c) Seat slings must be at least 3/8-inch wire rope when a worker is using a heat producing process such as gas or arc welding.

(d) Protect the worker with a safety life belt and lifeline attached to substantial members of the structure (not the scaffold), or to securely rigged lines, that will safely suspend the worker in case of a fall.

(e) The tackle must have the correct size ball bearing or bushed blocks and properly spliced 5/8-inch diameter first-grade manila.

(f) The roof irons, hooks, or the object to which the tackle is anchored must be secure. Tiebacks, when used, must be at right angles to the face of the building and securely fastened to a chimney.

(7) Horse scaffolds.

(a) Horse scaffolds must not be more than two tiers or 10 feet high.

(b) The members of the horses must be not less than those in Table 7. [Table not included. See ED. NOTE.]

(c) Space horses not more than 5 feet for medium duty and not more than 8 feet for light duty.

(d) When arranged in tiers, each horse must be directly over the horse in the tier below.

(e) On all scaffolds arranged in tiers, nail the legs to the planks to prevent displacement or thrust and cross brace each tier.

(f) Do not use horses or parts that are weak or defective.

(g) Install guardrails, 2 x 4 inches or the equivalent, between 36 inches and 42 inches high at all open sides on all scaffolds more than 10 feet above the ground or floor. The midrail, when required, must be 1 x 4-inch lumber or equivalent, and there must be toeboards at least 4 inches high. Use wire mesh according to paragraph OAR 437-004-0370(3)(o).

(8) Ladder-jack scaffolds.

(a) All ladder-jack scaffolds are only for light duty and may not be more than 20 feet above the floor or ground.

(b) All ladders used with ladder-jack scaffolds must be heavy-duty and designed and constructed according to 437-004-0340.

(c) The ladder jack must bear on the side rails in addition to the ladder rungs, or if bearing on rungs only, the bearing area must be at least 10 inches on each rung.

(d) To prevent slipping, use special devices, secure placement or anchor ladders used with ladder jacks.

(e) The wood platform planks must be not less than 2 inches (nominal) thick. Both metal and wood platform planks must overlap the bearing surface not less than 12 inches. The span between supports for wood must be not more than 8 feet. The platform must be at least 18 inches wide.

(f) Not more than two persons may be on any given 8 feet of a ladder-jack scaffold at one time.

(9) Roofing brackets.

(a) Roofing brackets must fit the pitch of the roof.

(b) Nail brackets in place in addition to using the pointed metal projections. Drive the nails all the way into the roof. When using rope supports, they must be first-grade manila of at least 3/4-inch diameter, or equivalent.



(c) A substantial catch platform must be below the working area of roofs more than 20 feet from the ground to eaves with a slope more than 3 inches in 12 inches and no parapet. In width the platform must extend 2 feet beyond the projection of the eaves and have a safety rail, midrail, and toeboard. This does not apply where employees are using a personal fall protection system.

(10) Crawling boards or chicken ladders.

(a) Crawling boards must be not less than 10 inches wide and 1 inch thick, with 1 x 1-1/2 inch cleats. The cleats must be equal in length to the width of the board and spaced at equal intervals not more than 24 inches. Drive nails through and clinch them on the underside. The crawling board must extend from the ridge pole to the eaves when used with roof construction, repair, or maintenance.

(b) A firmly fastened lifeline of at least 3/4-inch rope must be strung beside each crawling board for a handhold.

(c) Use adequate ridge hooks or equivalent effective means to secure crawling boards to the roof.

(11) Manually propelled mobile scaffolds.

(a) The height of free-standing mobile scaffold towers must not be more than four times the smallest base dimension.

(b) Casters must be able to support four times the maximum intended load. All casters must have a positive locking device.

(c) Scaffolds must have cross bracing and horizontal bracing.

(d) Platforms must have tight planking for the full width of the scaffold except for necessary entrance opening. Platforms must not be free to move.

(e) There must be a fixed or built-in ladder or stairway for access and exit.

(f) Move the mobile scaffold by force applied near or as close to the base as practicable. Keep the scaffold stable during movement. Move scaffolds only on level floors with no obstructions or openings.

(g) Workers may not ride on manually propelled scaffolds unless the following conditions exist:

(A) The floor or surface is within 3 degrees of level, and free from pits, holes, or obstructions;

(B) The smallest dimension of the scaffold base is at least one-half of the height. If it has outriggers, they must be on both sides of the staging;

(C) The wheels have rubber or similar resilient tires.

(h) Scaffolds must rest upon a suitable footing and be plumb. Lock the casters or wheels to prevent unintended movement.

(i) Guardrails made of lumber, not less than 2 X 4 inches (or other material providing equivalent protection), between 39 and 42 inches high, with a midrail and toeboards, must be on all open sides and ends of scaffolds more than 10 feet above the ground or floor. Toeboards must be at least 4 inches high. If people may pass under the scaffold, use wire mesh between the toeboard and top of the guardrail.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0380**

##### **Manually Propelled Mobile Ladder Stands and Scaffolds (Towers)**

Standards for the use of mobile work platforms and scaffolds are found in division 2, subdivision D, 1910.29 which applies to agricultural places of employment.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0390**

##### **Other Working Surfaces**

(1) Dockboards (bridge plates).

(a) Use bridge plates over any gap of more than 4 inches between two surfaces.

(b) Portable and powered dockboards must be strong enough to carry the load imposed on them.

(c) Anchor portable dockboards or use devices that prevent them from slipping.

(d) Powered dockboards must comply with Commercial Standard CS202-56 (1961) "Industrial Lifts and Hinged Loading Ramps" published by the U.S. Department of Commerce.

(e) Portable dockboards must have handholds or other ways to allow safe handling.

(f) There must be positive protection to prevent railroad cars from moving while dockboards or bridge plates are in position.

(g) Bridgeplates must be able to carry four times the heaviest expected load.

(h) Bridgeplates must sit evenly on the surface at each end. Repair or replace plates that teeter or rock.

(2) Floors.

(a) Floors, floor supports, and required appurtenances must be in good repair.

(b) Floors must not be slippery.

(3) Ramps and runways.

(a) Ramps and runways must be in safe condition.

(b) Ramps and runways for vehicles must be wide enough and have an even surface. They must have timber guards of not less than nominal 6-inch by 6-inch material set on nominal 3 inch blocks, or the equivalent, secured to the sides of the ramp or runway.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0405**

##### **Exits and Emergency Action Plan**

(1) Application. This does not apply to agricultural labor housing, agricultural buildings or mobile workplaces, such as vehicles or vessels. This applies to non-agricultural type buildings like offices and warehouses where employees spend most of their work time.

(2) Definitions.

(a) Exit. The part of the exit route, separate from other areas, that is a protected way out of a work area.

(b) Exit route. A continuous, unobstructed path from anywhere in a work area to a safe outside place. Exit routes are three dimensional.

(3) General.

(a) There must be permanent, unobstructed exit routes to get out of work areas safely during emergencies.

(b) There must be two or more exit routes depending on the size and layout of the work area and the number of people involved. A single exit route is acceptable only if all workers can get out through it safely during an emergency. Locate multiple exit routes apart from each other.

(4) Design.

(a) There must be a clear and unobstructed access and exit to any location more than 4 feet above or below the floor. Access may be by a ladder, stairs or ramp that complies with these standards.

(b) There must be unobstructed access to exit routes.

(A) Exit routes must not pass through or into lockable rooms or dead ends.

(B) Exit routes must be mostly level or have stairs or ramps.

(c) Exits must open from the inside without keys, tools or special knowledge. Devices that lock only from the outside are acceptable. There must be nothing on an exit door that could hinder its use during an emergency.

(d) An exit route must be able to handle the maximum number of persons allowed in the area it serves. Exit capacity must not decrease if the direction of travel changes.

(e) Exit routes must be at least 6 feet 8 inches high at all points.

(f) Exit routes must be at least 28 inches wide between handrails and wider if needed to handle the expected occupant load.

(g) Nothing can project into an exit route that reduces its minimum height or width.

(h) Exit routes must minimize danger to workers during emergencies.

(i) Exit routes must have adequate lighting.

(5) Marking.

(a) There must be exit signs at all emergency exits, except those that are obviously and clearly identifiable. Install additional directional signs to exits where necessary.

(b) If workers could mistake a nonexit for an exit, mark it, "Not an Exit" or mark it to indicate its real use.

(6) Special situations.

(a) Exit doors serving hazardous areas must swing in the direction of exit and open in a way that does not obstruct exit passageways. Do not allow anything to obstruct or prevent the use of an exit. During fire or panic, it must be easy to open all escape exit doors and windows from the inside.

(b) Rooms subject to extremes in temperature or with toxic atmospheres must have at least one door that opens from the inside. If this door is lockable from the outside, lighting and a set of instructions for opening the door must be inside the room on or near the door. It must be easy to find equipment needed to open the door from the inside. Also, inside the room there must be a way to communicate or a control that operates an alarm outside the building, or if other employees are on duty 24 hours a day, outside the room.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

### **437-004-0450**

#### **Emergency Action Plan**

(1) The plan must be in writing, be kept in the work place and be available to employees. Employers with fewer than 11 permanent, year-around workers may have a verbal plan.

(2) An emergency action plan must include:

(a) Procedures for reporting a fire or other emergency;

(b) Procedures for emergency operation or shut down of critical equipment;

(c) Procedures for rescue and medical duties; and

(d) Names or job titles of employees to contact to get more information about the duties of employees under the plan.

(3) There must be a communication system to alert employees or an employee alarm system with a distinctive signal for each purpose.

(4) The employer must review the emergency action plan with each covered employee:

(a) When the plan is new or the employee is new to the job;

(b) When the employee's responsibilities under the plan change; and

(c) When the plan changes.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

### **437-004-0570**

#### **Manlifts**

(1) Application. Manlifts covered here have platforms or brackets and handholds mounted on or attached to an endless belt that runs vertically in one direction only. Its support and drive are through top and bottom pulleys. Manlifts are for moving people only. This does not cover moving stairways, elevators with enclosed platforms ("Paternoster" elevators), gravity lifts nor conveyors used only to convey material.

(2) Definitions.

(a) Closed type. A cup-shaped device, open at the top in the direction of travel, and closed at the bottom.

(b) Handhold (Handgrip). A device attached to the belt for the passenger to hold.

(c) Limit switch. A device to cut off the power to the motor and apply the brake to stop the carrier when a loaded step passes the terminal landing.

(d) Manlift. A power-driven endless belt moving only in one direction and with steps or platforms and handholds for the transportation of personnel from floor to floor.

(e) Open type. One with a fully exposed handgrip surface that can be encircled by the passenger's fingers.

(f) Rated speed. The designed speed of the device.

(g) Split-rail switch. An electric limit switch operated mechanically by the rollers on the manlift steps. It has an additional hinged or "split" rail, mounted on the regular guide rail, over which the step rollers pass. It is spring loaded in the "split" position. If the step supports no load, the rollers will "bump" over the switch. If a loaded step passes over it, the split rail will be forced straight, tripping the switch and opening the electrical circuit.

(h) Step (platform). A step is a passenger carrying unit.

(i) Travel. The travel is the distance between the centers of the top and bottom pulleys.

(3) General requirements.

(a) Design requirements. Equipment installed after June 27, 1974 must comply with "American National Standard for Manlifts ANSI A90.1-1969."

(b) Floor openings.

(A) Allowable size. Floor openings for both the "up" and "down" runs must be between 28 inches and 36 inches wide for a 12-inch belt; between 34 inches and 38 inches wide for a 14-inch belt; and between 36 inches and 40 inches wide for a 16-inch belt. They must extend at least 24 inches, but not more than 28 inches from the face of the belt.

(B) Uniformity. All floor openings for a manlift must be the same size and approximately circular.

(c) Landing.

(A) Vertical clearance. The clearance between the floor or mounting platform and the lower edge for the conical guard above it required by (d) below must be at least 7 feet 6 inches. Do not allow access to the manlift if this clearance is not possible. Enclose the manlift runway where it passes through the floor.

(B) Clear landing space. Keep the landing space around the floor openings unobstructed and clear. This landing space will be at least 2 feet wide from the edge of the floor opening.

(C) Lighting and landing. Lighting must be not less than 5 foot-candles, at each floor landing when the lift running.

**NOTE:** A 40 watt or larger light bulb should provide the equivalent to 5 footcandles.

(D) Landing surface. There must be safe footing at landing surfaces.

(E) Emergency landings. If the travel is 50 feet or more between floor landings, there must be one or more emergency landings. There must be a landing (either floor or emergency) for every 25 feet or less of manlift travel.

(i) Emergency landings must be accessible from both the "up" and "down" rungs of the manlift. They must give access to the ladder as required in OAR 437-004-0570(i).

(ii) Completely enclose emergency landings with a standard railing and toeboard.

(iii) Platforms built for access to bucket elevators or other equipment for inspection or maintenance may also be emergency landings. All such platforms are then part of the emergency landing and must have standard railings and toeboards.

(d) Guards on underside of floor openings.

(A) Fixed type. The ascending side of the manlift floor openings must have a bevel guard or cone meeting the following requirements:

(i) The cone must be at an angle of not less than 45° with the horizontal. Use an angle of 60° or greater where ceiling heights permit.

(ii) The lower edge of this guard must extend at least 42 inches outward from any handhold on the belt. It must not extend beyond the upper surface of the floor above.

(iii) The cone must be at least No. 18 U.S. gauge sheet steel or material of equivalent strength or stiffness. Roll the lower edge to a minimum diameter of 1/2 inch. The interior must be smooth with no rivets, bolts or screws protruding.

(B) Floating type. A floating safety cone is acceptable instead of the fixed guards in (A) above. They must be mounted on hinges at least 6 inches below the underside of the floor. A force of 2 pounds on the edge of the cone closest to the hinge must actuate a limit switch. The maximum depth of this floating cone is 12 inches.

(e) Protection of entrances and exits.

(A) Guardrail requirement. Guard the entrances and exits at all floor landings with access to the manlift with a maze (staggered railing) or a standard guardrail with self-closing gates.

(B) Construction. The rails will be standard guardrails with toeboards as described in OAR 437-004-0320(6).

(C) Gates. Gates must open outward and be self-closing. Round the corners of gates.

(D) Maze. Maze or staggered openings must offer no direct passage between enclosure and outer floor space.

(E) Except where building layout prevents it, entrances at all landings must be in the same relative position.

(f) Guards for openings.

(A) Construction. Use a wall, standard guardrail and toeboard or wire mesh panels to guard the floor opening at each landing on sides not used for entrance or exit.

(B) Height and location. Guards for openings must be at least 42 inches high on the up-running side and 66 inches on the down-running side.

(g) Bottom arrangement.

(A) Bottom landing. At the bottom landing the clear area must not be smaller than the area enclosed by the guardrails on the floors above. Any wall in front of the down-running side of the belt must be at least 48 inches from the face of the belt. There must be no stairs or ladders in this space.

(B) Location of lower pulley. The lower (boot) pulley must be supported by the lowest landing served. Guard the sides of the pulley support to prevent contact with the pulley or the steps.

(C) Mounting platform. There must be a mounting platform in front or to one side of the up run at the lowest landing. This isn't necessary if the floor level allows the floor or platform to be at or above the point where the upper surface of the ascending step completes its turn and becomes horizontal.

(D) Guardrails. Guard the area on the downside of the manlift according to OAR 437-004-0570(e). Protect the area between the belt and the platform with a standard guardrail.

(h) Top arrangements.

(A) Clearance from floor. There must be at least 11 feet of top clearance above the top terminal landing. This clearance must be from a plane through each face of the belt to a vertical cylindrical plane having a diameter 2 feet greater than the diameter of the floor opening, extending upward from the top floor to the ceiling on the up-running side of the belt. There must be no encroachment of structural or machine supporting members within this space.

(B) Pulley clearance.

(i) There must be at least 5 feet between the center of the head pulley shaft and any ceiling obstruction.

(ii) The center of the head pulley shaft must be at least 6 feet above the top terminal landing.

(C) Emergency grab rail. There must be an emergency grab bar or rail and platform at the head pulley when the distance to the head pulley is more than 6 feet above the top landing. Otherwise there must be only a grab bar or rail to allow the rider to swing free if the emergency stops don't work.

(i) Emergency exit ladder. Provide a fixed metal ladder accessible from both the "up" and "down" run of the manlift for the entire travel of the manlift. The ladder must meet ANSI A14.3-1956, Safety Code for Fixed Ladders.

(j) Superstructure bracing. Secure manlift rails to avoid spreading, vibration, and misalignment.

(k) Lighting.

(A) General. There must be adequate lighting for both runs of the manlift when it is running. (See OAR 437-004-0570(3)(c)(C) for lighting requirements at landings.)

(B) Control of lighting. Circuits for lighting of manlift runways must be permanently tied to the building circuits with no switches or there must be switches at each landing. Where there are separate switches at each landing, every switch must work all lights for the entire runway.

(l) Weather protection. Protect the manlift and its driving mechanism from the weather.

(4) Mechanical requirements.

(a) Machines, general.

(A) Brakes. Brakes for stopping and holding a manlift must be inherently self-engaging, require power or force from an external source to cause disengagement. The brake must release electrically and work on the motor shaft for direct-connected units or the input shaft for belt-driven units. The brake must be able to stop and hold the manlift when the descending side is loaded with 250 pounds on each step.

(B) Belt.

(i) The belts must be of hard-woven canvas, rubber-coated canvas, leather or other material meeting the strength requirements of OAR 437-004-0570(3)(a). It must also have a coefficient of friction that when used with an adequate tension device will meet the brake test in (4)(a)(A) above.

(ii) The belt must be at least 12 inches wide for travel up to 100 feet, at least 14 inches wide for travel more than 100 feet and up to 150 feet and 16 inches wide for travel more than 150 feet.

(C) Do not splice or use repaired manlift belts.

(b) Maximum speed. Do not install or use a manlift designed for a speed over 80 feet per minute.

(c) Platforms or steps.

(A) Minimum depth. Steps or platforms must be 12 inches to 14 inches deep, measured from the belt to the edge of the step or platform.

(B) Width. The width of the step or platform must be at least as wide as the belt to which it is attached.

(C) Distance between steps. The distance between steps must be equal and at least 16 feet measured from the upper surface of one step to the upper surface of the next step above it.

(D) Angle of step. The surface of the step must be at approximately a right angle with the "up" and "down" run of the belt and must travel an approximate horizontal position with the "up" and "down" run of the belt.

(E) Surfaces. The upper or working surfaces of the step must be nonslip (coefficient of friction not less than 0.5) or have a secure nonslip covering.

(F) Strength of step supports. When loaded with 400 pounds at the approximate center of the step, step frames or supports and their guides must be strong enough to:

(i) Prevent the disengagement of any step roller.

(ii) Prevent any appreciable misalignment.

(iii) Prevent any visible deformation of the steps or its support.

(G) Prohibition of steps without handholds. All steps have a corresponding handhold above or below them meeting the requirements of OAR 437-004-0570(4)(d). When removing a step or steps, remove corresponding handholds before the lift is restarted.

(d) Handholds.

(A) Location. Handholds attached to the belt must be at least 4 feet but not more than 4 feet 8 inches above the step tread. Locate them on both "up" and "down" run of the belt.

(B) Size. The grab surface of the handhold must be at least 4-1/2 inches wide, at least 3 inches deep and have 2 inches of clearance from the belt. Fastenings for handholds must be at least 1 inch from the edge of the belt.

(C) Strength. The handhold must withstand a load of 300 pounds applied parallel to the run of the belt.

(D) Prohibition of handhold without steps. All handholds must have a corresponding step. When removing handholds permanently or temporarily, remove the corresponding steps and handholds for the opposite direction of travel before restarting the lift.

(E) Type. All handholds must be of the closed type.

(e) Up limit stops.

(A) Requirements. There must be two separate automatic stop devices to cut off the power and apply the brake when a loaded step passes the upper terminal landing. One of these must be a split-rail switch mechanically operated by the step roller and located not more than 6 inches above the top terminal landing. The second automatic stop device may have any of the following:

(i) Any split-rail switch placed 6 inches above and on the side opposite the first limit switch.

(ii) An electronic device.



(iii) A switch actuated by a lever, rod or plate, the latter to be on the “up” side of the head pulley so as to just clear a passing step.

(B) Manual reset location. After a stop device halts the manlift reset must be done manually. The device must be where a person resetting it would have a clear view of both the “up” and “down” runs of the manlift. It must be impossible to reset the device from any step or platform.

(C) Cut-off point. The initial limit stop device must stop the manlift before the loaded step has reached a point 24 inches above the top terminal landing.

(D) Electrical requirements.

(i) When switches open the main motor circuit directly they must be the multi-pole type.

(ii) When using electronic devices they must be designed and installed so that failure will shut off the power to the driving motor.

(iii) Where flammable vapors or combustible dusts may be present, electrical installations must be according to the requirements of Division 4/S for such locations.

(iv) Controller contacts carrying the main motor current must be oil immersed, copper to carbon or equal, except where the circuit is broken at two or more points at once.

(f) Emergency stop.

(A) General. There must be an emergency stop device.

(B) Location. It must be easy reach from the ascending and descending runs of the belt.

(C) Operation. This stop device must cut off the power and apply the brake when pulled in the direction of travel.

(D) Rope. If made of rope, it must be at least 3/8 inch in diameter. Do not use wire rope unless it has marlin covering or equivalent.

(g) Instruction and warning signs.

(A) Instruction signs at landings or belts. At each landing or stenciled on the belt there must be conspicuous and easily read instruction signs for the use of the manlift. The instructions must read as follows:

**Face the Belt.**

**Use the Handholds.**

**To Stop — Pull Rope.**

(B) Top floor warning sign and light.

(i) At the top floor there must be a lighted sign with the following wording: “**TOP FLOOR — GET OFF.**” Signs must have block letters at least 2 inches high. Locate the sign within easy view of an ascending passenger and not more than 2 feet above the top terminal landing.

(ii) In addition to the sign required by (4)(g)(B)(i) above, a red warning light of at least 40-watts must be immediately below the upper landing terminal so as to shine in the passenger’s face.

(C) Visitor warning. The following conspicuous sign must be at each landing: — **AUTHORIZED PERSONNEL ONLY** —

(5) People only. Do not move objects or material on a manlift. Manlifts are for people only.

(6) Periodic inspection.

(a) Frequency. A competent designated person must inspect manlifts at least every 30 days. Check limit switches weekly. Do not use unsafe manlifts until repairs make them safe again.

(b) Items covered. This periodic inspection must cover at least the following items:

(A) Steps.

(B) Step Fastenings.

(C) Rails.

(D) Rail Supports and Fastenings.

(E) Rollers and Slides.

(F) Belt and Belt Tension.

(G) Handholds and Fastenings.

(H) Floor Landings.

(I) Guardrails.

(J) Lubrication.

(K) Limit Switches.

(L) Warning Signs and Lights.

(M) Illumination.

(N) Drive Pulley.

(O) Bottom (boot) Pulley and Clearance.

(P) Pulley Supports.

(Q) Motor.

(R) Driving Mechanism.

(S) Brake.

(T) Electrical Switches.

(U) Vibration and Misalignment.

(V) “Skip” on up or down run when mounting step (indicating worn gears).

(c) Inspection record. Keep a certification record of each inspection. It must include the date of the inspection, the signature of the inspector and the serial number or other identifier of the manlift. On request, this record must be made available to OR-OSHA.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### 437-004-0610

##### Ventilation

Agricultural employers that do abrasive blasting, grinding, polishing and buffing or spray finishing in any part of their operation must follow the standards in OAR 437-002-1910.94 and 437-002-0081 found in subdivision 2/G.

These paraphrased excerpts are from 1910.94, Ventilation, in the OR-OSHA General Industry Standards, Division 2/G. If the amount or duration of the covered work or processes you do could meet one of the criteria below, consult 437-002-1910.94 in Division 2/G.

##### Grinding, polishing and buffing.

1910.94(b)(2) Application. You must use a mechanical local exhaust ventilation system to keep the 8-hour time-weighted average (TWA) exposures to substances in 437-004-9000 or other parts of this division, within required limits when dry grinding, dry polishing or buffing whether or not employees use a respirator.

##### Spray finishing.

1910.94(c)(8) Scope. This paragraph (c) does not apply to exterior spraying of buildings, fixed tanks or similar structures nor to small portable spraying apparatus not used repeatedly in the same location.

##### Open surface tanks.

1910.94(d)(13)(i) Scope. This paragraph (d) applies to all work involving the immersion of materials in liquids, or in the vapors of such liquids, for cleaning or altering their surfaces, or adding or imparting a finish or changing the character of the materials. It also applies to the subsequent removal from the liquids or vapors, draining, and drying. Such work includes washing, pickling, quenching, dyeing, dipping, bleaching, degreasing, alkaline cleaning, stripping, rinsing and similar processes. It does not include molten materials handling or surface coating.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### 437-004-0630

##### Noise Exposure

(1) You must have a noise monitoring program (see (3) below) when an employee’s exposure equals or is more than an 8-hour time-weighted average (TWA) of 85 decibels (dB).

**NOTE:** Most large or older farm machines and tractors, especially those without cabs, have the potential to produce more than 85 decibels of noise. Audiologists often say that if you have to shout or significantly raise your voice to talk with somebody 2 feet away, the noise is probably at the action level of 85 decibels.

(2) Noise classified as impulse or impact noise cannot be more than 140 dB peak sound pressure level.

**NOTE:** These noises are sudden and sharp and include such things as the firing of a weapon and sudden release of pressurized air.

(3) Noise Monitoring Employers must use a noise sampling strategy that determines which employees need to be part of a hearing conservation program. This sampling will also determine their need for hearing protection or when to consider engineering controls.

(a) Use a sound level meter or a dosimeter to do noise level surveys over an 8-hour period to get a time-weighted average. When the employees are mobile or there are significant changes in the sound level or impulse noise components, you must use representative personal sampling unless area samples produce equal results.

(b) Repeat the noise surveys when there is a change in production, process, equipment or controls that increases noise levels or exposures to or above the action level. Also repeat the surveys if the increase in noise may require additional noise reduction from hearing protectors already in use.

(c) Notify each monitored employee of the noise monitoring results if the exposure was at or above the 85 decibel TWA.

(d) The employer must give affected employees or their representatives the opportunity to observe the noise survey process.

**WARNING:** Employer responsibilities in this standard require special knowledge and equipment to be done successfully. In most cases it is advisable and in some cases mandatory to have these tests done by a professional. See OAR 437-004-0630(5)(c).

(4) **Engineering Controls** If the noise survey results are more than in **Table 1** below, use administrative or engineering controls to reduce the noise, if feasible. If not feasible or if the engineering or administrative controls fail to reduce the noise to levels within **Table 1** limits, provide appropriate training and enforce the use of hearing protection to reduce the noise to levels within the **Table 1**. [Table not included. See ED. NOTE.]

(a) You must provide all hearing protection equipment and devices without cost to the employee. Employees may voluntarily elect to use their own equipment but the employer is responsible to assure that it provides adequate protection.

(b) All hearing protection equipment and devices must be kept serviceable and clean according to the manufacturer's recommendations or accepted audiological practices. **Table 1** [Table not included. See ED. NOTE.]

(5) **Hearing Conservation Program** Establish and maintain an effective hearing conservation program for employees whose noise exposure equals or is more than an 8-hour TWA of 85 decibels, or an equivalent dose, before attenuation by hearing protectors. The program must include an audiometric (hearing) testing program, employee training and personal hearing protection.

(a) All parts of the hearing conservation program must be without charge to employees.

(b) You must tell the employees to avoid high levels of non-occupational noise exposure during the 14-hour period before any hearing test. Also, you must assure that the employee uses hearing protection or avoids noise exposure on the job for 14 hours before getting a baseline hearing test.

(c) Only a technician certified by the Council of Accreditation in Occupational Hearing Conservation, a licensed or certified audiologist, otolaryngologist or other physician may do a hearing test. Certified technicians must be responsible to an audiologist, otolaryngologist or physician.

**NOTE:** Audiograms must meet the requirements of OAR 437-002-1910.95, Appendix C, Audio-metric Measuring Instruments. The background noise in the test room must comply with OAR 437-002-1910.95, Appendix D, Audiometric Test Rooms. The audiometers used for the test and the methods must comply with the American National Standard Specifications for Audiometers, S3.6-1969. Oregon OSHA strongly suggests that employers hire a professional to provide services required by this standard.

(6) There are two types of hearing tests required by this standard.

(a) A baseline hearing test must be done within 6 months of the employees first exposure to noise at or above the action level. This test is the comparison base for future tests.

(b) After the baseline audiogram is done, each employee still exposed at or above the 8-hour TWA must have annual hearing tests. Compare the annual tests to the baseline tests to determine if there has been a standard threshold shift.

(c) The audiologist, otolaryngologist or physician evaluation of the audiogram may revise the baseline when the standard threshold shift in hearing revealed by the test is persistent or the hearing threshold shows an improvement over the baseline audiogram.

(7) For purposes of this standard a standard threshold shift of hearing compared to the baseline hearing test is called a standard threshold shift and is an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. In Oregon there is no allowance from age correction charts for this calculation.

(8) **Follow-Up** The qualified person doing the hearing test will compare the results of the annual hearing test to the baseline audiogram to see if it is valid and if there has been a standard threshold shift change in hearing as in (7) above.

(a) The employer may retest to assure validity within 30 days and use that as the annual test.

(b) An audiologist, otolaryngologist or physician must review all problem audiograms to determine the need for more evaluation. This may include follow up as described below.

(c) The employer is responsible to pay for this evaluation.

(d) The employer must assure that the reviewing audiologist, otolaryngologist or physician has the following information:

(A) A copy of the requirements for hearing conservation in this section.

(B) The employees baseline and most recent audiogram.

(C) Measurements of the noise levels in the audiometric test room.

(D) Records of audiometer calibrations as required by this section.

(9) If an employee's hearing test reveals a standard threshold shift, the employer must do (a) through (d) below unless the physician determines that the shift is not work-related or aggravated by work-related noise exposure.

(a) Fit employees with hearing protection, train them in its use and care. Require them to use it.

(b) Refit and retrain employees already using hearing protectors. Give them hearing protectors that offer more noise reduction.

(c) Refer the employee for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary. Also refer the employee to the physician if the wearing of hearing protectors causes or aggravates a medical problem of the ear.

(d) Inform the employee of the need for an otological examination if a medical pathology of the ear could be unrelated to the use of hearing protectors.

(10) If future hearing tests show that the standard threshold shift of hearing is not persistent and the noise exposure is less than a 8-hour TWA of 90 decibels the employer must tell the employee of the new results and may end the required use of hearing protectors.

(11) **Training** All employees exposed at or above the 8-hour TWA of 85 decibels must receive initial and annual training. Update the training program if there are changes in the hearing protection or work processes. The training program must include:

(a) The effects of noise on hearing.

(b) The purpose of hearing protectors, the advantages, disadvantages and attenuation of various types and instructions on selection, fitting, use and care.

(c) The purpose of the hearing test and an explanation of the test procedures.

(12) **Hearing Protection** Hearing protection must be available at no cost to all employees exposed to an 8-hour TWA of 85 dB. Wearing of hearing protection that offers adequate noise reduction is mandatory for employees exposed at 90 dB TWA. In addition, if an employee has had a standard threshold shift, they must wear hearing protection at 85 decibels or more.

(a) The employer must ensure proper initial fitting of the hearing protectors, supervise the correct use of them, and provide training in the use and care of the hearing protectors.

(b) The employees must have the chance to select the hearing protectors from a variety of appropriate hearing protectors and the hearing protectors must reduce the noise to at least an 8-hour TWA of 90 decibels.

(c) When noise exposure increases enough that the hearing protectors may no longer give proper protection, reevaluate the adequacy of the protectors noise reduction. Provide more effective hearing protection where necessary.

(13) **Recordkeeping** The employer must keep employees noise exposure records according to the Access to Employee Exposure and Medical Records standard OAR 437-004-0005. The records must be available to employees, former employees, representatives designated by the employee and Oregon OSHA. The test record must include:

(a) Name and job classification of the employee.

(b) Date of the audiogram.

(c) The examiner's name.

(d) Date of the last acoustic or exhaustive calibration of the audiometer.

(e) Employees most recent noise exposure assessment.

(14) If you sell your business, give the buyer all records required by this section.

**NOTE:** The professional who does your audiometric work will supply most of the records required by this section.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-0650**

##### **Ionizing Radiation**

**NOTE:** The Oregon Department of Human Resources, Health Division, enforces 1910.96 Ionizing Radiation and 437-004-0650 in Oregon, under an Interagency Agreement with the Department of Consumer and Business Services, OR-OSHA Division. Copies are available from OR-OSHA and the Health Division.

In addition to and not instead of 1910.96, the rules and regulations in ORS 453.0605 to 453.0745, Control of Radiation, administered by the Department of Human Resources, Oregon Health Division, apply to all employees working with or near ionizing radiation sources.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0710**

##### **Compressed Gases**

(1) Employers are responsible to keep compressed gas cylinders under their control in a safe condition by doing visual inspections that cover these points:

(a) Corrosion or pitting which reduces the wall thickness.

(b) Cuts, gouges or digs.

(c) Dents, bulges or other distortion or unsymmetrical condition or appearance.

(d) Distortion, looseness or failure of welds in the cylinder rings.

(e) Evidence of having been burned or exposed to fire, arc or torch burns.

(f) Damage to cylinder neck threads or inability to obtain a gas-tight seal by reasonable methods.

(2) If a compressed gas cylinder or tank shows any of the above conditions, or any other condition that could affect its safety, do not use it. Do not return it to service until it is thoroughly inspected by a person qualified to do so and they find it to be safe and in compliance with the Compressed Gas Association directives.

(3) The handling, storage, and use of all compressed gases in cylinders, portable tanks or motor vehicle cargo tanks must comply with the following:

(a) Do not use cylinders without a legible label identifying the contents.

(b) Keep the cylinder caps on except when the gauges are on the cylinder.

(c) Do not use cylinders for rollers, supports or for any purpose other than to contain the product.

(d) Do not place cylinders where they may become part of an electrical circuit. Do not ground cylinders used in conjunction with electric welding.

(e) Do not subject cylinders to temperatures above 125°F. If ice or snow accumulates on a cylinder, thaw at room temperature or with water less than 125°F.

(f) Contact your gas supplier when in doubt about proper handling of the cylinder.

(g) When returning empty cylinders, close the valve and replace the valve protection cap.

(h) Do not drag or slide cylinders.

(i) Do not drop or permit cylinders to strike against each other or other surfaces violently.

(j) Do not lift cylinders by the protective cap or with magnets.

(k) Do not suspend cylinders from ropes, chains or slings unless the cylinder was manufactured with an appropriate lifting attachment or suitable cradles or platforms are used.

(l) Post the storage areas with the name of the gases to be stored.

(m) Store cylinders away from ignitable substances such as gasoline or waste or combustibles in bulk including oil.

(n) Store cylinders upright and secure to prevent them from being knocked over.

(o) Secure cylinders when in use.

(4) Compressed gas cylinders, portable tanks, and cargo tanks must have pressure relief devices.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0715**

##### **Acetylene**

(1) Cylinders. The transfer, handling, storage, and use of acetylene in cylinders must comply with the general requirements of compressed gases.

(2) Piped systems. The piped systems for the transfer and distribution of acetylene must comply with the Compressed Gas Association Pamphlet G-1.3-1970.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0716**

##### **Oxygen**

(1) Scope. This applies to the installation of bulk oxygen systems on agricultural establishments.

(2) Bulk oxygen systems.

(a) Definition. A bulk oxygen system is an assembly of equipment, such as oxygen storage containers, pressure regulators, safety devices, vaporizers, manifolds, and interconnecting piping, with storage capacity more than 13,000 cubic feet of oxygen, Normal Temperature and Pressure (NTP), connected in service or ready for service, or more than 25,000 cubic feet of oxygen (NTP) including unconnected reserves on hand at the site. The bulk oxygen system ends where oxygen at service pressure first enters the supply line. The oxygen containers may be stationary or movable, and the oxygen may be gas or liquid.

(b) Location.

(A) General. Bulk oxygen storage systems must be above ground, outdoors or in a noncombustible building, adequately vented and used exclusively for oxygen storage. Locate containers and associated equipment so there is no exposure to electric power lines, flammable or combustible liquid lines, or flammable gas lines.

(B) Accessibility. Locate the system so that it is readily accessible to mobile supply equipment at ground level and to authorized personnel.

(C) Leakage. For liquid oxygen storage, provide noncombustible surfacing in the area where any leakage might fall during operation of the system and filling of the container. Asphalt or bituminous paving is combustible.

(D) Elevation. When locating bulk oxygen systems near above-ground flammable or combustible liquid storage that may be either indoors or outdoors, it is advisable to locate the system on ground higher than the flammable or combustible liquid storage.

(E) Dikes. When a bulk oxygen system must be lower than adjacent flammable or combustible liquid storage, there must be suitable means (such as diking, diversion curbs, or grading) to prevent accumulation of liquids under the bulk oxygen system.

(c) Distance between systems and exposures.

(A) The minimum distance from any bulk oxygen storage container to exposures, measured in the most direct line except as in (2)(c)(A)(v) and (vii) below, must be as follows:

(i) Fifty feet from combustible structures.

(ii) Twenty-five feet from structures with fire-resistive exterior walls or sprinklered buildings of other construction, but not less than one-half the height of the adjacent side wall of the structure.

(iii) At least 10 feet from any opening in adjacent walls of fire resistive structures. Spacing from such structures must be adequate to permit maintenance, but not be less than 1 foot.

(iv) Flammable liquid storage above-ground. [Table not included. See ED. NOTE.]



(v) Flammable liquid storage below-ground. [Table not included. See ED. NOTE.]

(vi) Combustible liquid storage above-ground. [Table not included. See ED. NOTE.]

(vii) Combustible liquid storage below ground. [Table not included. See ED. NOTE.]

(viii) Flammable gas storage. (Such as compressed flammable gases, liquefied flammable gases and flammable gases in low pressure gas holders). [Table not included. See ED. NOTE.]

(ix) Fifty feet from solid materials that burn rapidly, such as excelsior or paper.

(x) Twenty-five feet from solid materials that burn slowly, such as coal and heavy timber.

(xi) Seventy-five feet in one direction and 35 feet in approximately 90° direction from confining walls (not including firewalls less than 20 feet high) to provide adequate ventilation in courtyards and similar confining areas.

(xii) Twenty-five feet from areas such as offices, lunchrooms, locker rooms, time clock areas, and similar locations where people may gather.

(B) Exceptions. The distances in (2)(c)(A)(i), (ii), (iv) to (x) above, do not apply where there are protective structures, like firewalls, between the bulk oxygen storage installation and the exposure high enough to safeguard the oxygen storage systems. In those cases, the bulk oxygen storage installation may be a minimum distance of 1 foot from the firewall.

(d) Storage containers.

(A) Permanently installed containers must be on substantial noncombustible supports on firm noncombustible foundations.

(B) Make liquid oxygen storage containers from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII — Unfired Pressure Vessels — 1968. Containers operating at pressures more than 15 pounds per square inch gage (p.s.i.g.) must comply with ASME Boiler and Pressure Vessel Code, Section VII — Unfired Pressure Vessels — 1968. Insulation on the liquid oxygen container must be noncombustible.

(C) High-pressure gaseous oxygen containers must comply with one of the following:

(i) ASME Boiler and Pressure Vessel Code, Section VIII — Unfired Pressure Vessels — 1968.

(ii) DOT Specifications and Regulations.

(e) Piping, tubing, and fittings.

(A) Piping, tubing, and fittings must be suitable for oxygen service and for the pressures and temperatures involved.

(B) Piping and tubing must conform to Section 2 — Gas and Air Piping Systems of Code for Pressure Piping, American National Standard (ANSI), B31.1-1967 with addenda B31.10a-1969.

(C) Fabricate piping or tubing for operating temperatures below 20°F from materials meeting the impact test requirements of paragraph UG-84 of ASME Boiler and Pressure Vessel Code, Section VIII — Unfired Pressure Vessels — 1968, when tested at the anticipated minimum operating temperature.

(f) Safety relief devices.

(A) Equip bulk oxygen storage containers, regardless of design pressure, with safety relief devices required by the ASME code or the DOT specifications and regulations.

(B) Bulk oxygen storage containers designed and constructed according to DOT specifications must have safety relief devices as required.

(C) Bulk oxygen storage containers that comply with the ASME Boiler and Pressure Vessel Code, Section VIII — Unfired Pressure Vessel — 1968 must have safety relief devices that comply with the Compressed Gas Association Pamphlet “Safety Relief Device Standards for Compressed Gas Storage Containers,” S-1, Part 3.

(D) Equip insulation casings on liquid oxygen containers with suitable safety relief devices.

(E) Safety relief devices must not allow moisture that would interfere with proper operation to collect and freeze.

(g) Liquid oxygen vaporizers.

(A) Anchor the vaporizer and use connecting piping sufficiently flexible to compensate for expansion and contraction due to temperature changes.

(B) Adequately protect the vaporizer and its piping on the oxygen and heating medium sections with safety relief devices.

(C) Heat used in an oxygen vaporizer must be indirectly supplied only through media such as steam, air, water or water solutions that do not react with oxygen.

(D) If electric heaters provide the primary source of heat, ground the vaporizing system.

(h) Equipment assembly and installation.

(A) Remove oil, grease or other readily oxidizable materials before placing the system in service.

(B) Make joints in piping and tubing by welding or by using flanged, threaded, slip, or compression fittings. Gaskets or thread sealants must be suitable for oxygen service.

(C) Valves, gages, regulators, and other accessories must be suitable for oxygen service.

(D) People familiar with proper practices must supervise the installation of bulk oxygen systems.

(E) After installation test and prove tight all field erected piping at maximum operating pressure. Use oil-free, non-flammable substances for testing.

(F) Protect storage containers, piping, valves, regulating equipment, and other accessories from physical damage and tampering.

(G) Adequately ventilate enclosures for oxygen control or operating equipment.

(H) The bulk oxygen storage location must have permanent placards that say: “**OXYGEN — NO SMOKING — NO OPEN FLAMES**,” or an equivalent warning.

(I) Bulk oxygen installations are not hazardous locations as defined and covered in Division 4/S. Therefore, general purpose or weatherproof types of electrical wiring and equipment are acceptable depending on whether the installation is indoors or outdoors. Install this equipment according to Division 4/S.

(i) For installations that require operation of equipment by the user, keep legible instructions by the equipment.

(j) Cut back or clear combustible growth 15 feet from any bulk oxygen storage container.

[ED. NOTE: Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

## **437-004-0717**

### **Hydrogen**

Agricultural employers that use hydrogen in any part of their operation must comply with OAR 437-002-1910.103 in subdivision 2/H.

**NOTE:** For your convenience, this is the scope statement from that standard to help you know if your work falls under its jurisdiction.

(2) Scope

(i) Gaseous hydrogen systems.

(a) Paragraph (b) of this section applies to the installation of gaseous hydrogen systems on consumer premises where the hydrogen supply to the consumer premises originates outside the consumer premises and is delivered by mobile equipment.

(b) Paragraph (b) of this section does not apply to gaseous hydrogen systems having a total hydrogen content of less than 400 cubic feet, nor to hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the purpose of storing hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

(ii) Liquefied hydrogen systems.

(a) Paragraph (c) of this section applies to the installation of liquefied hydrogen systems on consumer premises.

(b) Paragraph (c) of this section does not apply to liquefied hydrogen portable containers of less than 150 liters (39.63 gallons) capacity; nor to liquefied hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the sole purpose of storing liquefied hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

437-004-0720

**Flammable and Combustible Liquids**

(1) Definitions:

(a) Approved — See Universal Definitions in 4/B, OAR 437-004-0100.

(b) Closed container — A container sealed with a lid or other device that prevents the loss of liquid or vapor at ordinary temperatures.

(c) Combustible — A substance or material that is able or likely to catch fire and burn.

(d) Combustible liquids — See definition of “Flammable liquids” below.

**NOTE:** When Oregon OSHA revised the Hazard Communication Standard to align with the Globally Harmonized System (GHS) of classification and labeling of chemicals, the term “combustible liquid” was eliminated. However, the term is still used by the National Fire Protection Association (NFPA) and by the Oregon State Fire Marshal. The NFPA system classifies some chemicals as “combustible liquids” that OSHA classifies as “flammable liquids.”

(e) Explosive — something capable of causing damage to the surroundings by chemical reaction. Also, see Universal Definition in 4/B, OAR 437-004-0100.

(f) Flammable — something capable of being easily ignited, burning intensely, or having a rapid rate of flame spread. Also, see Universal Definitions in 4/B, OAR 437-004-0100.

(g) Flammable liquids — are liquids having a flash point at or below 199.4 degrees F. (93 degrees C.) As defined in the globally harmonized system of classification and labeling (GHS) adopted in OSHA’s Hazard Communication Standard, flammable liquids are divided into four categories as follows:

(A) Category 1 includes liquids that have a flashpoint below 73.4 degrees F. (23 degrees C.) and have a boiling point at or below 95 degrees F. (35 degrees C.)

(B) Category 2 includes liquids that have a flashpoint below 73.4 degrees F. (23 degrees C.) and have a boiling point above 95 degrees F. (35 degrees C.)

(C) Category 3 includes liquids that have a flashpoint in a temperature range from at or above 73.4 degrees F. (23 degrees C.) to at or below 140 degrees F. (60 degrees C.)

(D) Category 4 includes liquids that have a flashpoint in a temperature range from above 140 degrees F. (60 degrees C.) to at or below 199.4 degrees F. (93 degrees C.)

**NOTES:** See Appendix A to OAR 437-004-0720 Flammable Liquids for a comparison of the GHS/Hazard Communication classification system with the NFPA classification system. Examples of flammable liquids include: Category 1: Diethyl ether (solvent used in some starting fluids) Category 2: Gasoline, Benzene Category 3: Kerosene, Stoddard Solvent Category 4: Diesel fuel

(h) Portable tank — A closed container with a liquid capacity more than 60 U.S. gallons (230 liters) and not intended for fixed installation.

(i) Safety can — An approved closed container, of not more than 5 gallons (20 liters) capacity, with a spring-closing lid and spout cover, and designed so that it will safely relieve internal pressure when subjected to fire.

(2) Storage and transporting.

(a) The storage of flammable liquids in containers with a capacity of 60 gallons (230 liters) or more must be in fixed or portable tanks. Such tanks must meet the material and design requirements in NFPA 30, Flammable and Combustible Liquids Code, 1996 edition.

**NOTE:** Tanks meeting the requirements of a more recent edition of the NFPA 30 code will also be considered to be in compliance with this rule.

(b) Storage of flammable liquids in containers of less than 60 gallons (230 liters) capacity must be in one of the following listed in Table H-1: [Table not included. See ED. NOTE.]

(c) Store flammable liquids in a manner that will not obstruct, impede, or limit use of exits, stairways, or areas normally used for safe exit routes.

(d) Flammable liquids transported in passenger-type vehicles (cars, trucks, buses, carry-alls, crew transporters, etc.) must be in safety cans, or approved containers used for petroleum fuels. Carry these containers outside the passenger compartment, secured in a

ventilated area that prevents the accumulation of flammable or explosive vapors, and that protects against rupture in a collision.

(3) Tanks and containers.

(a) Clearly mark tanks and containers as required in the Hazard Communication Standard, OAR 437-004-9800(5) Labels and other Forms of Warning. Mark fill-risers and pumps or discharge devices with the name of the product they contain.

**NOTE:** Division 4/L, 437-004-1440 requires employers to post signs reading, “No Smoking or Open Flame” (or “FLAMMABLE — KEEP FIRE AWAY”) in areas used for fueling, and where flammable liquids are received, dispensed, used, or stored.

(b) Protect pumps, containers, tanks, and supports for tanks used for flammable liquids against collision damage.

(c) Mount aboveground tanks on supports that are strong and stable enough to safely support the load. Provide enough clearance to permit inspection and maintenance as well as clearance from the ground.

(4) Tanks elevated for gravity discharge.

(a) The gravity discharge outlet must have an approved hose with a self-closing valve at the discharge end.

(b) The bottom opening for gravity discharge must have a shut-off valve adjacent to the tank shell that can be closed manually. Underground tanks from which fuel flows under gravity must have a manual shut-off valve between the tank and the hose.

(5) Tanks with top openings only.

(a) Tanks with all openings in the top must have a firmly attached, approved pumping device and an approved hose.

(b) Do not use siphons and discharge devices requiring pressure in the container.

(c) There must be an effective anti-siphoning device in the pump discharge; tank plumbing must not permit fuel to siphon or flow from the tank when the pump is not operating, even though discharge nozzle valves or line valves are open.

(6) Dispensing and fueling.

(a) Maintain pumping devices or faucets used to dispense flammable liquids so they do not leak enough material to puddle or cause a fire hazard.

(b) Fuel tanks and pumps from which flammable liquids are dispensed must have an approved hose long enough to fill containers.

(A) Hoses must have a metal nozzle at the discharge end.

(B) Hoses must incorporate an effective electrical interconnect between the nozzle and the supply tank.

(c) Do not dispense flammable liquids into or from portable or stationary metal tanks or drums unless there is an effective electrical interconnect (bond) between the source and the receiving containers.

**NOTES:** The electrical interconnect may be made by assuring that the metal nozzle of the approved hose is in contact with the metal fill neck or bung of the receiving container during filling. Both portable metal and portable plastic containers should be placed on a grounded surface when filling.

(d) Shut off internal combustion engines, except diesel engines, while refueling.

(7) Handling and use of flammable liquids.

(a) Control leakage or the escape of flammable liquids and use measures to prevent accidental spills. If a spill occurs, promptly clean any soaked or contaminated areas.

**NOTE:** If you have a release or spill of any hazardous substance at your workplace and you expect your employees to help clean it up, other rules may apply: Division 4/Z, 437-004-9800, Hazard Communication Standard for Agricultural Employers. Division 4/H, 437-004-0950 Hazardous Waste Operations and Emergency Response.

(b) Use flammable liquids, including gasoline, only where there is no open flame or other source of ignition within 50 feet of the operation, or within the possible path of vapor travel.

**NOTES:** This rule does not prohibit the refueling of orchard heaters used outdoors while adjacent heaters are burning; or the field (outdoor) refueling of portable tools while other tools are in operation. Division 4/L, 437-004-1430 requires employers to forbid smoking, open flames, the use of spark-producing devices or tools, and other sources of fire or ignition in fueling areas; where fuel systems for internal combustion engines are serviced; and where flammable liquids are received, dispensed, used, or stored.

(c) Do not use flammable liquids, including gasoline, indoors as a solvent or for cleaning purposes unless there is adequate venti-

lation to keep the concentration of vapors in the atmosphere below 20 percent of its lower explosive limit (LEL).

**NOTE:** In addition to the hazards of fire and explosion, the potential health hazards from exposure to flammable liquids through skin contact or breathing the vapors should also be avoided.

(d) Keep flammable liquids, including gasoline, in closed containers when not in use.

(8) Heating devices that use flammable liquids.

**NOTE:** The Oregon State Mechanical Specialty Code and the Oregon Fire Code have standards for space-heating devices and associated equipment.

(a) Set heaters, when in use, on a stable, level base; or mount them as specified by the manufacturer.

(b) Heaters not suitable for use on wood floors must rest on heat insulating material of at least 1-inch concrete, or equivalent. The insulating material must extend beyond the heater 2 feet or more in all directions.

(c) Locate heaters used near combustible tarpaulins, canvas, or similar coverings at least 10 feet from the coverings and securely fasten them to prevent ignition or upsetting of the heater due to wind action on the covering or other material.

(d) Liquid-fired heaters must have a primary safety control to stop the flow of fuel in the event of flame failure.

**NOTE:** Barometric or gravity oil feed is not a primary safety control.

(e) Do not use heating devices without built-in means to effectively control the fuel supply and the flame in occupied buildings.

(f) Vent heating devices (that use flammable fuels inside occupied buildings) to the outside atmosphere except when:

(A) The heating device has an "approval label" issued by the American Gas Association or a nationally recognized testing laboratory indicating it is approved for use as an unvented heater in occupied buildings; or,

(B) Prior to entry, test the atmosphere inside buildings where unvented heating devices are in use to assure it is free of hazardous levels of carbon monoxide.

(g) Fuel-burning devices must have means that prevent the emission of sparks or other sources of ignition.

(9) Design, construction, and capacity of storage cabinets.

(a) Maximum capacity. Do not store more than 60 gallons of Category 1, 2, or 3 flammable liquids, or more than 120 gallons of Category 4 flammable liquids in a storage cabinet.

(b) Fire resistance. Storage cabinets must meet NFPA 30, 1996 edition standards. Label storage cabinets with "No Smoking or Open Flame."

**NOTES:** Storage cabinets meeting the requirements of a more recent edition of the NFPA 30 code will also be considered to be in compliance with this rule. Storage cabinets labeled "FLAMMABLE — KEEP FIRE AWAY" are also in compliance with this rule.

(10) Design and construction of inside storage rooms.

(a) Construction.

(A) Construct inside storage rooms to meet the required fire-resistive rating in NFPA 30, 1996 edition.

(B) Such construction must comply with the test specifications in Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251, 1969 edition.

(C) Where there is an automatic sprinkler system, design and install the system according to accepted engineering practices.

(D) Openings to other rooms or buildings must have noncombustible, liquid-tight, raised sills or ramps at least 4 inches high, or the floor in the storage area must be at least 4 inches below the surrounding floors. A permissible alternate to the sill or ramp is an open-trenched trench inside the room that drains to a safe location.

(E) Openings must have approved self-closing fire doors. The room must be liquid-tight where the walls join the floor.

(F) Where other parts of the building or other properties are exposed, protect windows as required in the Standard for Fire Doors and Windows, NFPA 80, 1968 edition, for Class E or F openings.

(G) Wood at least 1-inch nominal thickness is acceptable for shelving, racks, dunnage, scuffboards, floor overlay, and similar installations.

**NOTES:** The following will also be considered to be in compliance with this rule: Inside storage rooms meeting the requirements of a more recent edition of the NFPA 30 code. Construction materials meeting the specifications in a more recent edition of NFPA 251 code. Windows and openings protected as required by a more recent edition of the NFPA 80 code.

(b) Rating and capacity. Storage in inside storage rooms must comply with Table H-2, below. [Table not included. See ED. NOTE.]

**NOTES:** Division 4/L, 437-004-1430 Sources of Fire requires that electric lights, equipment, and wiring used where there may be flammable or explosive gases or vapors must comply with the State Electrical Specialty Code. Division 4/S, 437-004-3075 Agricultural Buildings with Special Hazards has additional electrical requirements.

[ED. NOTE: Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### **437-004-0725**

##### **Spray Finishing**

If you use a spray booth or a spray room or do production-level spray finishing, you must follow the rules in Division 2/H, OAR 437-002-0107, Spray Finishing.

**NOTE:** The Spray Finishing rules do not apply to outdoor spray applications to buildings, tanks, or other similar structures; or to small, portable, spray apparatus that is not used repeatedly in the same location.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### **437-004-0770**

##### **Explosives and Blasting Agents**

Agricultural employers that use explosives and blasting agents must comply with OAR 437-002-1910.109 in subdivision 2/H.

**NOTE:** For your convenience, this is the scope statement from that standard to help you know if your work falls under its jurisdiction.

**NOTE:** This section applies to the manufacture, keeping, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics. The section does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor the use of explosives in the form prescribed by the official U.S. Pharmacopeia.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0780**

##### **Storage and Handling of Liquefied Petroleum Gases**

**NOTE:** OAR 437-004-0790, following this rule, covers the use of LPG and natural gas in fields and orchards. This rule (0780) does not cover those applications.

(1) Definitions.

(a) API-ASME container — A container built to comply with OAR 437-004-0780(3)(b)(C).

(b) ASME container — A container built to comply with OAR 437-004-0780(3)(b)(A).

(c) Approved — See universal definition in 4/B.

(d) Container assembly — An assembly of the container and fittings for all container openings, including shutoff valves, excess flow valves, liquid-level gaging devices, safety relief devices, and protective housing.

(e) Containers — All vessels, such as tanks, cylinders, or drums, used to transport or store liquefied petroleum gases.

(f) DOT — Department of Transportation.

(g) DOT container — A container built to comply with 49 CFR Chapter 1.

(h) DOT cylinders — cylinders meeting the requirements of 49 CFR Chapter I.

(i) DOT Specifications — regulations of the Department of Transportation published in 49 CFR Chapter I.

(j) Liquefied petroleum gases — "LPG" and "LP-Gas" — Any material made mostly of any of the following hydrocarbons, or mixtures of them; propane, propylene, butane (normal butane or isobutane), and butylenes.

(k) Listed — see universal definition in 4/B.

(l) Movable fuel storage tenders or farm carts — Containers not more than 1,200 gallons water capacity, with wheels for towing. They are not highway vehicles, but may occasionally be moved on public roads or highways. They are a fuel supply vehicle.

(m) P.S.I.A. — pounds per square inch absolute.



(n) P.S.I.G. — pounds per square inch gauge.

(o) Systems — an assembly of the container or containers, major devices such as vaporizers, safety relief valves, excess flow valves, regulators, and connecting piping.

(p) Vaporizer-burner — an integral vaporizer-burner unit, dependent on the heat generated by the burner as the source of heat to vaporize the liquid used for dehydrators or dryers.

(q) Ventilation, adequate — when specified for the prevention of fire during normal operation, ventilation is adequate when the concentration of the gas in a gas-air mixture does not exceed 25 percent of the lower flammable limit.

(2) Scope.

(a) Application.

(A) Paragraph OAR 437-004-0780(3) applies to installations made according to OAR 437-004-0780(4), (5), (6) and (8), except as noted in each of those paragraphs.

(B) Paragraphs OAR 437-004-0780(4) through (8) have their own application statements.

(b) Exclusions. This section does not apply to:

(A) LP-Gas refrigerated storage systems;

(B) LP-Gas used with oxygen. The requirements of OAR 437-004-2310 apply to that use;

(C) Low-pressure (not more than one-half pound per square inch or 14 inches water column) LP-Gas piping systems, and the installation and operation of residential and commercial appliances including their inlet connections, supplied through such systems. For those systems, the National Fire Protection Association Standard for the Installation of Gas Appliances and Gas Piping, NFPA 54-1996 apply.

(c) Retroactivity. Unless otherwise stated, this section is not retroactive. Existing plants, appliances, equipment, buildings, structures, and installations for the storage, handling or use of LP-Gas, that met the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58, 1995, at the time of manufacture or installation are acceptable, if their use does not cause a recognized hazard to employees.

(3) Basic rules.

(a) Approval of equipment and systems.

(A) Each system using DOT containers according to 49 CFR Part 178 must use approved container valves, connectors, manifold valve assemblies, and regulators.

(B) Each system for domestic or commercial use with containers of 2,000 gallons or less water capacity, other than those built according to 49 CFR Part 178, must have a container assembly and one or more regulators, and may include other parts. The system as a unit or the container assembly as a unit, and the regulator or regulators, must be individually listed.

(C) In systems using containers of more than 2,000 gallons water capacity, each regulator, container valve, excess flow valve, gaging device, and relief valve installed on or at the container, must be listed by a nationally recognized testing laboratory. Refer to 29 CFR 1910.7 for the definition of nationally recognized testing laboratory.

(b) Requirements for construction and original test of containers.

(A) Containers used with systems in OAR 437-004-0780(5), (6) and (8), except in (6)(c)(C), must comply with the Rules for Construction of Unfired Pressure Vessels, section VIII, Division 1, American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, 1968 edition.

(B) Containers constructed according to the 1949 and earlier editions of the ASME Code do not have to comply with paragraphs U-2 through U-10 and U-19 of it. Do not use containers constructed according to paragraph U-70 in the 1949 and earlier editions.

(C) Containers designed, constructed, and tested before July 1, 1961, according to the Code for Unfired Pressure Vessels for Petroleum Liquids and Gases, 1951 edition with 1954 Addenda, of the American Petroleum Institute and the American Society of Mechanical Engineers are acceptable. Containers constructed according to API-ASME Code do not have to comply with section

I or with appendix to section I. Paragraphs W-601 to W-606 inclusive in the 1943 and earlier editions do not apply.

(D) Paragraph (3)(b)(A) above does not prohibit the use or reinstallation of containers constructed and maintained according to the standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58 in effect at the time of fabrication.

(E) Containers used with systems covered in OAR 437-004-0780(3), (5)(c)(C), and (7), must comply with DOT specifications effective at the date of their manufacture.

(c) Welding of containers.

(A) Welding to the shell, head, or any other part of the container subject to internal pressure, must comply with the code under which the tank was built. Other welding is permitted only on saddle plates, lugs, or brackets attached to the container by the tank manufacturer.

(B) Welding of DOT containers, must be done by a qualified manufacturer making containers of the same type, and must comply with DOT regulations.

(d) Markings on containers.

(A) Each container in (3)(b)(A) above, except as in (3)(b)(D) above must have these markings:

(i) A mark identifying compliance with, and other markings required by, the rules of the reference under which the container is constructed; or with the stamp and other markings required by the National Board of Boiler and Pressure Vessel Inspectors.

(ii) Notation as to whether the container is designed for underground or aboveground installation or both. If intended for both and different style hoods are provided, the marking must indicate the proper hood for each type of installation.

(iii) The name and address of the supplier of the container, or with the trade name of the container.

(iv) The water capacity of the container in pounds or gallons, U.S. Standard.

(v) The pressure in p.s.i.g., for which the container is designed.

(vi) The wording "This container must not contain a product with a vapor pressure in excess of \_\_\_\_ p.s.i.g. at 100°F," see (m)(G).

(vii) The tare weight in pounds or other identified unit of weight for containers with a water capacity of 300 pounds or less.

(viii) Marking indicating the maximum level to which the container may be filled with liquid at temperatures between 20°F and 130°F, except on containers provided with fixed maximum level indicators or which are filled by weighing. Markings must be increments of not more than 20°F. This marking may be located on the liquid level gaging device.

(ix) The outside surface area in square feet.

(B) Marks must be on a metal nameplate attached to the container and visible after installation of the container.

(C) When storing or using LP-Gas and one or more other gases in the same area, the containers must identify their content.

(e) Location of containers and regulating equipment.

(A) Containers, and first stage regulating equipment if used, must be outside buildings, except under one or more of the following:

(i) In buildings used exclusively for container charging, vaporization pressure reduction, gas mixing, gas manufacturing, or distribution.

(ii) For portable use according to OAR 437-004-0780(4)(e).

(iii) LP-Gas fueled engines according to OAR 437-004-0780(6)(j) or (k).

(iv) LP-Gas fueled industrial trucks used according to OAR 437-004-0780(6)(l).

(v) LP-Gas fueled vehicles garaged according to OAR 437-004-0780(6)(m).

(vi) Containers awaiting use or resale when stored according to OAR 437-004-0780(7).

(B) Place individual containers with respect to the nearest building or group of buildings according to Table 1. [Table not included. See ED. NOTE.]

(C) Do not stack containers on each other during use.

(D) Keep easily ignitable material such as weeds and long dry grass 10 feet away from containers.

(E) Keep at least 20 feet between liquefied petroleum gas containers and flammable liquid tanks. The minimum separation between a container and the centerline of the dike is 10 feet. This does not apply when LP-Gas containers of 125 gallons or less capacity are next to Class III flammable liquid tanks of 275 gallons or less capacity.

(F) Prevent the accumulation of flammable liquids under adjacent liquefied petroleum gas containers by diking, diversion curbs, grading or the equivalent.

(G) Do not put liquefied petroleum gas containers within the dikes around flammable liquid tanks.

(f) Container valves and container accessories.

(A) Valves, fittings, and accessories connected directly to the container including primary shutoff valves, must have a rated working pressure of at least 250 p.s.i.g. and be suitable for LP-Gas service. Do not use cast iron. This does not prohibit the use of container valves made of malleable or nodular iron.

(B) Connections to containers, except safety relief connections, liquid level gaging devices, and plugged openings, must have shutoff valves as close to the container as practicable.

(C) Excess flow valves, must close automatically at the rated flows of vapor or liquid as specified by the manufacturer. The connections or line including valves, fittings, etc., being protected by an excess flow valve must have a greater capacity than the rated flow of the excess flow valve.

(D) Liquid level gaging devices do not need excess flow valves if their outward flow is less than would pass through a .055 inch opening.

(E) Openings from the container or through fittings attached directly to it with a pressure gauge connected do not need shutoff or excess flow valves if they are not larger than .055 inch.

(F) Except as in OAR 437-004-0780(4)(e)(A)(ii), excess flow and back pressure check valves required here must be inside the container or at an outside point where the line enters the container. In the latter case, make installation so that strain beyond the excess flow or back pressure check valve will not cause a break between the container and the valve.

(G) Excess flow valves must have a bypass, not to exceed a .040 inch opening to allow equalization of pressures.

(H) Containers with water capacity between 30 gallons and 2,000 gallons, filled by volume and made after December 1, 1963, must fill into the vapor space.

(g) Piping — including pipe, tubing, and fittings.

(A) Pipe, except as in OAR 437-004-0780(6)(f)(A), must be wrought iron or steel (black or galvanized), brass, copper, or aluminum alloy. Aluminum alloy pipe must be at least Schedule 40. Do not use alloy 5456. Protect aluminum alloy pipe against external corrosion when it contacts dissimilar metals other than galvanized steel. Also protect it when it is subject to repeated wetting by such liquids as water (except rainwater), detergents, sewage, or leaking from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, is good protection. The maximum nominal pipe size for aluminum pipe is 3/4 inch. Limit pressures to less than 20 p.s.i.g. Do not install aluminum alloy pipe within 6 inches of the ground.

(i) Vapor piping with operating pressures not more than 125 p.s.i.g. must be suitable for a working pressure of at least 125 p.s.i.g. It must be at least Schedule 40 (ASTM A-53-69, Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal).

(ii) Vapor piping with operating pressures more than 125 p.s.i.g. and all liquid piping must be suitable for a working pressure of at least 250 p.s.i.g. It must be at least Schedule 80 if it has threaded or threaded and back welded joints. It must be at least Schedule 40 (ASTM A-53-69 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal) if it has welded, or welded and flanged joints.

(B) Tubing must be seamless and of copper, brass, steel, or aluminum alloy. Copper tubing must be type K or L or equivalent as covered in the Specification for Seamless Copper Water Tube, ANSI

H23.1-1970 (ASTM B88-69). Aluminum alloy tubing must be Type A or B or equivalent as in Specification ASTM B210-68. It must have markings every 18 inches indicating compliance with ASTM Specifications. The minimum nominal wall thickness of copper tubing and aluminum alloy tubing is in Table 2 and Table 3. [Tables not included. See ED. NOTE.]

Protect aluminum alloy tubing against external corrosion when it contacts dissimilar metals other than galvanized steel. Also protect it when it is subject to repeated wetting by liquids such as water (except rainwater), detergents, sewage, or leakage from other piping, or it passes through flooring, plaster, masonry, or insulation. Galvanized sheet steel or pipe, galvanized inside and out, is good protection. The maximum outside diameter for aluminum alloy tubing is 3/4 inch. Limit pressures to less than 20 p.s.i.g. Do not install aluminum alloy pipe within 6 inches of the ground.

**NOTE:** The standard size to designate tubing is 1/8 inch smaller than its nominal outside diameter.

(C) Pipe joint may be screwed, flanged, welded, soldered, or brazed with a material with a melting point more than 1,000°F. Joints on seamless copper, brass, steel, or aluminum alloy gas tubing must be made with approved gas tubing fittings, or soldered or brazed with a material having a melting point more than 1,000°F.

(D) For operating pressures of 125 p.s.i.g. or less, fittings must withstand a pressure of at least 125 p.s.i.g. For operating pressures above 125 p.s.i.g., fittings withstand a minimum of 250 p.s.i.g.

(E) You may not use threaded cast iron pipe fittings such as ells, tees, crosses, couplings, and unions. Use aluminum alloy fittings with aluminum alloy pipe and tubing. Use insulated fittings where aluminum alloy pipe or tubing connects with a dissimilar metal.

(F) Strainers, regulators, meters, compressors, pumps, etc., are not pipe fittings. This does not prohibit the use of malleable, nodular, or higher strength gray iron for such equipment.

(G) All materials such as valve seats, packing, gaskets, diaphragms, etc., must be resistant to the action of liquefied petroleum gas.

(H) After assembly, test all piping, tubing, or hose at not less than normal operating pressures. After installation, test piping and tubing with a manometer or similar tester that shows a pressure drop. There must be no leaks. Do not test with a flame.

(I) Use flexible connections to compensate for expansion, contraction, jarring, vibration, and settling.

(J) Piping outside buildings may be buried, aboveground, or both. It must have good support and protection against physical damage. Where soil conditions warrant, protect piping against corrosion. Where condensation may occur, the piping must pitch back to the container, or there must be another way to change the condensate back to a vapor.

(h) Hose specifications.

(A) Hose must be made of materials that are resistant to the action of LP-Gas. If the hose has wire braid reinforcing, it must be corrosion-resistant.

(B) Mark hose for container pressure "LP-Gas" or "LPG" at least every 10 feet.

(C) Hose for container pressure must have a bursting pressure rating of not less than 1,250 p.s.i.g.

(D) Hose for container pressure must be listed (see definitions in subdivision B).

(E) Hose connections for container pressure must withstand, without leaks, a test pressure of at least 500 p.s.i.g.

(F) Hose and hose connections on the low-pressure side of the regulator or reducing valve must have a bursting pressure rating of not less than 125 p.s.i.g. or five times the set pressure of the relief devices protecting that portion of the system, whichever is higher.

(G) Hose is acceptable on the low-pressure side of regulators to connect to other than domestic and commercial gas appliances if:

(i) The appliances connected with a hose are portable and need a flexible connection.

(ii) For use inside buildings the hose must be of minimum practical length, but not more than 6 feet except as in OAR 437-004-0780(4)(e)(A)(vii). It may not extend from one room to another, nor pass through any walls, partitions, ceilings, or floors. Such hose must be in view and not concealed. Outside buildings, the hose may be longer but must be as short as practical.

(iii) Use only approved hose. Do not use it where temperatures are likely to be more than 125°F. Securely connect the hose to the appliance and do not use rubber slip ends.

(iv) The shutoff valve for an appliance connected by hose must be in the metal pipe or tubing and not at the appliance end of the hose. When shutoff valves are installed close to each other, take precautions to prevent operation of the wrong valve.

(v) Protect hose connected to wall outlets from physical damage.

(i) Safety devices.

(A) Every container except those meeting DOT specifications and every vaporizer (except motor fuel vaporizers and except vaporizers in OAR 437-004-0780(3)(j)(B)(iii) and (5)(d)(E)(i)) whether heated by artificial means or not, must have one or more spring loaded safety relief valves. These valves must allow free venting to the outer air with discharge not less than 5 feet horizontally away from any opening into nearby buildings. The rate of discharge must meet the requirements of (3)(i)(B) or (3)(i)(C) below for vaporizers.

(B) The minimum rate of discharge in cubic feet per minute of air at 120 percent of the maximum permitted start to discharge pressure for safety relief valves on containers other than DOT containers must be as follows: [Table not included. See ED. NOTE.]

(C) Minimum Required Rate of Discharge for Safety Relief Valves for Liquefied Petroleum Gas Vaporizers (Steam Heated, Water Heated, and Direct Fired). Determine the minimum required rate of discharge for safety relief valves as follows:

(i) Obtain the total surface area by adding the surface area of the vaporizer shell in square feet directly in contact with LP-Gas and the heat exchanged surface area in square feet directly in contact with LP-Gas.

(ii) Obtain the minimum required rate of discharge in cubic feet of air per minute, at 60°F and 14.7 p.s.i.a. from (3)(i)(B) above, for this total surface area.

(D) Container and vaporizer safety relief valves must be set to start-to-discharge, with relation to the design pressure of the container, according to Table 4.

(E) Safety relief devices used with systems having other than DOT containers must discharge at not less than the rates in (3)(i)(B) above, before the pressure is more than 120 percent of the maximum (not including the 10 percent in (3)(i)(D) above) permitted start to discharge pressure setting of the device. [Table not included. See ED. NOTE.]

(F) Some places have continuous high temperatures that require storage of a lower vapor pressure product or the use of a higher designed pressure vessel to prevent the safety valves opening. As an alternative use cooling devices like sprayers, shade or other methods.

(G) Place safety relief valves to discourage tampering. If pressure setting or adjustment is external, the relief valves must have approved means for sealing adjustment.

(H) Shutoff valves must not be between the safety relief devices and the container, or the equipment or piping to which the safety relief device is connected unless there is full required capacity flow through the safety relief device.

(I) Safety relief valves must have direct communication with the vapor space of the container at all times.

(J) Mark each container safety relief valve used with systems covered by OAR 437-004-0780(5), (6), and (8), except as in (6)(c)(C) as follows:

(i) "Container Type" of the pressure vessel on which the valve is designed to be installed;

(ii) The pressure in p.s.i.g. at which the valve will discharge;

(iii) The actual rate of discharge of the valve in cubic feet per minute of air at 60°F and 14.7 p.s.i.a.;

(iv) The manufacturer's name and catalog number, for example: T200-250-4050 AIR — indicating that the valve is suitable for use on a Type 200 container that it is set to start to discharge at 250 p.s.i.g., and

(v) That its rate of discharge is 4,050 cubic feet per minute of air as noted in OAR 437-004-0780(i)(B).

(K) Safety relief valve assemblies, including their connections, must provide the rate of flow required for the container on which they are installed.

(L) A hydrostatic relief valve must be between each pair of shut-off valves on liquefied petroleum gas liquid piping to discharge into a safe atmosphere. The start-to-discharge pressure setting must not be more than 500 p.s.i.g. The minimum setting on relief valves in piping connected to other than DOT containers must not be lower than 140 percent of the container relief valve setting and in piping connected to DOT containers not lower than 400 p.s.i.g. The start-to-discharge pressure setting of a relief valve installed on the discharge side of a pump, must be more than the maximum pressure permitted by the recirculation device in the system.

(M) Safety relief devices must not discharge in or beneath a building, except devices covered by OAR 437-004-0780(3)(f)(A)(i) through (iv), or (4)(d)(A) or (e).

(N) Container safety relief devices and regulator relief vents must be at least five (5) feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(j) Vaporizer and housing.

(A) Indirect fired vaporizers using steam, water, or other heating medium must comply with the following:

(i) Vaporizers must comply with OAR 437-004-0780(3)(b)(A)–(C) and have permanent marks as follows:

(I) The code marking signifying the specifications of the vaporizer.

(II) The allowable working pressure and temperature for the vaporizer.

(III) The sum of the outside surface area and the inside heat exchange surface area in square feet.

(IV) The name or symbol of the manufacturer.

(ii) Vaporizers with an inside diameter of 6 inches or less exempted by the ASME Unfired Pressure Vessel Code, Section VIII of the ASME Boiler and Pressure Vessel Code — 1968 must have a design pressure not less than 250 p.s.i.g. and need no permanent marks.

(iii) Do not install heating or cooling coils inside a storage container.

(iv) Vaporizers are acceptable in buildings, rooms, sheds, or lean-tos used exclusively for gas manufacturing or distribution, or in other structures of light, noncombustible construction or equivalent, well ventilated near the floor line and roof. When vaporizing and/or mixing equipment is in a structure or building not used exclusively for gas manufacturing or distribution, either attached to or within such a building, separate the structure or room from the rest of the building with a wall that will withstand a static pressure of at least 100 pounds per square foot. This wall must have no openings or pipe or conduit passing through it. Such structure or room must have enough ventilation and must have a roof or at least one exterior wall of lightweight construction.

(v) Vaporizers must have, at or near the discharge, a relief valve with an discharge rate complying with OAR 437-004-0780(3)(i)(C), except as in (4)(d)(F)(i).

(vi) The heating medium lines into and leaving the vaporizer must have suitable means for preventing gas flow into the heat systems in the event of tube rupture in the vaporizer. Vaporizers must have suitable automatic means to prevent liquid passing through the vaporizers to the gas discharge piping.

(vii) The device that supplies the necessary heat for producing steam, hot water, or other heating medium may be in a building, compartment, room, or lean-to that must have ventilation near the floor-line and roof to the outside. A wall that can withstand a static pressure of at least 100 pounds per square foot must separate the device from all compartments or rooms that have liquefied petroleum gas vaporizers, pumps, and central gas mixing devices. This wall must have no openings or pipes or conduit passing through it. This requirement does not apply to the domestic water heaters that may supply heat for a vaporizer in a domestic system.



(viii) Gas-fired heating systems supplying heat exclusively for vaporization purposes must have automatic devices to shut off the flow of gas to main burners, if the pilot light should fail.

(ix) Vaporizers may be an integral part of a fuel storage container directly connected to the liquid section or gas section or both.

(x) Vaporizers must not have fusible plugs.

(xi) Vaporizer houses must not have unprotected drains to sewers or sump pits.

(B) Atmospheric vaporizers using heat from the ground or surrounding air must be as follows:

(i) Buried underground; or

(ii) Inside the building close to a point at which pipe enters the building if the capacity of the unit does not exceed 1 quart.

(iii) Vaporizers of less than 1 quart capacity heated by the ground or surrounding air, need not have relief valves if adequate tests show that the assembly is safe without them.

(C) Make, mark and install direct gas-fired vaporizers as follows:

(i)(I) In accordance with the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code — 1968 that are applicable to the maximum working conditions for which the vaporizer is designed.

(II) With the name of the manufacturer; rated Btu input to the burner; the area of the heat exchange surface in square feet; the outside surface of the vaporizer in square feet; and the maximum vaporizing capacity in gallons per hour.

(ii)(I) Vaporizers may be connected to the liquid section or the gas section of the storage container, or both; but in any case there must be at the container a manually operated valve in each connection to permit completely shutting off when desired, of all flow of gas or liquid from container to vaporizer.

(II) Vaporizers with capacity not more than 35 gallons per hour must be at least 5 feet from container shutoff valves. Vaporizers with capacity of more than 35 gallons but not more than 100 gallons per hour must be at least 10 feet from the container shutoff valves. Vaporizers with a capacity more than 100 gallons per hour must be at least 15 feet from container shutoff valves.

(iii) Vaporizers may be in buildings, rooms, housings, sheds, or lean-tos used exclusively for vaporizing or mixing of liquefied petroleum gas. Vaporizing housing structures must be of non-combustible construction, well ventilated near the floorline and the highest point of the roof. When vaporizer and/or mixing equipment is located in a structure or room attached to or within a building, such structure or room must be separated from the remainder of the building by a wall that can withstand a static pressure of at least 100 pounds per square foot. This wall must have no openings or pipes or conduit passing through it. Such structure or room must have adequate ventilation, and must have a roof or at least one exterior wall of lightweight construction.

(iv) Vaporizers must have at or near the discharge, a relief valve with an effective discharge rate complying with OAR 437-004-0780(3)(i)(C). The relief valve must not be subjected to temperatures more than 140°F.

(v) Vaporizers must have suitable automatic means to prevent liquid passing from the vaporizer to the gas discharge piping of the vaporizer.

(vi) Vaporizers must have means for manually turning off the gas to the main burner and pilot.

(vii) Vaporizers must have automatic devices to shut off the flow of gas to main burners if the pilot light should fail. When the flow through the pilot is more than 2,000 Btu per hour, the pilot also must have an automatic device to shut off the flow of gas to the pilot if the pilot flame goes out.

(viii) Pressure regulating and pressure reducing equipment if within 10 feet of a direct fire vaporizer must be separated from the open flame by a substantially airtight noncombustible partition or partitions.

(ix) Except as in (iii), keep the following minimum distances between direct fired vaporizers and the nearest building or group of buildings:

(I) Ten feet for vaporizers with a capacity of 15 gallons per hour or less vaporizing capacity.

(II) Twenty-five feet for vaporizers with a vaporizing capacity of 16 to 100 gallons per hour.

(III) Fifty feet for vaporizers with a vaporizing capacity more than 100 gallons per hour.

(x) Direct fired vaporizers must not raise the product pressure above the design pressure of the vaporizer equipment or raise the product pressure within the storage container above the pressure in the second column of **Table H-8**.

(xi) Vaporizers must not have fusible plugs.

(xii) Vaporizers must not have unprotected drains to sewers or sump pits.

(D) Install and use direct gas-fired tank heaters as follows:

(i) Direct gas-fired tank heaters, and tanks to which they are applied, must only be above ground.

(ii) Tank heaters must have permanent markings with the name of the manufacturer, the rated Btu input to the burner, and the maximum vaporizing capacity in gallons per hour.

(iii) Tank heaters may be an integral part of a fuel storage container directly connected to the container liquid section, or vapor section, or both.

(iv) Tank heaters must have a means for manually turning off the gas to the main burner and pilot.

(v) Tank heaters must have an automatic device to shut off the flow of gas to main burners, if the pilot light should fail. When flow through pilot exceeds 2,000 Btu per hour, the pilot also must have an automatic safety device to shut off the gas to the pilot if the pilot flame goes out.

(vi) Separate pressure regulating and pressure reducing equipment if within 10 feet of a direct fired tank heater, from the open flame by a substantially airtight noncombustible partition.

(vii) Keep these minimum distances between a storage tank heated by a direct fired tank heater and the nearest important building or group of buildings:

(I) Ten feet for storage containers of less than 500 gallons water capacity.

(II) Twenty-five feet for storage containers of 500 to 1,200 gallons water capacity.

(III) Fifty feet for storage containers of over 1,200 gallons water capacity.

(viii) No direct fired tank heater must raise the product pressure within the storage container over 75 percent of the pressure set out in the second column of Table H-8.

(E) The vaporizer section of vaporizer-burners used for dehydrators or dryers must be outside of buildings and as follows:

(i) Vaporizer-burners must have a minimum design pressure of 250 p.s.i.g. with a factor of safety of five.

(ii) Manually operated positive shut-off valves must be at the containers to shut off all flow to the vaporizer-burners.

(iii) Minimum distances between storage containers and vaporizer-burners is as follows: [Table not included. See ED. NOTE.]

(iv) The vaporizer section of vaporizer-burners must have a hydrostatic relief valve. The relief valve must not be subjected to temperatures more than of 140°F. The start-to-discharge pressure setting must be set protect the components involved, but not less than 250 p.s.i.g. The discharge must be upward and away from component parts of the equipment and away from operating personnel.

(v) Vaporizer-burners must have means for manually turning off the gas to the main burner and pilot.

(vi) Vaporizer-burners must have automatic devices to shut off the flow of gas to the main burner and pilot if it goes out.

(vii) Locate or protect pressure regulating and control equipment so that the temperatures surrounding this equipment do not exceed 140°F except that you may use equipment components at higher temperatures if designed to withstand such temperatures.

(viii) Pressure regulating and control equipment when downstream of the vaporizer must be able to withstand the maximum discharge temperature of the vapor.

(ix) The vaporizer section of vaporizer-burners must not have fusible plugs.

(x) Vaporizer coils or jackets must be ferrous metal or high temperature alloys.

(xi) Equipment using vaporizer-burners must have automatic shutoff devices upstream and downstream of the vaporizer section connected to operate in case of excessive temperature, flame failure, and, if applicable, insufficient airflow.

(k) Filling densities.

(A) The "filling density" is the percent ratio of the weight of the gas in a container to the weight of water the container will hold at 60°F. Fill containers according to the filling densities in Table 5. [Table not included. See ED. NOTE.]

(B) Except as in (3)(k)(C) below, any container including mobile cargo tanks and portable tank containers, shipped under DOT jurisdiction or made according to 49 CFR Chapter I Specifications must be charged according to 49 CFR Chapter I requirements.

(C) Portable containers not subject to DOT jurisdiction (such as, but not limited to, motor fuel containers on industrial and lift trucks, and farm tractors in OAR 437-004-0780(6), or containers recharged at the installation) may be filled either by weight, or by volume using a fixed length dip tube gaging device.

(l) LP-Gas in buildings.

(A) Pipe vapor into buildings at pressures more than 20 p.s.i.g. only if the buildings or separate areas:

(i) Comply with this section;

(ii) Are used only for vaporization equipment, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and with a similar hazard;

(iii) Buildings, structures, or equipment under construction or undergoing major renovation.

(B) Liquid is permitted in buildings as follows:

(i) Buildings, or separate areas of buildings, used exclusively to house equipment for vaporization, pressure reduction, gas mixing, gas manufacturing, or distribution, or to house internal combustion engines, industrial processes, research and experimental laboratories, or equipment and processes using such gas and having a similar hazard; and when such buildings, or separate areas are constructed according to this section.

(ii) Buildings, structures, or equipment under construction or undergoing major renovation if the temporary piping meets the following conditions:

(I) Liquid piping inside the building must conform to the requirements of OAR 437-004-0780(3)(g), and must not exceed three-fourths iron pipe size. Copper tubing with an outside diameter of 3/4 inch or less is acceptable if it conforms to Type K of Specifications for Seamless Water Tube, ANSI H23.1-1970 (ASTM B88-69) (see Table 24). All such piping must have protection against construction hazards. Liquid piping inside buildings must be kept to a minimum. Fasten such piping securely to walls or other surfaces for adequate protection from breakage and place it to subject the liquid line to lowest ambient temperatures.

(II) There must be a shutoff valve in each intermediate branch line where it takes off the main line. A shutoff valve must also be at the appliance end of the intermediate branch line. Such shutoff valves must be upstream of any flexible connector used with the appliance.

(III) Suitable excess flow valves must be in the container outlet line supplying liquid LP-Gas to the building. A suitable excess flow valve must be immediately downstream of each shutoff valve. Suitable excess flow valves must be installed and sized where piping size is reduced.

(IV) Hydrostatic relief valves must comply with OAR 437-004-0780(3)(i)(l).

(V) Do not use hose to carry liquid between the container and the building or at any point in the liquid line, except at the appliance connector.

(VI) Where flexible connectors are necessary for appliance installation, make them as short as practicable and they must comply with OAR 437-004-0780(3)(g)(B) or (h).

(VII) Minimize the release of fuel by either of the following methods when any section of piping or appliances is disconnected.

(C) Using an approved automatic quick-closing coupling (a type closing in both directions when coupled in the fuel line); or

(D) Closing the valve nearest to the appliance and allowing the appliance to operate until the fuel in the line is consumed.

(E) Do not take portable containers into buildings except as in OAR 437-004-0780(3)(e)(A).

(m) Transfer of liquids. The employer must assure that:

(A) At least one attendant stays close to the transfer connection, during the transfer of the product.

(B) Do not use or refill containers made according to 49 CFR Part 178 and authorized by 49 CFR Chapter 1 as a "single trip" or "nonrefillable container."

(C) Do not vent gas or liquid to the atmosphere while transferring contents of one container to another, except as in OAR 437-004-0780(6)(e)(D). This does not preclude the use of listed pumps that use LP-Gas vapor as a source of energy. They may vent to the atmosphere at a rate not more than that from a .1200 inch opening. Such venting and liquid transfer must be at least 50 feet from the nearest building.

(D) Filling of fuel containers for industrial trucks or motor vehicles from industrial bulk storage containers must be at least 10 feet from the nearest masonry-walled building or at least 25 feet from the nearest building or other construction and in any case, not less than 25 feet from any building opening.

(E) Filling of portable containers, containers on skids, fuel containers on farm tractors, or similar applications, from storage containers used in domestic or commercial service, must be at least 50 feet from the nearest building.

(F) The filling connection and the vent from the liquid level gages in containers, filled at point of installation, must be at least 10 feet in any direction from air openings into sealed combustion system appliances or mechanical ventilation air intakes.

(G) Gauge and charge fuel supply containers only in the open air or in buildings especially for that purpose.

(H) The maximum vapor pressure of the product at 100°F during transfer into a container must comply with paragraphs OAR 437-004-0780(c)(2) and (d)(3). (For DOT containers use DOT requirements.)

(I) Use only gases for which the system is designed, examined, and listed, particularly regarding pressures.

(J) Pumps or compressors must be designed for use with LP-Gas. When using compressors they must take suction from the vapor space of the container being filled and discharge to the vapor space of the container being emptied.

(K) Pumping systems, with a positive displacement pump, must have a recirculating device that limits the differential pressure on the pump under normal operating conditions to its maximum differential pressure rating. Protect the discharge of the pumping system so that pressure is never more than 350 p.s.i.g. If a recirculation system discharges into the supply tank and has a manual shutoff valve, there must be an adequate secondary safety recirculation system that has no means of making it inoperative. Manual shutoff valves in recirculation systems must be open except during an emergency or when the system is under repair.

(L) When necessary, unloading piping or hoses must have suitable bleeder valves to relieve pressure before disconnection.

(M) Agricultural air moving equipment, including crop dryers, must be off when filling supply containers unless the air intakes and sources of ignition are at least 50 feet from the container.

(N) Agricultural equipment using open flames or equipment with integral containers, such as flame cultivators, weed burners, and, tractors, must be off during refueling.

(n) Tank car or transport truck loading or unloading points and operations.

(A) The track of tank car sidings must be relatively level.

(B) A "Tank Car Connected" sign, as covered by DOT rules, must be at the active end or ends of the siding while the tank car is connected.

(C) While cars are on sidetrack for loading or unloading, block the wheels at both ends.

(D) The employer must insure that an employee is always present during loading or unloading of tank cars or trucks.

(E) A backflow check valve, excess-flow valve, or a shutoff valve with means of remote closing, to protect against uncontrolled discharge of LP-Gas from storage tank piping must be close to the point where the liquid piping and hose or swing joint pipe connect.

(F) Except as in (3)(n)(G) below, when the size (diameter) of the loading or unloading hoses and/or piping is reduced below the size of the tank car or transport truck loading or unloading connections, the adaptors to which lines are attached must have either a backflow check valve, a properly sized excess flow valve, or shut-off valve with means of remote closing, to protect against uncontrolled discharge from the tank car or transport truck.

(G) The requirement of (3)(n)(F) above does not apply if the tank car or transport has a quick-closing internal valve that remotely closes.

(H) The location of the tank car or transport truck loading or unloading point must consider the following:

- (i) Nearness to railroads and highway traffic.
- (ii) With respect to buildings on installer's property.
- (iii) Nature of occupancy.
- (iv) Topography.
- (v) Type of construction of buildings.

(vi) Number of tank cars or transport trucks that may be safely loaded or unloaded at one time.

(vii) Frequency of loading or unloading. Where practical, the distance of the unloading or loading point must conform to the distances in OAR 437-004-0780(3)(e)(B).

(o) Instructions. Personnel performing installation, removal, operation, and maintenance work must have proper training.

(p) Electrical equipment and other sources of ignition.

(A) Fixed electrical equipment in classified areas must comply with OAR 437-004-0780(q). Other electrical equipment and wiring must comply with 4/S.

(B) There must be no open flames or other sources of ignition in vaporizer rooms (except those housing direct-fired vaporizers), pump houses, container charging rooms or other similar locations. Direct-fired vaporizers may not be in pump houses or container charging rooms.

(C) Liquefied petroleum gas storage containers do not require lightning protection.

(D) Since liquefied petroleum gas is in a closed system of piping and equipment, the system does not need to be electrically conductive or electrically bonded for protection against static electricity.

(E) Open flames, cutting or welding, portable electric tools, and extension lights capable of igniting LP-Gas, must not be in classified areas in Table 6 unless the LP-Gas facilities are free of all liquid and vapor. [Table and Figure not included. See ED. NOTE.]

(q) Fixed electrical equipment in classified areas. Fixed electrical equipment and wiring in classified areas in Table 6 must comply with Table 6 and subdivision 4/S. This provision does not apply to fixed electrical equipment at residential or commercial installations of LP-Gas systems or to systems covered by OAR 437-004-0780(4).

(r) Liquid-level gaging device.

(A) Each container made after December 31, 1965, and filled on a volumetric basis must have a fixed liquid-level gage to indicate the maximum filling level as in OAR 437-004-0780(b)(19)(v). Each container made after December 31, 1969, must have permanently attached to the container adjacent to the fixed level gage a marking showing the percentage full that will be shown by that gage. When there is also a variable liquid-level gage, the fixed gage will also serve as a way to check the variable gage. OAR 437-004-0780(b)(12) requires these gages in charging containers.

(B) Arrange all variable gaging devices so that the maximum allowed liquid level for butane, for a 50-50 mixture of butane and propane, and for propane, is readily determinable. The markings indicating the various liquid levels from empty to full must be on the sys-

tem nameplate or gaging device or part may be on the system nameplate and part on the gaging device. Dials of magnetic or rotary gages must show whether they are for cylindrical or spherical containers and whether for aboveground or underground service. The dials of gages intended for use only on aboveground containers of over 1,200 gallons water capacity must be so marked.

(C) Gaging devices that require bleeding of the product to the atmosphere, such as the rotary tube, fixed tube, and slip tube, must have a bleed valve maximum opening not larger than .0550 inch, unless they have an excess flow valve.

(D) Gaging devices must have a design working pressure of at least 250 p.s.i.g.

(E) Length of tube or position of fixed liquid-level gage must indicate the maximum fill level of the container for the product contained. This level must be based on the volume of the product at 40°F at its maximum permitted filling density for aboveground containers and at 50°F for underground containers. The employer must calculate the filling point for which the fixed liquid level gage must be designed according to the method in this subdivision.

(i) It is impossible to set out in a table the length of a fixed dip tube for various capacity tanks because of the varying tank diameters and lengths and because the tank may be installed either in a vertical or horizontal position. Knowing the maximum permitted filling volume in gallons, however, the length of the fixed tube can be determined by the use of a strapping table obtained from the container manufacturer. The length of the fixed tube should be such that when its lower end touches the surface of the liquid in the container, the contents of the container will be the maximum permitted volume as determined by the following formula: [Formula not included. See ED. NOTE.]

(ii) Formula for determining maximum volume of liquefied petroleum gas for which a fixed length of dip tube must be set: [Table not included. See ED. NOTE.]

(iii) The maximum volume of LP-Gas that can be in a container when determining the length of the dip tube expressed as a percentage of total water content of the container is calculated by the following formula.

(iv) The maximum weight of LP-Gas which may be placed in a container for determining the length of a fixed dip tube is determined by multiplying the maximum volume of liquefied petroleum gas obtained by the formula in (3)(r)(E)(i) above by the pounds of liquefied petroleum gas in a gallon at 40°F for aboveground and at 50°F for underground containers. For example, typical pounds per gallon are below: [Formula not included. See ED. NOTE.]

(F) Fixed liquid-level gages on containers other than DOT containers must be stamped on the exterior of the gage with the letters "DT" followed by the vertical distance (expressed in inches and carried out to one decimal place) from the top of container to the end of the dip tube or to the centerline of the gage when it is at the maximum permitted filling level. For portable containers that may be filled in the horizontal and/or vertical position the letters "DT" must be followed by "V" with the vertical distance from the top of the container to the end of the dip tube for vertical filling and with "H" followed by the proper distance for horizontal filling. For DOT containers the stamping must be both on the exterior of the gage and on the container. On above-ground or cargo containers where the gages are positioned at specific levels, the marking may be in percent of total tank contents and the marking must be on the container.

(G) Columnar gage glasses must be restricted to charging plants where the fuel is withdrawn in the liquid only. They must have valves with metallic handwheels, excess flow valves, and extra-heavy glass adequately protected with a metal housing applied by the gage manufacturer. They must be shielded against the direct rays of the sun. Do not use columnar gage glasses on tank trucks, motor fuel tanks or on containers used in domestic, commercial, and industrial installations.

(H) Gaging devices of the float, or equivalent type that do not require flow for their operation and with connections extending to a point outside the container do not have to have excess flow valves if the piping and fittings will withstand the container pressure and are properly protected against physical damage.



(s) Requirements for appliances.

(A) Except as in (3)(s)(B) below, new commercial and industrial gas consuming appliances must be approved.

(B) If an appliance was made to use a gas other than LP-Gas, it may be used with LP-Gas only after it is properly converted, adapted and tested for performance before placing it in use.

(C) Unattended heaters inside buildings for animal or poultry production or care must have an approved automatic device to shut off the gas if the flame goes out.

(D) Install all agricultural appliances or equipment according to the requirements of this section and the following:

(i) Domestic and commercial appliances — NFPA 54-1969, Standard for the Installation of Gas Appliances and Gas Piping.

(ii) Industrial appliances — NFPA 54A-1969, Standard for the Installation of Gas Piping and Gas Equipment on Industrial Premises and Certain Other Premises.

(iii) Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines — NFPA 37-1970.

(4) Cylinder systems.

(a) Application. This paragraph applies specifically to systems using DOT containers. All requirements of OAR 437-004-0780(3) apply to this paragraph unless otherwise noted in OAR 437-004-0780(3).

(b) Marking of containers.

(A) Container markings must comply with DOT regulations. Additional markings not in conflict with DOT regulations are acceptable.

(B) Each container must show its water capacity in pounds or other identified unit of weight unless it is filled and maintained only by the owner or their representative and the water capacity is identified by a code.

(C) Each container must show its tare weight in pounds or other identified unit of weight including all permanently attached fittings but not the cap.

(c) Description of a system. A system includes the container base or bracket, containers, container valves, connectors, manifold valve assembly, regulators, and relief valves.

(d) Containers and regulating equipment outside of buildings or structures.

(A) Do not bury containers. This does not prohibit installation below grade level if the container and regulating equipment do not contact the ground. The area must have drainage and ventilate horizontally to the outside air from its lowest level. The outlet must be at least 3 feet away from any building opening that is below it.

Except as in OAR 437-004-0780(3)(i)(M), the discharge from safety relief devices must be at least 3 feet horizontally away from any building opening below the level of discharge and must not end beneath any building unless the space has good ventilation and only two enclosed sides.

(B) Containers must be on a firm foundation or otherwise firmly secured. Connect outlet pipes with a flexible or special fitting.

(e) Containers and equipment inside buildings or structures.

(A) When you must use portable containers inside buildings or structures follow (i) through (xii) below, and other parts of this subparagraph (A) that apply.

(i) Use containers with and connect only to compatible equipment or appliances.

(ii) Systems using containers with a water capacity more than 2-1/2 pounds (nominal 1 pound LP-Gas capacity) must have excess flow valves. The valves must be integral either with the container valves or in the connections to the container valve outlets. In either case, an excess flow valve must prevent strain beyond the excess flow valve from causing a break between the container and the valve.

(iii) Regulators must be connect directly either to the container valves or to manifolds connected to the container valves. The regulator must be suitable for use with LP-Gas. Manifolds and fittings connecting containers to pressure regulator inlets must withstand at least 250 p.s.i.g. service pressure.

(iv) Protect valves on containers with a water capacity more than 50 pounds (nominal 20 pounds LP-Gas capacity) while in use.

(v) Containers must have markings that comply with OAR 437-004-0780(3)(d)(C) and (4)(b).

(vi) Pipe or tubing must conform to OAR 437-004-0780(3)(g). Do not use aluminum pipe or tubing.

(vii)(I) Hose must have a working pressure of at least 250 p.s.i.g. Hose and hose connections must be listed by a nationally recognized testing laboratory. The hose length may be more than the length in OAR 437-004-0780(3)(h)(G)(ii), but must be as short as practicable. Refer to §1910.7 for definition of nationally recognized testing laboratory.

(II) Hose must be long enough to permit compliance with spacing provisions of this subparagraph without kinking or straining or causing hose to be so close to a burner as to be damaged by heat.

(viii) Portable heaters, including salamanders, must have an approved automatic device to shut off the gas if the flame does out. Heaters with inputs more than 50,000 Btu made on or after May 17, 1967, and heaters with inputs more than 100,000 Btu made before May 17, 1967, must have either:

(I) A pilot that must light before the main burner can be turned on; or

(II) An electric ignition system.

**NOTE:** This paragraph (viii) does not apply to tar kettle burners, torches, melting pots, nor to portable heaters less than 7,500 B.t.u.h. input used with containers with a maximum water capacity of 2-1/2 pounds. Do not use container valves, connectors, regulators, manifolds, piping, and tubing as structural supports for heaters.

(ix) Locate containers, regulating equipment, manifolds, pipe, tubing, and hose to minimize exposure to abnormally high temperatures, physical damage, or tampering by unauthorized persons.

(x) Locate and use heat producing equipment in a way that minimizes the possibility of ignition of combustibles.

(xi) Containers with a water capacity more than 2-1/2 pounds (nominal 1 pound LP-Gas capacity) connected for use, must be upright on a firm and level surface.

(xii) Containers, including the valve protective devices, must be installed to minimize the probability of impingement of discharge of safety relief devices on containers.

(B) Containers with a maximum water capacity of 2-1/2 pounds (nominal 1 pound LP-Gas capacity) are allowed inside buildings as part of approved self-contained hand torch assemblies or similar appliances.

(C) You may use containers in buildings or structures under construction or major renovation and not occupied by the public, as follows:

(i) The maximum water capacity of individual containers is 245 pounds (nominal 100 pounds LP-Gas capacity).

(ii) For temporary heating such as curing concrete, drying plaster and similar applications, heaters (other than integral heater-container units) must be at least 6 feet from any LP-Gas container. This does not prohibit the use of heaters designed for attachment to the container or to a supporting standard, if they do not allow direct or radiant heat application onto the container. Blower and radiant type heaters must not point toward any LP-Gas container within 20 feet.

(iii) If two or more heater-container units, of either the integral or non-integral type, are in an unpartitioned area on the same floor, separate them by at least 20 feet.

(iv) Storage of containers awaiting use must comply with OAR 437-004-0780(7).

(D) Containers are allowed in buildings for temporary emergency heating purposes, to prevent damage to the buildings or contents, when the permanent heating system is temporarily out of service, as follows:

(i) Containers and heaters must comply with and be used according to OAR 437-004-0780(4)(e)(C).

(ii) Do not leave the temporary heating equipment unattended.

(f) Container valves and accessories.

(A) Valves in the assembly of multiple container systems must allow replacement of containers without shutting off the flow of gas in the system.

**NOTE:** This does not require an automatic changeover device.

(B) Firmly attach regulators and low-pressure relief devices to the cylinder valves, cylinders, supporting standards or the building walls. The weather must not affect their operation.

(C) Protect valves and connections to the containers while in transit, in storage, and while being moved into final use, as follows:

(i) By setting into the recess of the container to prevent their being struck if the container is dropped on a flat surface, or

(ii) By ventilated cap or collar, fastened to the container and strong enough to prevent the force of a blow from affecting the valve or other connection.

(D) Keep outlet valves tightly closed or plugged on unconnected containers, although the containers are empty.

(E) Containers with a water capacity more than 50 pounds (approximately 21 pounds LP-Gas capacity), recharged at the installation, must have excess flow or backflow check valves to prevent the discharge of contents in case of failure of the filling or equalizing connection.

(g) Safety devices.

(A) Containers must have safety devices as required by DOT regulations.

(B) A final stage regulator of an LP-Gas system (excluding any appliance regulator) must have on the low-pressure side with a relief valve set to start to discharge within the limits in Table 8. [Table not included. See ED. NOTE.]

(C) When using a regulator or pressure relief valve inside a building for other than purposes in OAR 437-004-0780(3)(e)(A)(i)-(vii), vent the relief valve and the space above the regulator and relief valve diaphragms to the outside air with the discharge outlet at least 3 feet horizontally away from any building opening below the discharge. This does not apply to protected individual appliance regulators nor to OAR 437-004-0780(4)(e) and (3)(i)(m).

(h) Reinstallation of containers. Do not reinstall containers unless they requalify according to DOT regulations.

(i) Permissible product. Do not put a product in a container marked with a service pressure less than four-fifths of the maximum vapor pressure of the product at 130°F.

(5) Systems using containers other than DOT containers.

(a) Application. This paragraph applies specifically to systems using storage containers other than those that comply with DOT specifications. OAR 437-004-0780(3) applies unless otherwise noted in OAR 437-004-0780(3).

(b) Design pressure and classification of storage containers. Storage containers must comply with Table 9. [Table not included. See ED. NOTE.]

(c) Container valves and accessories, filler pipes, and discharge pipes.

(A) The filling pipe inlet terminal must not be inside a building. For containers with a water capacity of 125 gallons or more, such terminals must be at least 10 feet from any building, 5 feet or more from a driveway (see OAR 437-004-0780(3)(e)(B)) and in a protective housing built for the purpose.

(B) The filling connection must have one of the following:

(i) Combination back-pressure check valve and excess flow valve.

(ii) One double or two single back-pressure check valves.

(iii) A positive shutoff valve, with either:

(I) An internal back-pressure valve; or

(II) An internal excess flow valve.

(C) All openings in a container must have approved automatic excess flow valves except in the following: Filling connections in OAR 437-004-0780(5)(c)(B); safety relief connections, liquid-level gaging devices OAR 437-004-0780(3)(f)(D); pressure gage connections in (3)(f)(E).

(D) If the following exist, you do not need an excess flow valve in the withdrawal service line:

(i) Such systems' total water capacity does not exceed 2,000 U.S. gallons.

(ii) Control of the discharge from the service outlet is by a manual shutoff valve that is:

(I) Threaded directly into the service outlet of the container; or

(II) Is an integral part of a substantial fitting threaded into or on the service outlet of the container; or

(III) Threaded directly into a substantial fitting threaded into or on the service outlet of the container.

(iii) The shutoff valve has an attached handwheel or the equivalent.

(iv) The controlling orifice between the contents of the container and the outlet of the shutoff valve is not more than 5/16 inch in diameter for vapor withdrawal systems and 1/8 inch in diameter for liquid withdrawal systems.

(v) An approved pressure-reducing regulator is directly attached to the outlet of the shutoff valve and is rigidly supported, or that an approved pressure-reducing regulator is attached to the outlet of the shutoff valve with a suitable flexible connection, if the regulator has adequate support and protection on or at the tank.

(E) All inlet and outlet connections except safety relief valves, liquid level gaging devices and pressure gages on containers of 2,000 gallons water capacity, or more, and on any container that supplies fuel directly to an internal combustion engine, must have labeling to show whether they communicate with vapor or liquid space. Labels may be on valves.

(F) Instead of an excess flow valve, openings may have a quick-closing internal valve that, except during operating periods remains closed. The internal mechanism for such valves may have a secondary control that must have a fusible plug (not more than 220° melting point) that closes the internal valve automatically in case of fire.

(G) There can be only two plugged openings on a container of 2,000 gallons or less water capacity.

(H) Containers of 125 gallons water capacity or more made after July 1, 1961, must have an approved device for liquid evacuation. The minimum size is 3/4 inch National Pipe Thread minimum. A plugged opening does not satisfy this requirement.

(d) Safety Devices.

(A) All safety devices must comply with the following:

(i) All container safety relief devices must be on the containers and have a direct link with the vapor space of the container.

(ii) Protect safety relief device discharge terminals against physical damage and such discharge pipes must have loose rain caps. There can be no return bends or restrictive pipe fittings.

(iii) Discharge lines from two or more safety relief devices on the same unit, or similar lines from two or more different units, may be run into a common discharge header, if the cross-sectional area of the header is at least equal to the sum of the cross-sectional areas of the individual discharge lines, and the setting of safety relief valves are the same.

(iv) Each storage container of more than 2,000 gallons water capacity must have a suitable pressure gage.

(v) A final stage regulator of an LP-Gas system (excluding any appliance regulator) must have, on the low-pressure side, a relief valve set to start to discharge within the limits in Table 8.

(vi) When a regulator or pressure relief valve is inside a building, it and the space above the regulator and relief valve diaphragms must vent to the outside air. The discharge outlet must be at least 3 feet horizontally away from any opening into the building that is below such discharge. (This does not apply to protected individual appliance regulators.)

(B) Provide safety devices for aboveground containers as follows:

(i) Containers above ground of 1,200 gallons water capacity or less that may contain liquid fuel must have a spring-loaded relief valve or valves with a rate of discharge required by OAR 437-004-0780(3)(i)(B). In addition to the required spring-loaded relief valve(s), you can use suitable fuse plug(s) if their total discharge area for each container is not more than 0.25 square inches.

(ii) The fuse plugs must melt between 208°F and 220°F. Relief valves and fuse plugs must have a direct link with the container's vapor space.

(iii) On a container with a water capacity more than 125 gallons, but not more than 2,000 gallons, vent the discharge from the safety relief valves away from the container vertically upwards and unobstructed to prevent any impingement of escaping gas upon the container. Use loose-fitting rain caps. There must be a way to drain condensate that may accumulate in the relief valve or its discharge pipe.

(iv) On containers of 125 gallons water capacity or less, the discharge from safety relief devices must be at least 5 feet horizontally away from any opening into the building below the level of the discharge.

(v) On a container with a water capacity more than 2,000 gallons, the discharge from the safety relief valves must vent away from the container vertically upwards to a point at least 7 feet above the container, and unobstructed to the open air in a way that prevents any impingement of escaping gas upon the container. Use only loose-fitting rain caps. Condensation inside the safety relief valve or its discharge pipe must not make the valve inoperative. If there is a drain, there must be a way to protect the system against impingement of flame from ignition of any product escaping from the drain.

(e) Vaporizers. Safety devices for vaporizers must be provided as follows:

(A) Vaporizers of less than 1 quart total capacity, heated by the ground or the surrounding air, need not have safety relief valves if adequate tests certified by any of the authorities in OAR 437-004-0780(3)(b), demonstrate that the assembly is safe without them.

(B) Vaporizers must not have fusible plugs.

(f) Reinstallation of containers. Containers may be reinstalled if they do not show any evidence of harmful external corrosion or other damage. Containers reinstalled underground, must have corrosion resistant coating in good condition (see OAR 437-004-0780(5)(h)(D)). Containers reinstalled above ground, must have safety devices and gaging devices that comply with OAR 437-004-0780(5)(d) and 437-004-0780(3)(r) respectively.

(g) Capacity of containers. Maximum capacity for a storage container is 90,000 gallons water capacity.

(h) Installation of storage containers.

(A) Above ground containers, except as in (5)(h)(G) below, must have substantial masonry or noncombustible structural supports on firm masonry foundation.

(B) Aboveground containers have support as follows:

(i) Horizontal containers must be on saddles in such a manner as to permit expansion and contraction. Use structural metal supports only with approved fire protection. There must be suitable means of preventing corrosion on the part of the container that contacts the foundations or saddles.

(ii) Containers of 2,000 gallons water capacity or less may have non-fireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container shell to the concrete pad, footing, or the ground is not more than 24 inches.

(C) Any container may have non-fireproofed ferrous metal supports if mounted on concrete pads or footings, and if the distance from the outside bottom of the container to the ground is not more than 5 feet, if the container is in an isolated location.

(D) Containers may be partially buried if the following requirements are met:

(i) The portion of the container below the surface and for a vertical distance not less than 3 inches above the surface of the ground is protected to resist corrosion, and the container is protected against settling and corrosion as required for fully buried containers.

(ii) Spacing requirements must be as specified for underground tanks in OAR 437-004-0780(3)(f)(B).

(iii) Relief valve capacity must be as required for aboveground containers.

(iv) Container is not subject to vehicular damage, or has adequate protection against such damage.

(v) Filling densities must be as required for above-ground containers.

(E) The top of buried containers must be at least 6 inches below grade. Where an underground container might be subject to abrasive action or physical damage due to vehicular traffic or other causes, it must be:

(i) Not less than 2 feet below grade; or

(ii) Otherwise protected against such physical damage.

**NOTE:** It will not be necessary to cover the portion of the container to which manhole and other connections are affixed; however, where necessary, there must be protection against vehicular damage. When necessary to prevent floating, containers must be securely anchored or weighted.

(F)(i) Containers must have a protective coating before being placed under ground. This coating must be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, do not damage to the coating. Repair any damage to the coating must before backfilling.

(ii) Containers must be on a firm foundation (firm earth is okay) and surrounded with earth or sand firmly tamped in place.

(G) Containers with attached foundations (portable or semi-portable containers with suitable steel “runners” or “skids” known in the industry as “skid tanks”) must comply with these rules subject to the following:

(i) If they are for a given general location for a temporary period not longer than 6 months they need not have fire-resisting foundations or saddles but must have adequate ferrous metal supports.

(ii) The outside bottom of the container shell must not be more than 5 feet above the ground unless there are fire-resisting supports.

(iii) The bottom of the skids must be at least 2 inches but not more than 12 inches below the outside bottom of the container shell.

(iv) Flanges, nozzles, valves, fittings, and the like, having communication with the interior of the container, must have protection against physical damage.

(v) When not permanently on fire-resisting foundations, piping connections must be sufficiently flexible to minimize the possibility of breakage or leakage of connections if the container settles, moves, or is otherwise displaced.

(vi) Secure skids or lugs for attachment of skids, to the container according to the code or rules under which it was designed and built (with a minimum factor of safety of four) to withstand loading in any direction equal to four times the weight of the container and attachments when filled to the maximum permissible loaded weight.

(H) Field welding where necessary must be made only on saddle plates or brackets which were applied by the manufacturer of the tank.

(I) For aboveground containers, secure anchorage or adequate pier height must be provided against possible container flotation wherever sufficiently high floodwater might occur.

(J) When permanently installed containers are interconnected, compensate for expansion, contraction, vibration, and settling of containers, and interconnecting piping. Where flexible connections are used, they must be an approved type and must be designed for a bursting pressure of at least five times the vapor pressure of the product at 100°F. Do not use nonmetallic hose for permanently interconnecting such containers.

(K) Container assemblies listed for interchangeable installation above ground or under ground must conform to the requirements for above-ground installations with respect to safety relief capacity and filling density. For installation above ground all other requirements for above-ground installations apply. For installation under ground all other requirements for underground installations apply.

(i) Protection of container accessories. Protect valves, regulating, gaging, and other container accessory equipment against tampering and physical damage.

(j) Drips for condensed gas. Where vaporized gas on the low-pressure side of the system may condense to a liquid at normal operating temperatures and pressures, there must be suitable means for reevaporation of the condensate.

(k) Damage from vehicles. Protect LP-Gas systems from vehicle traffic.

(l) Drains. Do not direct drains or blowoff lines into or near sewer systems.

(m) Lighting. Electrical equipment and installations must comply with OAR 437-004-0780(3)(n) and (o).

(n) Vaporizers for internal combustion engines. Paragraph OAR 437-004-0780(6)(g) applies.

(o) Gas regulating and mixing equipment for internal combustion engines. Paragraph OAR 437-004-0780(6)(h) applies.

(6) Liquefied petroleum gas as a motor fuel.

(a) Application.



(A) This applies to internal combustion engines, fuel containers, and equipment for the use of LPG as a motor fuel on portable units including self-propelled vehicles.

(B) Paragraph OAR 437-004-0780(5) covers fuel containers and equipment for stationary internal combustion engines using LPG. This does not apply to containers for transportation of liquefied petroleum gases. All of OAR 437-004-0780(3) applies to this paragraph, unless otherwise noted in OAR 437-004-0780(3).

(b) General.

(A) Do not fuel vehicles while passengers are on board.

(B) Fuels industrial trucks (including forklifts) with permanently mounted fuel tanks outdoors. Charging equipment must comply with paragraph (8).

(C) LP-Gas fueled industrial trucks must comply with the Standard for Type Designations, Areas of Use, Maintenance and Operation of Powered Industrial Trucks, NFPA 505-1969.

(D) Engines on vehicles must be off while fueling if the fueling operation involves venting to the atmosphere.

(c) Design pressure and classification of fuel containers.

(A) Except as in (6)(c)(B) and (C) below, containers must comply with Table 10.

(B) Fuel containers for use in industrial trucks (including forklifts) must be either DOT containers authorized for LP-Gas service with a minimum service pressure of 240 p.s.i.g. or minimum Container Type 250. Under 1950 and later ASME codes, this means a 312.5 p.s.i.g. design pressure container. [Table not included. See ED. NOTE.]

(C) Containers made and maintained under DOT specifications and regulations are acceptable fuel containers. They must conform to all requirements of this paragraph.

(D) All container inlets and outlets except safety relief valves and gaging devices must have labels that designate whether they link to vapor or liquid space. Labels may be on valves.

(d) Installation of fuel containers.

(A) Containers must be in a place that minimize the possibility of damage. Containers in the rear of trucks and buses, when protected by bumpers, comply. Fuel containers on passenger-carrying vehicles must be as far from the engine as practicable. There must be a seal between the passenger space or any space with radio equipment and the container space to prevent direct seepage of gas to these spaces. The container compartment must vent to the outside. If the fuel container is near the engine or the exhaust system, shield it from direct heat.

(B) Mount all fuel containers to prevent jarring loose, slipping, or rotating. The fastenings must withstand static loading in any direction equal to twice the weight of the tank and attachments when filled using a safety factor of not less than four. Only do field welding on saddle plates, lugs or brackets, originally attached to the container by the manufacturer.

(C) Permanently install fuel containers on buses.

(e) Valves and accessories.

(A) Container valves and accessories must have a rated working pressure of at least 250 p.s.i.g., and suitable for use on a liquefied petroleum gas service.

(B) The filling connection must have an approved double back-pressure check valve, or a positive shutoff in conjunction with an internal back-pressure check valve. On a removable container the filler valve may be a hand operated shutoff valve with an internal excess flow valve. Main shutoff valves on the container on liquid and vapor lines must be readily accessible.

(C) With the exceptions of (D)(iii) below, filling connections with approved automatic back-pressure check valves, and safety relief valves, all connections to containers with openings for the flow of gas more than .055 inch must have approved automatic excess flow valves.

(D) Liquid-level gaging devices:

(i) Do not use variable liquid-level gages that require the venting of fuel to the atmosphere on fuel containers of industrial trucks (including forklifts).

(ii) On portable containers that fill vertically and/or horizontally, the fixed liquid-level gage must show maximum permitted filling

level for both vertical and horizontal filling with the container oriented to place the safety relief valve in communication with the vapor space.

(iii) For containers used only on farm tractors and charged at a point at least 50 feet from any building, the fixed liquid-level gaging device may equal that passed by a .1200 inch opening. You do not need an excess flow valve. Mark fittings with the restricted opening and the container they are on to show the size of the opening.

(iv) Protect all valves and connections on containers from damage. For farm tractors where parts of the vehicle protect the valves and fittings, this requirement is met. On removable containers the protection for the fittings must be permanently attached.

(v) For systems with removable fuel containers, there must be a way in the system to minimize the escape of fuel when exchanging containers. Either of these methods are acceptable:

(I) Using an approved automatic quick-closing coupling (a type closing in both directions when uncoupled) in the fuel line, or

(II) Closing the valve at the fuel container and allowing the engine to run until the fuel line is empty.

(f) Piping — including pipe, tubing, and fittings.

(A) Pipe from fuel container to first-stage regulator must be at least schedule 80 wrought iron or steel (black or galvanized), brass or copper; or seamless copper, brass, or steel tubing. Steel tubing must have a minimum wall thickness of 0.049 inch. Steel pipe or tubing must have protection against exterior corrosion. Copper tubing must be types K or L or equivalent with a minimum wall thickness of 0.032 inch. Approved flexible connections may be used between container and regulator or between regulator and gas-air mixer within the limits of approval. Do not use aluminum pipe or tubing. For removable containers use an approved flexible connection between the container and the fuel line.

(B) Install, brace and support all piping to reduce to a minimum the possibility of vibration strains or wear.

(g) Safety devices.

(A) Use only spring-loaded internal type safety relief valves on motor fuel containers.

(B) The discharge outlet from safety relief valves must be on the outside of enclosed spaces and as far as practicable from possible sources of ignition. It must vent upward within 45 degrees of the vertical to prevent impingement of escaping gas on containers, or parts of vehicles, or on vehicles in adjacent lines of traffic. Use a rain cap or other protector to keep water and dirt from collecting in the valve.

(C) When using a discharge line from the container safety relief valve, the line must be metallic, other than aluminum, and may not restrict the required flow of gas from the safety relief valve. Such discharge line must be able to withstand the pressure resulting from the discharge of vapor when the safety relief valve is fully open. When flexibility is necessary, use flexible metal hose or tubing.

(D) You can fill portable containers with volumetric filling in either the vertical or horizontal position only if the safety relief valve links with the vapor space.

(E) Paragraph OAR 437-004-0780(3)(i)(L) for hydrostatic relief valves applies.

(h) Vaporizers.

(A) Vaporizers and any part thereof and other devices that may be subjected to container pressure must have a design pressure of at least 250 p.s.i.g.

(B) Each vaporizer must have a valve or suitable plug which will permit substantially complete draining of the vaporizer. It must be located at or near the lowest portion of the section occupied by the water or other heating medium.

(C) Securely fasten vaporizers to minimize the possibility of their becoming loose.

(D) Permanently mark each vaporizer at a visible point as follows:

(i) With the design pressure of the fuel-containing portion in p.s.i.g.

(ii) With the water capacity of the fuel-containing portion of the vaporizer in pounds.

(E) Devices to supply heat directly to a fuel container must have an automatic device to cut off the supply of heat before the pressure inside the fuel container reaches 80 percent of the start to discharge pressure setting of the safety relief device on the fuel container.

(F) Engine exhaust gases are acceptable as a direct source of heat supply for the vaporization of fuel if the materials of construction of those parts of the vaporizer in contact with exhaust gases are resistant to the corrosive action of exhaust gases and the vaporizer system is designed to prevent excessive pressures.

(G) Vaporizers must not have fusible plugs.

(i) Gas regulating and mixing equipment.

(A) Approved automatic pressure reducing equipment must be between the fuel supply container and gas-air mixer to reduce the pressure of the fuel delivered to the gas-air mixer.

(B) An approved automatic shutoff valve must be in the fuel system ahead of the inlet of the gas-air mixer, to prevent flow of fuel to the mixer when the ignition is off and the engine is not running. For industrial trucks and engines operating in buildings other than those that exclusively house engines, the automatic shutoff valve must operate if the engine stops. Atmospheric type regulators (zero governors) are adequate as an automatic shutoff valve only in outdoor operation such as farm tractors, irrigation pump engines, and on other outdoor stationary engines.

(C) The source of the air for combustion must be completely isolated from the passenger compartment, ventilating system, or air conditioning system.

(j) Capacity of containers. No single fuel container on passenger carrying vehicles can be more than 200 gallons water capacity. No single fuel container on other vehicles normally operating on the highway can be more than 300 gallons water capacity.

(k) Stationary engines in buildings. Stationary engines and gas turbines in buildings, including portable engines used instead of or to supplement stationary engines, must comply with the Standard for the Institution and Use of Stationary Combustion Engines and Gas Turbines, NFPA 37-1970, and OAR 437-004-0780(a), (b), and (c).

(l) Portable engines in buildings.

(A) Only use portable engines in buildings for emergencies, except as in OAR 437-004-0780(10).

(B) Exhaust gases must discharge outside the building or to an area where they are not hazard.

(C) There must be sufficient air for combustion and cooling.

(D) An approved automatic shutoff valve must be in the fuel system ahead of the engine, to prevent flow of fuel to the engine when the ignition is off or if the engine stops.

(E) The capacity of LP-Gas containers used with such engines must comply with OAR 437-004-0780(4)(e).

(m) Industrial trucks inside buildings.

(A) LP-Gas-fueled industrial trucks are permitted in buildings and structures.

(B) No more than two LP-Gas containers can be on an industrial truck for motor fuel purposes.

(C) Do not leave industrial trucks unattended near sources of ignition.

(n) Garaging LP-Gas-fueled vehicles.

(A) LP-Gas-fueled vehicles may be stored or serviced inside garages.

(B) Keep the shutoff valve closed on LP-Gas-fueled vehicles being repaired in garages except when the engine must run.

(7) Storage of containers awaiting use.

(a) Application. This paragraph applies to the storage of portable containers not more than 1,000 pounds water capacity, filled or partially filled, at user location but not connected for use.

(b) General.

(A) Do not store containers near sources of heat or ignition or near stairs or exits.

(B) Keep the outlet valves of stored containers closed.

(C) Empty containers, stored inside, that have held LP-Gas are treated like full containers when calculating the maximum quantity of LP-Gas permitted by this paragraph.

(c) Storage within buildings not frequented by the public (such as agricultural buildings). Do not store more than 300 pounds

(approximately 2,550 cubic feet in vapor form) except as in (d) below.

(d) Storage within special buildings or rooms.

(A) Do not store more than 10,000 pounds of LP-Gas in special buildings or rooms.

(B) The walls, floors, and ceilings of container storage rooms that are within or next to other parts of the building must have at least a 2-hour fire resistance rating.

(C) Part of the exterior walls or roof with an area at least 10 percent of the combined area of the enclosing walls and roof must be of explosion relieving construction.

(D) Each opening from such storage rooms to other parts of the building must have a 1-1/2 hour (B) fire door listed by a nationally recognized testing laboratory. Refer to §1910.7 for definition of nationally recognized testing laboratory.

(E) The must be no open flames in the rooms.

(F) The rooms must have adequate ventilation both top and bottom to the outside only. The openings from such vents must be at least 5 feet away from any other opening into any building.

(G) The floors of such rooms must not be below ground level.

(H) The rooms may not adjoin a property line occupied by schools, churches, hospitals, athletic fields or other public gathering places.

(I) Fixed electrical equipment must comply with OAR 437-004-0780 (3)(o).

(e) Storage outside buildings.

(A) Storage outside buildings, for containers awaiting use, must comply with Table 11 with respect to:

(i) The nearest building or group of buildings;

(ii) Busy highways; [Table not included. See ED. NOTE.]

(B) Containers must be in a suitable enclosure or otherwise protected against tampering.

(f) Fire protection. Storage locations must have at least one approved portable fire extinguisher with rating of 8-B, C or more.

(8) Liquefied petroleum gas dispensing.

(a) Application. This paragraph applies to storage containers, dispensing devices, and equipment where LP-Gas is stored and dispensed into fuel tanks of motor vehicles. See OAR 437-004-0780(6) for requirements covering use of LP-Gas as a motor fuel. All requirements of OAR 437-004-0780(3) apply to this paragraph unless otherwise noted.

(b) Design pressure and classification of storage containers. Storage containers must comply with Table 12. [Table not included. See ED. NOTE.]

(c) Container valves and accessories.

(A) A filling connection on the container must have one of the following:

(i) A combination back-pressure check and excess flow valve.

(ii) One double or two single back-pressure valves.

(iii) A positive shutoff valve, in conjunction with either:

(I) An internal back-pressure valve; or

(II) On internal excess flow valve.

**NOTE:** Instead of an excess flow valve, filling connections may have a quick-closing internal valve, that must remain closed except during operating periods. The mechanism for such valves may have a secondary control that causes it to close automatically in case of fire. When using a fusible plug, its melting point must not be more than 220° F

(B) A filling pipe inlet terminal not on the container must have a positive shutoff valve in conjunction with either:

(i) A back pressure check valve; or

(ii) An excess flow check valve.

(C) All openings in the container except those below must have approved excess flow check valves:

(i) Filling connections as in subdivision (A) above.

(ii) Safety relief connections as in OAR 437-004-0780(3)(f)(B).

(iii) Liquid-level gaging devices as in OAR 437-004-0780(3)

(f)(D).

(iv) Pressure gage connections as in OAR 437-004-0780(3)

(f)(E).

(D) All container inlets and outlets except those listed below must have labels to designate whether they connect with vapor or liquid (labels may be on valves):

- (i) Safety relief valves.
- (ii) Liquid-level gaging devices.
- (iii) Pressure gages.
- (E) Each storage container must have a suitable pressure gage.
- (d) Safety-relief valves.
- (A) All safety-relief devices must be as follows:
- (i) On the container and directly connected with the vapor space.

(ii) Safety-relief valves and discharge piping must have protection against physical damage. The outlet must have loose-fitting rain caps. There must be no return bends or restrictions in the discharge piping.

(iii) The discharge from two or more safety relief valves with the same pressure settings may be run into a common discharge header. The cross-sectional area of the header must be at least equal to the sum of the cross-sectional areas of the individual discharges.

(iv) Safety relief devices must not discharge in or under a building.

(B) Above ground containers must have safety relief valves as follows:

(i) The rate of discharge, provided by one or more valves, must be not less than in OAR 437-004-0780(3)(i)(B).

(ii) The discharge from safety relief valves must vent to open air unobstructed and vertically in a way that prevents any impingement of escaping gas on the container. Use loose-fitting rain caps. On a container with a water capacity more than 2,000 gallons, the discharge from the safety relief valves must vent away from the container vertically to a point at least 7 feet above it. Condensation inside the relief valve or its discharge pipe must not make the valve inoperative. If there is a drain, there must be a way protect the container, adjacent containers, piping, or equipment against impingement of flame from ignition of the product escaping from the drain.

(C) Underground containers must be provided with safety relief valves as follows:

(i) The discharge from safety-relief valves must be piped vertically upward to a point at least 10 feet above the ground. The discharge lines or pipes must be adequately supported and protected against physical damage.

(ii) If no liquid is put into a container until after it is buried and covered, the rate of discharge of the relief valves may be reduced to not less than 30 percent of the rate in OAR 437-004-0780(3)(j)(B). If liquid fuel is present during installation of containers, the rate of discharge must be the same as for above-ground containers. Such containers must not be uncovered until emptied of liquid fuel.

(e) Capacity of liquid containers. Individual liquid storage containers must not exceed 30,000 gallons water capacity.

(f) Installation of storage containers.

(A)(i) Each storage container used exclusively in dispensing operations must comply with the following table that specifies minimum distances to a building and groups of buildings. [Table not included. See ED. NOTE.]

(ii) There must be a 10-foot area around containers that is free of combustibles.

(iii) The minimum separation between LP-Gas containers and flammable liquid tanks is 20 feet and the minimum separation between a container and the centerline of the dike is 10 feet.

(iv) LP-Gas containers near flammable liquid containers must have dikes, diversion curbs, or grading to protect against the flow or accumulation of flammable liquids.

(v) LP-Gas containers must not be within diked areas for flammable liquid containers.

(vi) Do field welding on saddle plates or brackets applied by the container manufacturer.

(vii) Where flexible connections are used, they must be approved type and have a bursting pressure of not less than five times the vapor pressure of the product at 100°F. Do not use nonmetallic hose for interconnecting such containers.

(viii) Where there may be a high water table or flood conditions there must be protection against container flotation.

(B) Above ground containers must comply with this subdivision.

(i) Containers may be horizontal or vertical.

(ii) Unless protected by location, there must be protective barriers around containers. Do not service vehicles within 10 feet of containers.

(iii) Container foundations must be masonry or other noncombustible material. Containers must be on saddles that permit expansion and contraction.

(C) Underground containers must be installed in accordance with this subdivision.

(i) Containers must be given a protective coating before being placed under ground. This coating must be equivalent to hot-dip galvanizing or to two coatings of red lead followed by a heavy coating of coal tar or asphalt. In lowering the container into place, care must be exercised to minimize abrasion or other damage to the coating. Damage to the coating must be repaired before back-filling.

(ii) Containers must be set on a firm foundation (firm earth may be used) and surrounded with earth or sand firmly tamped in place. Backfill should be free of rocks or other abrasive materials.

(iii) A minimum of 2 feet of earth cover must be provided. Where ground conditions make compliance with this requirement impractical, equivalent protection against physical damage must be provided. The portion of the container to which manhole and other connections are attached need not be covered. If the location is subjected to vehicular traffic, protect containers by a concrete slab or other cover adequate to prevent the weight of a loaded vehicle imposing concentrated direct loads on the container shell.

(g) Protection of container fittings. Valves, regulators, gages, and other container fittings must have protection against tampering and physical damage.

(h) Transport truck unloading point. The filling pipe inlet terminal must not be in a building nor within 10 feet of any building or driveway. It must be protected against physical damage.

(i) Piping, valves, and fittings.

(A) Piping may be underground, aboveground, or a combination of both.

(B) Piping beneath driveways must have protection from vehicle damage.

(C) Piping must be wrought iron or steel (black or galvanized), brass or copper pipe; or seamless copper, brass, or steel tubing and suitable for a minimum pressure of 250 p.s.i.g. Pipe joints may be screwed, flanged, brazed, or welded. Do not use aluminum alloy piping or tubing.

(D) All shutoff valves (liquid or gas) must be suitable for liquefied petroleum gas service and designed for not less than the maximum anticipated operating pressure. Valves that may experience container pressure must have a rated working pressure of at least 250 p.s.i.g.

(E) All materials used for valve seats, packing, gaskets, diaphragms, etc., must be resistant to the action of LP-Gas.

(F) Fittings must be steel, malleable iron, or brass with a minimum working pressure of 250 p.s.i.g. Do not use cast iron pipe fittings.

(G) After assembly, test all piping to assure it is free of leaks at not less than normal operating pressures.

(j) Pumps and accessories. All pumps and accessory equipment must be suitable for LP-Gas service, and designed for not less than the maximum anticipated operating pressure. Accessories must have a minimum rated working pressure of 250 p.s.i.g. Positive displacement pumps must have suitable pressure actuated bypass valves permitting flow from pump discharge to storage container or pump suction.

(k) Dispensing devices.

(A) Meters, vapor separators, valves, and fittings in the dispenser must be suitable for LP-Gas service and have a minimum working pressure of 250 p.s.i.g.

(B) Vent LP-Gas in a dispensing device to a safe location.

(C) Pumps used to transfer LP-Gas must allow control of the flow and prevent leakage or accidental discharge. There must be a way outside the dispensing device to shut off the power in case of fire or accident.



(D) A manual shutoff valve and an excess flow check valve must be downstream of the pump and ahead of the dispenser inlet.

(E)(i) Dispensing hose must be resistant to the action of liquid LP-Gas and have a minimum bursting pressure of 1,250 p.s.i.g.

(ii) An excess flow check valve or automatic shutoff valve must be at the terminus of the liquid line at the point of attachment of the dispensing hose.

(F)(i) LP-Gas dispensing devices must be at least 10 feet from above ground storage containers more than 2,000 gallons water capacity. The dispensing devices must be at least 20 feet from any building (not including canopies), basement, cellar, pit, or line of adjoining property that may be developed and not less than 10 feet from sidewalks, streets, or thoroughfares. No drains or blowoff lines may discharge into or near to the sewer systems used for other purposes.

(ii) LP-Gas dispensing devices must be on a concrete foundation or as part of a complete storage and dispensing assembly mounted on a common base, and must be adequately protected from physical damage.

(iii) LP-Gas dispensing devices may not be in a building except that they may be under a weather shelter or canopy if it is not enclosed on more than two sides. If the enclosing sides are next to each other, the area must have proper ventilation.

(G) The dispensing of LP-Gas into the fuel container of a vehicle must be done by a competent attendant who stays at the LP-Gas dispenser during the entire transfer operation.

(I) Smoking. There must be no smoking on the driveway of dispensing facilities or transport truck unloading areas. Post signs prohibiting smoking in places easily seen by facility users.

(m) Motors. The motors of all vehicles being fueled must be off during the fueling operations.

(n) Electrical. Electrical equipment and installations must conform to OAR 437-004-0780(3)(n) and (o).

(o) Fire protection. Each dispensing facility must have at least one approved portable fire extinguisher with at least an 8-B, C, rating.

[ED. NOTE: Tables, Figures & Equations referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-0790**

#### **Use of Liquefied Petroleum Gas or Natural Gas in Fields and Orchards**

(1) Scope. This applies to the storage and use of liquefied petroleum gas or natural gas, in fields and orchards, to fuel or power stationary orchard heaters, fans, and other such fixed equipment. It does not cover portable orchard and field equipment. OAR 437-004-0780 covers all other uses of these gases.

(2) Definitions.

(a) Approved — See universal definition in 4/B.

(b) Competent person — See universal definition in 4/B.

(c) Labeled — See universal definition in 4/B.

(d) Liquefied petroleum gases — “LPG” and “LP-Gas” — Any material made mostly of any of the following hydrocarbons, or mixtures of them; propane, propylene, butane (normal butane or isobutane), and butylenes.

(e) Listed — See universal definition in 4/B.

(3)(a) Components. The tank regulator and all components in between must be labeled, listed or approved.

(b) All piping and end use components, like fans and heaters, must be on the low pressure side of approved regulators.

(4) Installation. Installation of systems and equipment that use liquefied petroleum gas must only be by persons licensed according to ORS 480.410–460 and must conform to OAR 837, division 30. (Contact the Office of State Fire Marshal for more information on these requirements.)

(5) Welding. Do not weld on parts of the system subject to pressure.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 7-2001, f. & cert. ef. 5-15-01

#### **437-004-0800**

#### **Storage and Handling of Anhydrous Ammonia**

(1) Scope.

(a) This standard applies to the operation of anhydrous ammonia systems including refrigerated ammonia storage systems.

(b) This standard does not apply to applications that use ammonia solely as a refrigerant.

(2) Definitions.

(a) Appurtenances — All devices such as pumps, compressors, safety relief devices, liquid-level gaging devices, valves and pressure gages.

(b) Capacity — Total volume of the container in standard U.S. gallons.

(c) Certified — See universal definitions in Subdivision 4/B, OAR 437-004-0100.

(d) Code — The Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels of the American Society of Mechanical Engineers (ASME) — 1968.

(e) Container — Includes all vessels, tanks, cylinders, or spheres used for transportation, storage, or application of anhydrous ammonia.

(f) Cylinder — A container of 1,000 pounds of water capacity or less built according to Department of Transportation specifications.

(g) Design pressure — is identical to the term “Maximum Allowable Working Pressure” used in the Code.

(h) DOT — U.S. Department of Transportation.

(i) DOT specifications — Regulations of the Department of Transportation in 49 CFR Chapter I.

(j) Farm vehicle (implement of husbandry) — A vehicle for use on a farm with a container of not more than 1,200 gallons water capacity on it.

(k) Labeled — See universal definitions in Subdivision 4/B, OAR 437-004-0100.

(l) Listed — See universal definitions in Subdivision 4/B, OAR 437-004-0100.

(3) Basic rules.

(a) Approval of equipment and systems. All systems, equipment and appurtenances must comply with one of the following three paragraphs.

(A) If installed before February 8, 1973, it must comply with American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1-1999 or CGA G-2.1-1999.

(B) It must be listed and labeled by a nationally recognized testing laboratory as defined in 29 CFR 1910.7.

(C) A registered engineer may test and certify custom designed and custom built systems as meeting the criteria in OAR 437-004-0800(3)(a)(A). This certification must be on file with the employer for agency review. The certification must detail the test criteria, data and results along with the qualifications of the person doing the test.

(b) Requirements for construction, original test and recertification of non-refrigerated containers.

(A) Only competent persons and/or companies may design, install and maintain non-refrigerated containers.

(B) Containers used with systems in OAR 437-004-0800(4), (7), (8) and (9) must comply with the Code (Boiler and Pressure Vessel Code, Sec VIII, Unfired Pressure Vessels of the American Society of Mechanical Engineers (ASME) — 1968). Construction under Table UW 12 at a basic joint efficiency of less than 80 percent is not authorized.

(C) Containers more than 36 inches in diameter or 250 gallons water capacity must comply with one or more of the following:

(i) Containers must be stress relieved after fabrication according to the Code; or

(ii) Cold-form heads must be stress relieved; or

(iii) Use only hot-formed heads.

(D) Paragraph (B) above does not prohibit the continued use or reinstallation of containers constructed and maintained according to

the 1949, 1950, 1952, 1956, 1959, and 1962 editions of the Code or any revisions in effect at the time of fabrication.

(E) Welding to the shell, head or any other part of the container subject to internal pressure must comply with the Code. Other welding is permitted only on saddle plates, lugs or brackets attached to the container by the container manufacturer.

(F) Containers used with systems in OAR 437-004-0800(5) must comply with DOT specifications.

(c) Marking of containers. Keep the original markings on refrigerated and non-refrigerated containers as they were at the time of installation.

(d) Location of containers.

(A) When selecting the location for the storage container consider the physiological effects as well as adjacent fire hazards. Locate containers outside buildings unless the building was built for this purpose.

(B) Locate permanent storage containers 50 feet from a dug well or other sources of potable water supply, unless the container is a part of a water-treatment installation.

(C) Keep storage areas free of readily ignitable materials such as waste, weeds and long dry grass.

(e) Container appurtenances.

(A) Design appurtenances to stand the maximum working pressure of that part of the system on which they are installed. Make appurtenances from material proved suitable for anhydrous ammonia service.

(B) All connections to containers except safety relief devices, gaging devices, or those fitted with a .0550-inch orifice must have shutoff valves as close to the container as practicable.

(C) Excess flow valves where required by these standards must close automatically at the rated flows of vapor or liquid specified by the manufacturer. The connections and line including valves and fittings protected by an excess flow valve must have a larger capacity than the rated flow of the excess flow valve so that the valve will close in case of failure of the line or fittings.

(D) Liquid-level gaging devices that require bleeding of the product to the atmosphere and are built so that outward flow will not be more than that passed by a .0550-inch opening do not need excess flow valves.

(E) Openings from the container or through fittings attached directly on the container to which pressure gage connections are made need do not need excess flow valves if they are not larger than .0550-inch.

(F) Excess flow and back pressure check valves where required by this section must be inside the container or if outside as close as practicable to where the line enters the container. In the latter case installation must prevent strain beyond the excess flow or back pressure check valve from causing a break between the container and the valve.

(G) Excess flow valves must have a bypass not to exceed a .0400-inch opening to allow equalization of pressures.

(H) All excess flow valves must have plain and permanent markings with the name or trademark of the manufacturer, the catalog number, and the rated capacity.

(f) Piping, tubing and fittings.

(A) All piping, tubing and fittings must be made of material suitable for anhydrous ammonia service.

(B) All piping, tubing and fittings must be designed for a pressure not less than the maximum pressure under which they might operate.

(C) All refrigerated piping must conform to the Refrigeration Piping Code, American National Standard, B31.5-1966 with addenda B31.5a-1968 as it applies to ammonia.

(D) Piping on non-refrigerated systems must be at least American Society for Testing and Materials (ASTM) A-53-69 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal. For welded or welded and flanged joints the pipe must be at least schedule 40. For threaded joints the pipe must be at least schedule 80. Do not back-weld threaded connections. Do not use brass, copper or galvanized steel pipe.

(E) Do not use tubing made of brass, copper, or other material subject to attach by ammonia.

(F) Do not use cast iron fittings but this does not prohibit the use of fittings made specifically for ammonia service or malleable, nodular, or high strength gray iron meeting American Society for Testing and Materials (ASTM) A47-68, ASTM 395-68 or ASTM A126-66 Class B or C.

(G) Use joint compounds that are resistant to ammonia.

(g) Hose specifications.

(A) Hose used in ammonia service must conform to the joint Agricultural Ammonia Institute — Rubber Manufacturers Association Specifications for Anhydrous Ammonia Hose.

(B) Hose subject to container pressure must be designed for a minimum working pressure of 350 p.s.i.g. and a minimum burst pressure of 1,750 p.s.i.g. Hose assemblies, when made up, must be capable of withstanding a test pressure of 500 p.s.i.g.

(C) Hose and hose connections on the low-pressure side of flow control or pressure-bleeding valves must have a bursting pressure rating of not less than five times the pressure setting of the safety relief devices protecting that part of the system but not less than 125 p.s.i.g. All connections must not leak when connected.

(D) Where using hose to transfer liquid from one container to another, "wet" hose is recommended. Such hose must have approved shutoff valves at the discharge end. Prevent excessive pressure in the hose.

(E) On all hose 1/2-inch outside diameter and larger, used for the transfer of anhydrous ammonia liquid or vapor, there must be etched, cast, or impressed at 5-foot intervals the following information.

**NOTE:** "Anhydrous Ammonia" xxx p.s.i.g. (maximum working pressure), manufacturer's name or trademark, year of manufacture.

**NOTE:** In place of this requirement the same information may be on a nameplate permanently attached to the hose. Table 1 Footnotes

(h) Safety relief devices.

(A) Every container in systems covered by OAR 437-004-0800(4), (7), (8) and (9) must have one or more safety relief valves of the spring-loaded or equivalent type. The discharge from safety-relief valves must vent away from the container, upward and unobstructed to the atmosphere. All relief-valve discharge openings must have suitable rain caps that allow free discharge of the vapor and prevent entrance of water. Accumulated condensation must drain away. The rate of the discharge must comply with **Table 1**.

(B) Container safety-relief valves must be set to start-to-discharge as follows, with relation to the design pressure of the container: [Table not included. See ED. NOTE.]

(C) Safety relief devices in systems covered by OAR 437-004-0800(4), (7), (8) and (9) must discharge at not less than the rates in (3)(h)(A) above before the pressure is in excess of 120 percent (not including the 10 percent tolerance in (3)(h)(B) above) of the maximum permitted start-to-discharge pressure setting of the device.

(D) Arrange safety relief valves to minimize the possibility of tampering. If the pressure setting adjustment is external, the relief valves must have a means of sealing the adjustment.

(E) Shutoff valves must not be between the safety relief valves and the container; except, that a shutoff valve may be where the arrangement of this valve is such as to always afford full required capacity flow through the relief valves.

(F) Safety relief valves must have direct communication with the vapor space of the container.

(G) Each container safety relief valve used with systems covered by OAR 437-004-0800(4), (7), (8) and (9) must have plain and permanent markings with the symbol "NH3" or "AA"; with the pressure in pounds-per-square-inch at which the valve is set to start-to-discharge; with the actual rate of discharge of the valve at its full open position in cubic feet per minute of air at 60 degrees F. and atmospheric pressure; and the manufacturer's name and catalog number.

**Example:** "NH3 250-4050 Air" indicates that the valve is suitable for use on an anhydrous ammonia container, is set to start-to-discharge at a pressure of 250 p.s.i.g., and that its rate of discharge at full open position is 4,050 cubic feet per minute of air.

(H) There must be no connection on either the upstream or downstream side that restricts the flow capacity of the relief valve.

(I) A hydrostatic relief valve must be between each pair of valves in the liquid ammonia piping or hose to relieve into the atmosphere at a safe location.

(i) General.

(A) All stationary storage installations must have at least two readily accessible suitable gas masks. Full face masks with ammonia canisters, not cartridges, approved by the National Institute of Occupational Safety and Health (NIOSH), are suitable for emergency action for most leaks, particularly those that are outdoors. For protection in concentrated ammonia atmospheres the use of self-contained breathing air apparatus is mandatory. Refer to OAR 437-004-1041 Respiratory Protection, Division 4/I for additional requirements for personal protective equipment.

(B) Stationary storage installations must have an easily accessible shower or a 50-gallon drum of water.

(C) Each vehicle transporting ammonia in bulk except farm applicator vehicles must carry a container of at least 5 gallons of water and a full face mask.

(j) Charging of containers.

(A) The filling densities for unrefrigerated containers must not be more than the following:

(B) Aboveground uninsulated containers may be charged 87.5 percent by volume if the temperature of the anhydrous ammonia being charged is not lower than 30 degrees F. or if the charging of the container stops at the first indication of frost or ice formation on its outside surface and does not resume until the frost or ice is gone.

(k) Transfer of liquids.

(A) Anhydrous ammonia must always be at a temperature suitable for the material of construction and the design of the receiving container.

(B) The employer must require the continuous presence of an attendant in the vicinity of the operation during ammonia transfer.

(C) Charge and use containers only with authorization of the owner.

(D) Gage and charge containers only in the open atmosphere or in buildings or areas for that purpose.

(E) Pumps used for transferring ammonia must be made for that purpose.

(i) Pumps must be designed for at least 250 p.s.i.g. working pressure.

(ii) Positive displacement pumps must have, installed off the discharge port, a constant differential relief valve discharging into the suction port of the pump through a line of sufficient size to carry the full capacity of the pump at relief valve setting, which setting and installation must be according to the pump manufacturer's recommendations.

(iii) On the discharge side of the pump, before the relief valve line, there must be a pressure gage graduated from 0 to 400 p.s.i.

(iv) Plant piping must have shutoff valves as close as practical to pump connections.

(F) Compressors for transferring or refrigerating ammonia must be recommended for ammonia service by the manufacturer.

(i) Compressors must be designed for at least 250 p.s.i.g. working pressure.

(ii) Plant piping must have shutoff valves located as close as practical to compressor connections.

(iii) A relief valve large enough to discharge the full capacity of the compressor must be connected to the discharge before the shutoff valve.

(iv) Compressors must have pressure gages at suction and discharge graduated to at least 1-1/2 times the maximum pressure.

(v) Adequate means, such as a drainable liquid trap, must be on the compressor suction to minimize the entry of liquid into the compressor.

(G) In case the hose breaks, loading and unloading systems must have suitable devices to prevent emptying of the storage or supply container. Backflow check valves or properly sized excess flow valves must be where necessary to provide this protection. If such valves are not practical, remotely operated shutoff valves may be acceptable.

(I) Tank car unloading points and operations.

(A) Unloading of tank cars must conform to the applicable recommendations in DOT regulations.

(B) The employer must insure that unloading operations are done by reliable persons properly instructed and with the authority to monitor careful compliance with all applicable procedures.

(C) Caution signs must be on the track or car to give warning to people approaching the car from the open end or ends of the siding. They must be left up until after the car is empty and disconnected from discharge connections. Signs must be metal or other suitable material, at least 12 inches by 15 inches and bear the words "STOP — Tank Car Connected" or "STOP — Men at Work" the word, "STOP," being in letters at least 4 inches high and the other words in letters at least 2 inches high.

(D) The track of a tank car siding must be substantially level.

(E) Set the brakes and block the wheels on cars during unloading.

(m) Liquid-level gaging device.

(A) Each container except those filled by weight must have an approved liquid-level gaging device. A thermometer well must be in containers without a fixed liquid-level gaging device.

(B) All gaging devices must be arranged so that the maximum liquid level to which the container is filled is readily determined.

(C) Gaging devices that require bleeding of the product to the atmosphere such as the rotary tube, fixed tube, and slip tube devices must have a maximum opening of the bleed valve not larger than .0550-inch unless they have an excess flow valve. (This requirement does not apply to farm vehicles used for the application of ammonia as in OAR 437-004-0800(9).)

(D) Gaging devices must have a design pressure equal to or greater than the design pressure of their host container.

(E) Fixed tube liquid-level gages must indicate the container's 85 percent fill level of its water capacity.

(F) Use columnar gage glasses only on stationary storage installations. They must have shutoff valves with metallic handwheels, excess-flow valves and extra heavy glass adequately protected with a metal housing applied by the gage manufacturer. They must be shielded from the direct rays of the sun.

(n) Electrical equipment and wiring.

(A) Electrical equipment and wiring for use in ammonia installations must be general purpose or weather resistant as appropriate.

(B) Electrical systems must comply with 4/S.

(4) Systems using stationary, non-refrigerated storage containers.

(a) Applies to all storage containers except portable DOT containers.

(A) The minimum design pressure and construction for non-refrigerated containers is 250 p.s.i.g.

(B) Each filling connection must have a combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.

(C) All liquid and vapor connections to containers except filling pipes, safety relief connections, and liquid-level gaging and pressure gage connections with orifices not larger than .0550-inch required in OAR 437-004-0800(3)(e)(D) and (E) must have excess-flow valves.

(D) Each storage container must have a pressure gage graduated from 0 to 400 p.s.i. Gages must be designated for use in ammonia service.

(E) All containers must have vapor return valves.

(b) Safety-relief devices.

(A) Every container must have one or more safety-relief valves of the spring-loaded or equivalent type according to OAR 437-004-0800(b)(9).

(B) The rate of discharge of spring-loaded safety relief valves on underground containers may be a minimum of 30 percent of the rate of discharge in Table 1. After installation, do not uncover containers with this protection until empty of liquid ammonia. Consider containers that may contain liquid ammonia before being installed underground and before being completely covered with earth to be



aboveground containers when determining the rate of discharge requirements of the safety-relief valves.

(C) On underground installations where there is a probability of the manhole or housing becoming flooded, the discharge from vent lines must be above the high water level. All manholes or housings must have ventilated louvers or their equivalent, the area which equal or exceed the combined discharge areas of safety-relief valves and vent lines that discharge their content into the manhole housing.

(D) Do not restrict vent pipes. They may not be a smaller diameter than the relief-valve outlet connection.

(E) Vent pipes from two or more safety-relief devices on the same unit, or similar lines from two or more different units may run into a common discharge header, if the capacity of the header is at least equal to the sum of the capacities of the individual discharge lines.

(c) Reinstallation of containers.

(A) Containers that were installed underground must not be reinstalled above-ground or underground, unless they withstand hydrostatic pressure retests at their original rating required by the code under which they were made. They must show no serious corrosion.

(B) Containers reinstalled aboveground, must have safety devices or gaging devices that comply with OAR 437-004-0800(i) and this paragraph respectively for above-ground containers.

(d) Installation of storage containers.

(A) Above ground containers, except as in (4)(d)(E) below must have substantial concrete or masonry supports, or structural steel supports on firm concrete or masonry foundations. All foundations must extend below the frost line.

(B) Horizontal above ground containers must be on foundations that permit expansion and contraction. Containers must have supports that prevent the concentration of excessive loads on the supporting portion of the shell. That part of the container in contact with foundations or saddles must have corrosion protection.

(C) The top of underground containers must be below the frost line and at least 2 feet below the surface. If ground conditions make compliance with these requirements impracticable, installation methods must prevent physical damage. It is not necessary to cover the part of the container where there are manhole and other connections. Anchor or weight containers when necessary to prevent floating.

(D) Underground containers must be on a firm foundation (firm earth is OK) and surrounded with compacted earth or sand. The container must have a corrosion resisting protective coating. This coating must remain undamaged when placing the container into the ground.

(E) Containers with foundations (portable or semi-portable tank containers with suitable steel "runners" or "skids" and commonly known in the industry as "skid tanks") must comply with OAR 437-004-0800(4)(a)(A).

(F) There must be secure anchorage or adequate pier height to prevent container flotation where high flood water might occur.

(G) The distance between underground containers of over 2,000 gallons capacity must be at least 5 feet.

(e) Protection of appurtenances.

(A) Protect valves, regulators, gages and other appurtenances against tampering and physical damage. This also applies during transit of containers.

(B) All connections to underground containers must be within a dome, housing, or manhole and with access by means of a substantial cover.

(f) Damage from vehicles. Protect ammonia systems from vehicle damage.

(4) Refrigerated storage systems.

(a) Container design.

(A) The design temperature must be the minimum temperature to which the container will be refrigerated.

(B) Containers with a design pressure more than 15 p.s.i.g. must comply with OAR 437-004-0800(3)(b), and the materials must be from those in **API Standard 620, Recommended Rules for Design and Construction of Large, Welded, Low-Pressure Storage**

**Tanks, Fourth Edition, 1970, Tables 2.02, R2.2, R2.2(A), R2.2.1, or R2.3.**

(C) Containers with a design pressure of 15 p.s.i.g. and less must comply with the applicable requirements of API Standard 620 including its **Appendix R**.

(D) Use the Code as a guide to select austenitic steels or non-ferrous materials to build containers for use at the design temperature.

(E) The filling density for refrigerated storage containers must be such that the container will not be liquid full at a liquid temperature corresponding to the vapor pressure at the start-to-discharge pressure setting of the safety-relief valve.

(b) Installation.

(A) Containers must be on suitable non-combustible foundations.

(B) There must be adequate protection against flotation or other water damage where high flood water might occur.

(C) Containers for product storage at less than 32 degrees F. must have protection from freezing and consequent frost heaving.

(c) Shutoff valves. When operating conditions make it advisable, there must be a check valve on the fill connection and a remotely operated shutoff valve on other connections below the maximum liquid level.

(d) Safety relief devices.

(A) Set safety relief valves to start-to-discharge at a pressure not more than the design pressure of the container. The valves must prevent a maximum pressure in the container of more than 120 percent of the design pressure. Relief valves for refrigerated storage containers must be self-contained spring-loaded, weight-loaded, or self-contained pilot-operated type.

(B) The total relieving capacity must be the larger of:

(i) Possible refrigeration system upset such as (1) cooling water failure, (2) power failure, (3) instrument air or instrument failure, (4) mechanical failure of any equipment, (5) excessive pumping rates.

(ii) Fire exposure determined by Compressed Gas Association (CGA) S-1, Part 3, Safety Relief Device Standards for Compressed Gas Storage Containers, 1959, except that "A" must be the total exposed surface area in square feet up to 25 feet above grade or to the equator of the storage container if it is a sphere, whichever is greater. If the relieving capacity required for fire exposure is greater than that required by OAR 437-004-0800(a), the additional capacity may be provided by weak roof to shell seams in containers operating at essentially atmospheric pressure and having an inherently weak roof-to-shell seam. The weak roof-to-shell seam is not to provide any of the capacity required in OAR 437-004-0800(a).

(C) If vent lines conduct the vapors from the relief valve, the back pressure under full relieving conditions must not be more than 50 percent of the start-to-discharge pressure for pressure balanced valves or 10 percent of the start-to-discharge pressure for conventional valves. The vent lines must prevent accumulation of liquid in the lines.

(D) The valve or valve installation must provide weather protection.

(E) Atmospheric storage must have vacuum breakers. Ammonia gas, nitrogen, methane, or other inert gases are acceptable to provide a pad.

(e) Protection of container appurtenances. Protect appurtenances against tampering and physical damage.

(f) Reinstallation of refrigerated storage containers. When reinstalling containers that require field fabrication, reconstruct and reinspect them according to their original construction requirements. Pressure retest the containers and if rerating is necessary, it must comply with applicable requirements.

(g) Damage from vehicles. Protect containers from damage by vehicles.

(h) Refrigeration load and equipment.

(A) Compute the total refrigeration load as the sum of the following:

(i) Load imposed by heat flow into the container caused by the temperature differential between design ambient temperature and storage temperature.

(ii) Load imposed by heat flow into the container caused by maximum sun radiation.

(iii) Maximum load imposed by filling the container with ammonia warmer than the design storage temperature.

(B) A single refrigeration system may serve more than one storage container.

(i) Compressors.

(A) There must be a minimum of two compressors either of which must be large enough to handle the loads. Where there are more than two compressors, there must be minimum standby equipment equal to the largest normally operating equipment. Filling compressors are acceptable as standby equipment for holding compressors.

(B) Compressors must be able to operate with a suction pressure at least 10 percent below the minimum setting of the safety valve(s) on the storage container and must withstand a suction pressure at least equal to 120 percent of the design pressure of the container.

(j) Compressor drives.

(A) Each compressor must have its individual driving unit.

(B) There must be an emergency power source that can handle the loads unless facilities are available to safely dispose of vented vapors while the refrigeration system is not operating.

(k) Automatic control equipment.

(A) The refrigeration system must have suitable controls to govern the compressor operation.

(B) There must be an emergency alarm system to function in case the container pressure rises to the maximum allowable operating pressure.

(C) An emergency alarm and shut-off must be in the condenser system to respond to excess discharge pressure caused by failure of the cooling medium.

(D) All automatic controls must be prevent operation of alternate compressors unless the controls will function with the alternate compressors.

(l) Separators for compressors. An entrainment separator of suitable size and design pressure must be in the compressor suction line of lubricated compression. The separator must have a drain and gaging device.

(m) Condensers. The condenser system may be air or water cooled or both. The condenser must have minimum design pressure of at least 250 p.s.i.g. There must be a way to purge noncondensibles either manually or automatically.

(n) Receiver and liquid drain. A receiver must have a liquid-level control to discharge the liquid ammonia to storage. The receiver must be able to operate at least 250 p.s.i.g. and have the necessary connections, safety valves, and gaging device.

(o) Insulation. Insulated refrigerated containers and pipelines must have covers of a material of suitable quality and thickness for the temperatures. Weatherproofing must be flame retardant.

(5) Systems using portable DOT containers.

(a) Cylinders must comply with DOT specifications and must comply with 49 CFR Chapter I and Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1-1954 (R1970).

(b) Store cylinders in an area free from ignitable debris and in such manner as to prevent external corrosion. Storage may be indoors or outdoors.

(c) Cylinders filled according to DOT regulations will become liquid full at 145 degrees F. Protect cylinders from heat sources such as radiant flame and steam pipes. Do not apply heat directly to cylinders to raise the pressure.

(d) Store cylinders in a way that protects them from vehicles or external damage.

(e) Any cylinder designed to have a valve protection cap must have the cap securely in place when the cylinder is not in service.

(6) Tank motor vehicles for the transportation of ammonia.

(a) This paragraph applies to containers and equipment on tank motor vehicles including semitrailers and full trailers used to transport ammonia. This paragraph does not apply to farm vehicles. For requirements covering farm vehicles, refer to OAR 437-004-0800(8)

and (9). Paragraph (b) below applies to this paragraph unless otherwise noted. Containers and pertinent equipment for tank motor vehicles for the transportation of anhydrous ammonia, must also comply with DOT requirements.

(b) Design pressure and construction of containers.

(A) The minimum design pressure for containers must comply with DOT regulations.

(B) The shell or head thickness of containers must be at least 3/16-inch.

(C) All container openings, except safety relief valves, liquid-level gaging devices, and pressure gages, must have labels that designate whether they communicate with liquid or vapor space.

(c) Container appurtenances.

(A) Protect appurtenances from physical damage.

(B) All connections to containers, except filling connections, safety relief devices, and liquid-level and pressure gage connections, must have suitable automatic excess flow valves, or may have quick-closing internal valves, that must remain closed except during delivery operations. The control mechanism for such valves may have a secondary control remote from the delivery connections and such control mechanism must have a fusible section (melting point 208 degrees F. to 220 degrees F.) that permits the internal valve to close automatically in case of fire.

(C) Filling connections must have automatic back-pressure check valves, excess-flow valves, or quick-closing internal valves, to prevent back-flow in case the filling connection breaks. You do not need an automatic valve where the filling and discharge connect to a common opening in the container shell and that opening has a quick-closing internal valve as in OAR 437-004-0800(f)(3)(ii).

(D) All containers must be capable of spray loading (filling in the vapor space) or with an approved vapor return valve of adequate capacity.

(d) Piping and fittings.

(A) Securely mount all piping, tubing, and fittings and protect them from damage. Protect hoses while the vehicle is moving.

(B) Fittings must comply with OAR 437-004-0800(3)(e). Pipe must be Schedule 80.

(e) Safety relief devices.

(A) The discharge from safety relief valves must vent upward away from the container and to the open air in such a manner as to prevent any impingement of escaping gas. Use loose-fitting rain caps. Size of discharge lines from safety valves must not be smaller than the nominal size of the safety-relief valve outlet connection. Condensate that accumulates in the discharge pipe must drain off.

(B) Any part of liquid ammonia piping that may close at both ends must have a hydrostatic relief valve.

(f) Transfer of liquids.

(A) Determine the content of tank motor vehicle containers by weight, by a suitable liquid-level gaging device, or other approved methods. If using a liquid-level measurement, the container must have a thermometer well. This volume when converted to weight must not be more than the filling density specified by the DOT.

(B) Any pump, except a constant speed centrifugal pump, must have a suitable pressure actuated bypass valve permitting flow from discharge to suction when the discharge pressure rises above a predetermined point. Pump discharge must also have a spring-loaded safety relief valve set at a pressure not more than 135 percent of the setting of the bypass valve or more than 400 p.s.i.g., whichever is larger.

(C) Compressors must have manually operated shutoff valves on both suction and discharge connections. Pressure gages of Bourdon-tube type must be on the suction and discharge of the compressor before the shutoff valves. The compressor must not operate if either pressure gage is removed or is inoperative. A spring-loaded, safety-relief valve capable of discharging to atmosphere the full flow of gas from the compressor at a pressure not more than 300 p.s.i.g. must be between the compressor discharge and the discharge shutoff valve.

(D) Valve functions have clear and legible identification by metal tags or nameplates permanently affixed to each valve.

(g) Full trailers and semitrailers.

- (A) Securely attach full trailers to the vehicle drawing them with suitable drawbars and a safety chain (or chains) or safety cables.
- (B) Every full trailer or semitrailer must have reliable brakes that operate from the driver's seat.
- (C) Every full trailer must have self-energizing brakes.
- (D) Full trailers must follow substantially in the path of their towing vehicle and will not whip or swerve dangerously from side to side.
- (E) Where using a fifth wheel, securely fasten it to both units, and use a positive locking mechanism that prevents separation of the two units except by manual release.
- (h) Protection against collision. Each tank motor vehicle must have properly attached bumpers or chassis extension that protects the tank, piping, valves, and fittings from physical damage.
- (i) Chock blocks. There must be at least two chock blocks. Use these blocks to prevent rolling during loading and unloading.
- (j) Portable tank containers (skid tanks). Where these tanks are for farm storage they must comply with OAR 437-004-0800(4)(a)(A). When portable tank containers substitute for cargo tanks and are permanently on tank motor vehicles for the transportation of ammonia, they must comply with the requirements of this paragraph.
- (7) Systems on farm vehicles other than for the application of ammonia.
  - (a) Application. This paragraph applies to containers of 1,200 gallons capacity or less and equipment on farm vehicles (implements of husbandry) not used to apply ammonia to the soil. OAR 437-004-0800(4) applies unless otherwise noted.
  - (b) Design pressure and classification of containers.
    - (A) The minimum design pressure for containers is 250 p.s.i.g.
    - (B) Container shell or head thickness must be at least 3/16-inch.
    - (c) Mounting containers.
      - (A) A suitable "stop" or "stops" must be on the vehicle or on the container so that the container does not become loose from its mounting.
      - (B) At one or more places on each side of the container, a "hold down" device must anchor the container to the vehicle.
      - (C) When containers are on four-wheel trailers, the weight must be even over both axles.
      - (d) Container appurtenances.
        - (A) All containers must have a fixed liquid-level gage.
        - (B) All containers with a capacity more than 250 gallons must have a pressure gage with a dial graduated from 0-400 p.s.i.
        - (C) The filling connection must have a combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.
        - (D) All containers with a capacity more than 250 gallons must be equipped for spray loading or have an approved vapor return valve.
        - (E) All vapor and liquid connections except safety-relief valves and those specifically exempted in ANSI K61.1-1966, must have approved excess-flow valves or quick-closing internal valves that, except during operating periods, must be closed.
        - (F) Fittings must have protection from damage by a metal box or cylinder with an open top fastened to the container or by rigid guards welded to the container on both sides of the fittings or by a metal dome. If there is a metal dome, the relief valve must vent through the dome.
        - (G) If there is a liquid withdrawal line in the bottom of a container, its connections, including hose, must not be lower than the lowest horizontal edge of the vehicle axle.
        - (H) Secure both ends of the hose while in transit.
        - (e) Marking the container. The words, "Caution — Ammonia" must be on each side and the rear end of the container in letters at least 4 inches high or its markings must comply with DOT regulations.
        - (f) Farm vehicles. All vehicles must carry a container of at least 5 gallons of water for washing ammonia from the skin.
        - (8) Systems on farm vehicles for the application of ammonia.

- (a) This applies to systems using containers of 250 gallons capacity or less on farm vehicles (implements of husbandry) used to apply ammonia to the soil. OAR 437-004-0800(4) applies unless otherwise noted. Larger containers must comply with ANSI K61.1-1966.
- (b) Design pressure and classification of containers.
  - (A) The minimum design pressure for containers is 250 p.s.i.g.
  - (B) The shell or head thickness of a container is less than 3/16-inch.
  - (c) Mounting of containers. All containers and flow-control devices must have secure mountings.
  - (d) Container valves and accessories.
    - (A) Each container must have a fixed liquid-level gage.
    - (B) The filling connection must have a combination back-pressure check valve and an excess-flow valve; one double or two single back-pressure check valves; or a positive shut-off valve in conjunction with an internal back-pressure check valve or an internal excess-flow valve.
    - (C) You can fill the applicator tank by venting to open air if the bleeder valve orifice is not more than 7/16-inch in diameter.
    - (D) Regulation equipment may connect directly to the tank coupling or flange only with a flexible connection between the regulating equipment and the rest of the liquid withdrawal system. Otherwise, connect the regulating equipment flexibly to the container shutoff valve.
    - (E) There need be no excess flow valve in the liquid withdrawal line if the controlling orifice between the contents of the container and the outlet of the shutoff valve is not more than 7/16-inch in diameter.

[ED. NOTE: Tables & Appendices referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-0950**

#### **Hazardous Waste Operations and Emergency Response (HAZWOPER)**

(1) If an agricultural employer requires employees to respond to an emergency release of a hazardous chemical with a reasonable possibility for employee exposure to safety or health hazards, that response activity must be in compliance with the applicable sections of Division 2/H, 1910.120, Hazardous Waste Operations and Emergency Response.

(2) Agricultural employers whose activities include clean-up operations involving hazardous waste, including those conducted at a treatment, storage, and disposal (TSD) facility, are subject to the applicable requirements in Division 2/H, 1910.120, Hazardous Waste Operations and Emergency Response.

**NOTES:** There are two primary considerations for most agricultural employers to determine if the HAZWOPER rules apply to you:

(1) Do you expect your employees to respond to spills of hazardous chemicals in a way that involves a reasonable possibility of exposure to safety or health hazards? (If NO, the HAZWOPER rules do not apply.)

(2) If YES, would your employees respond only to an incidental release of a hazardous chemical; or, to an emergency release of a hazardous chemical?

(a) IF you expect your employees to respond only to an incidental release (defined as a situation where the spilled substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate area, or by maintenance personnel;) and there is no potential safety or health hazard (such as fire, explosion, or chemical exposure;) THEN, the HAZWOPER RULES DO NOT APPLY. However, you must train and equip employees who are expected to respond to incidental releases to safely handle that type of non-routine task as required by Division 4/Z, 437-004-9800, Hazard Communication Standard for Agricultural Employers.)

(b) IF you expect your employees to respond to an emergency release (defined as an occurrence that results in, or is likely to result in an uncontrolled release of a hazardous substance; or, a situation that requires a response effort by employees from outside the imme-



diate release area, or by other designated responders such as mutual-aid groups or local fire departments;) THEN, the HAZWOPER RULES APPLY. Agricultural employers who expect their employees to respond to these types of emergencies are required to follow the sections in the HAZWOPER rules that apply to emergency releases “without regard to the location of the hazard.” (See Division 2/H, 1910.120(q) Emergency responses to hazardous substance releases.) The best source of information about any chemical in the workplace (including recommended personal protective equipment and procedures for spill-response) is often the chemical’s Safety Data Sheet (SDS.)

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### **437-004-1005**

##### **General Requirements for Protective Equipment**

###### **(1) Definitions.**

Contaminants – include any substance that can cause illness or physical harm to a person by contact with or entry into the body. Examples include dust in the air and pesticide residues in water.

Hazards – include chemicals, contaminants, and energy sources that are present in the workplace environment in a way that can cause injury to, or functional impairment of, any part of the body through absorption, inhalation or physical contact.

Personal protective equipment (PPE) – includes anything worn or used for protecting a person from hazards.

###### **(2) Hazard assessment and protective equipment selection.**

**NOTE:** This section applies to protective equipment not covered in OAR 437-004-1041 (Respiratory Protection) or OAR 437-004-0630 (Noise Exposure).

(a) The employer must assess the workplace to determine if hazards are present, or are likely to be present, that would make the use of personal protective equipment (PPE) necessary to protect employees.

(b) If such hazards are present, or likely to be present, the employer must:

(A) Select, and ensure that each exposed employee use, the types of PPE that will protect them from the hazards identified in the hazard assessment;

(B) Communicate PPE selection decisions to each exposed employee; and,

(C) Select PPE that properly fits each exposed employee.

**NOTE:** Nonmandatory Appendix A to Subdivision I provides a sample hazard assessment procedure.

###### **(3) Payment for protective equipment.**

(a) Except as in paragraphs (3)(b) through (3)(e), employers must provide, at no cost to the employee, all protective equipment, including personal protective equipment (PPE). For purposes of this rule, employees of labor contractors, labor leasing companies and temporary labor providers are the employees of the using employer. The using employer must supply PPE in compliance with this rule.

**NOTE:** When another Oregon OSHA standard specifies that the employer must pay for protective equipment, that standard applies over this one.

(b) Employers do not have to pay for non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, if the employer allows employees to wear the items off the job site.

(c) When employers provide metatarsal guards and allow the employee, to use shoes or boots with built-in metatarsal protection, employers do not have to reimburse the employee for the shoes or boots.

(d) Employers do not have to pay for:

(A) Everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots; or

(B) Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, and sunscreen.

(e) Employers must pay for replacement PPE, except when the employee has lost or intentionally damaged the PPE.

**NOTE:** Employees must not be allowed to work in hazardous conditions without the appropriate PPE.

(f) Where an employee provides their own protective equipment the employer does not have to reimburse the employee for that equipment. (Also see paragraph (4))

(4) Employees’ equipment. If employees provide their own protective equipment, the employer is responsible to ensure that it is adequate and is right for the job and hazards.

(5) Equipment inspection, maintenance, and storage. Do not allow workers to use defective or damaged personal protective equipment. All protective equipment, whether furnished by the employer or provided by the employee, must be maintained in a sanitary and reliable condition.

(6) Skin protection. Where needed, provide and require the use of protective coverings, such as aprons, ointments, gloves, or other effective protection to employees exposed to materials or conditions that are hazardous to their skin.

(7) Follow manufacturer’s instruction. Require employees to wear and use personal protective equipment according to the manufacturer’s instructions.

(8) Watches and jewelry. Employees working where they might contact moving parts of powered machinery or live parts of electrical equipment, must not be allowed to wear rings, watches, earrings, bracelets or other things that could cause a hazard.

(9) Control hazards first. Contain or eliminate hazards at the source by using administrative or engineering controls. Personal protective equipment is appropriate when these types of controls are not feasible or where there are still hazards.

###### **(10) Training.**

**NOTE:** This section applies to protective equipment not covered in OAR 437-004-1041 (Respiratory Protection) or OAR 437-004-0630 (Noise Exposure).

(a) The employer must provide training to each employee who is required to use Personal Protective Equipment (PPE). that includes at least the following:

(A) When PPE is necessary;

(B) What type of PPE is necessary;

(C) How to properly put on, take off, adjust, and use the PPE;

(D) The limitations and useful life of the PPE; and,

(E) The proper care, maintenance, storage and disposal of the PPE.

(b) Each affected employee must demonstrate an understanding of the training specified in paragraph (10)(a) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (10)(a) of this section, the employer must retrain that employee. Circumstances where retraining is required include:

(A) When changes in the workplace make previous training obsolete;

(B) When changes in the types of PPE to be used make previous training obsolete;

(C) When deficiencies in an affected employee’s demonstrated knowledge or use of assigned PPE indicate that the employee has not retained the required understanding or skill.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

#### **437-004-1020**

##### **Personal Fall Protection**

**NOTE:** The general requirements for Protective Equipment in 437-004-1005 apply to Personal Fall Protection.

(1) Definitions. Competent person — is a person who because of training and experience, can identify existing and predictable hazards in equipment, material, conditions or practices and who has the knowledge and authority to take corrective steps. Lanyard — A flexible line connected at one end to a body belt or harness and at the other end to an anchorage. Personal fall arrest system means a system used to stop an employee in a fall from a working level. It con-

sists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. Personal fall protection systems include arrest systems, restraint systems or positioning device systems. Personal fall restraint system means a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness, along with an anchorage, connectors and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices. Positioning device system means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning. Qualified person — is a person who has a recognized degree, certification, professional standing, knowledge, training or experience; and has successfully demonstrated the ability to perform the work, or solve or resolve problems relating to the work, subject matter, or project.

(2) Protect all employees from falls when working:

(a) On unguarded surfaces more than 10 feet above a lower level; and

(b) Above open pits, tanks or dangerous equipment at any height.

**NOTE:** The requirements to protect employees from falls when working on unguarded surfaces more than 10 feet above a lower level does NOT apply when the work is of limited duration and limited exposure, and it is equally or more hazardous to set up or use a fall protection system. Examples include work on haystacks, stacked silage, and stacked Christmas trees in open, outdoor areas.

(3) Personal fall protection systems must use:

(a) Lanyards and vertical lifelines that have a minimum breaking strength of 5,000 pounds.

(b) Connectors that are drop forged, pressed or formed steel, or equivalent materials.

(c) Connectors that have a corrosion-resistant finish, and with smooth surfaces and edges to prevent damage to interfacing parts of the system.

(d) Dee-rings, snap hooks or carabiners that have a minimum tensile strength of 5,000 lbs. and that are proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.

(e) Snap hooks and carabiners that are self-locking or double-locking and sized to be compatible with the member to which they are connected.

(4) Use lifelines, body belts or safety harnesses and lanyards only for the purpose they were intended. Remove fall protection equipment from service after it has been subjected to a load.

(5) Anchorages:

(a) Anchorages used for attachment of personal fall arrest equipment must be capable of supporting at least 5,000 pounds per employee attached, or must be designed, installed, and used as follows:

(A) Under the supervision of a qualified person; and

(B) As part of a complete personal fall arrest system which maintains a safety factor of at least two.

(b) Anchorages used for attachment of personal fall restraint or positioning device systems must be capable of supporting 3000 lbs. per employee attached, or be designed, installed and used as follows:

(A) Under the supervision of a qualified person; and

(B) As part of a complete personal fall restraint or positioning device system which maintains a safety factor of at least two.

(6) Horizontal lifelines must be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

(7) Fall arrest and fall restraint systems.

(a) Fall arrest systems must be rigged so that an employee can neither free fall more than 6 feet, nor contact any lower level.

(b) Fall arrest systems, when stopping a fall, must limit maximum arresting force on an employee to 1,800 pounds

(c) Fall arrest systems must bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.

(d) Fall restraint systems must be rigged to prevent the user from falling any distance.

(e) Positioning device systems must be rigged such that an employee cannot free fall more than 2 feet.

(8) Personal fall protection systems must be inspected by a competent person prior to each use for wear, damage and other deterioration, and defective components must be removed from service.

(9) When employees use personal fall arrest systems, the employer must provide for prompt rescue of employees in the event of a fall or ensure that employees are able to rescue themselves.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### **437-004-1030**

#### **Work Clothing**

(1) General requirements. Ensure that employees:

(a) Wear clothing that provides adequate protection for the hazards of the work.

(b) Do not wear loose sleeves or other loose clothing when near enough to be caught in moving parts of machinery.

**NOTE:** See Divisions 4/O and 4/P for equipment and tool guarding requirements.

(c) Do not wear clothing soaked with flammable liquids or contaminated with other hazardous substances.

**NOTE:** See Subdivision 4/P, 437-004-2230 for requirements for PPE while using chain saws.

(2) High visibility garments.

(a) The employer is responsible to determine, before work begins, if any task or work assigned will expose employees to hazards caused by on-highway type moving vehicles in work zones and street or highway traffic.

(b) Work that exposes employees to these hazards must comply with Division 2/I, 437-002-0134(7) High Visibility Garments.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### **437-004-1035**

#### **Eye and Face Protection**

**NOTES:** See Division 4/Q, 437-004-2310(6) for the protective equipment requirements for welders in agricultural workplaces.

See Division 4/W, 437-004-6000, 170.240(c)(7) for the protective eyewear requirements for pesticide handlers.

(1) General requirements. Employers must:

(a) Provide and require the use of eye or face protection that protects employees from hazards such as flying particles, molten metal, liquid chemicals, acids or caustic materials, gases and vapors, electrical hazards, or potentially harmful light radiation.

(b) If an employee wears prescription lenses while doing work that involves eye or face hazards, either provide protective equipment that incorporates the prescription lenses or provide protective equipment that can be worn over the prescription lenses in a way that does not disturb the proper position of either the prescription lenses or the protective equipment.

(c) Require employees to use eye or face protection with side protection when there is a hazard from flying objects. Detachable side protectors on safety glasses (such as, clip-on or slide-on side shields) are acceptable if they offer adequate protection from the hazard.

(d) Eye and face protection equipment must be clean and in good repair.

(2) Criteria for protective eye and face devices.

(a) Protective eye and face protection devices must comply with any of the following consensus standards:

(A) ANSI Z87.1-2003, "American National Standard Practices for Occupational and Educational Eye and Face Protection;"

(B) ANSI Z89.1-1997, "American National Standard for Industrial Head Protection;"

(C) ANSI Z89.1-1986, "American National Standard for Personnel Protection — Protective Headwear for Industrial Workers — Requirements."

**NOTE:** The Oregon OSHA Resource Center has copies of these standards for public review at 350 Winter Street NE, Salem OR.

(b) Protective eye and face protection devices that the employer demonstrates are at least as effective as protective eye and face protection devices that are constructed in accordance with one of the consensus standards will be deemed to be in compliance with the requirements of this section.

(3) Laser protection.

(a) The employer is responsible to determine, before work begins, if any task or work assigned will expose employees to laser light beams.

(b) Work that exposes employees to laser light beams must be furnished laser safety goggles which will protect for the specific wavelength of the laser and be of optical density adequate for the energy involved.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### **437-004-1041**

#### **Respiratory Protection**

(1) Permissible practice.

(a) To control occupational diseases caused by breathing contaminated air, the best method is to prevent contamination with engineering controls. To the extent feasible, accepted engineering controls must be used. Examples of engineering controls include enclosing the source of contamination, providing general or local exhaust ventilation to remove the contaminated air from work areas, and substituting less toxic materials. When this approach is not feasible, or while engineering controls are being established, employers must provide appropriate respirators in compliance with this standard.

(b) You must provide a respirator to each employee when it is necessary to protect their health. Respirators must be appropriate for the hazard. You must also establish and maintain an effective respiratory protection program that includes at least the requirements outlined in paragraph (3) of this standard. The program must cover each employee required to use a respirator.

(2) Definitions. The following definitions apply to this standard.

Air-purifying respirator is a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element. Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section. Atmosphere-supplying respirator is a respirator that supplies the user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units. Canister or cartridge is a container with a filter, sorbent, or catalyst, or combination of these items, that removes specific contaminants from the air passed through the container. Competent person is a person who, because of training and experience, can identify existing and predictable hazards in equipment, material, conditions or practices and who has the knowledge and authority to take corrective steps. Demand respirator is an atmosphere-supplying respirator that admits breathing air to the face piece only when inhalation creates a negative pressure inside the face piece. Elastomer (elastomeric) is an elastic substance like rubber or neoprene. Emergency situation is any event such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant. Employee exposure is exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection. End-of-service-life indicator (ESLI) is a device, on the cartridge, that warns respirator users when their respirator is near the end of its ability to protect them. For example, an indicator on the cartridge will change to warn the user that the cartridge sorbent material is nearing saturation and is no longer effective. Engineering control measures are methods to eliminate or control employee exposure to the hazard; e.g., substi-

tution of a less toxic material, general or local ventilation and enclosing the operation. Escape-only respirator is a respirator only for use during emergency exit. Filter or air purifying element is a respirator component (e.g., canister or cartridge) that removes solid or liquid aerosols from the inspired air. Filtering face piece (dust mask) is a tight fitting negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece made of the filtering medium. Fit factor is a quantitative estimate of the fit of a particular respirator to a specific person, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. Instrumentation is used with ambient air as the "test agent" to quantify the respirator fit. See Appendix A. Fit test is the use of procedures in Appendix A to qualitatively or quantitatively evaluate the fit of a respirator on a person. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.) Helmet is a rigid respirator covering that also provides head protection against impact and penetration. High efficiency particulate air (HEPA) filter is a filter that is at least 99.97 percent efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters. Hood is a respirator covering that completely covers the head and neck and may also cover portions of the shoulders and torso. Immediately dangerous to life or health (IDLH) is an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere. Interior structural firefighting is the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage. Loose-fitting face piece is a respiratory covering that forms a partial seal with the face, e.g., hood. Maximum use concentration (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment. Negative pressure respirator (tight fitting) is a respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator. Oxygen deficient atmosphere is an atmosphere with an oxygen content less than 19.5 percent by volume. Physician or other licensed health care professional (PLHCP) is a person whose legally permitted scope of practice (i.e., license, registration, or certification) allows them to independently provide, or be delegated to provide, some or all of the health care services required by this standard. Positive pressure respirator is a respirator in which the pressure inside the respiratory covering is higher than the air pressure outside the respirator. Powered air-purifying respirator (PAPR) is an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering. Pressure demand respirator is a positive pressure atmosphere-supplying respirator that admits breathing air to the face piece when inhalation reduces the positive pressure inside the face piece. Qualitative fit test (QLFT) is a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent. See Appendix A. Quantitative fit test (QNFT) is an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator. See Appendix A. Respirator covering is that part of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a face piece, helmet, hood, suit, or a mouthpiece respirator with nose clamp. Self-contained breathing apparatus (SCBA) is an atmosphere-supplying respirator for which user carries the breathing air source. Service life is the period of time that a respirator, filter or sorbent, or other respiratory equipment adequately protects the wearer. Supplied-air respirator (SAR) or airline respirator



is an atmosphere-supplying respirator for which the source of breathing air is not carried by the user. Tight-fitting face piece is a respirator covering that forms a complete seal with the face, e.g., half mask or full-face piece. User seal check is an action by the respirator user to determine if the respirator is properly seated to the face. See appendix B-1.

(3) Respiratory protection program.

(a) When respirators are necessary to protect the health of workers or when you require workers to wear them, you must have an effective, written respiratory protection program, managed by a knowledgeable person, with procedures specific to your work site. Keep the program updated to reflect changes in conditions that require the use of respirators. You must include at least these points, as applicable:

(A) Procedures for selecting respirators for use in the workplace;

(B) Procedures for the medical evaluations of employees required to use respirators;

(C) Fit testing procedures for tight-fitting respirators;

(D) Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;

(E) Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;

(F) Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;

(G) Procedures for training employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;

(H) Procedures for training employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and

(I) Procedures for regularly evaluating the effectiveness of the program.

(b) The employer must provide respirators, and all other program requirements including training, and medical evaluations at no cost to the employee.

(c) Where respirator use is voluntary:

(A) You may provide respirators to employees who request them or they may use their own respirators. If you allow this voluntary use;

(i) You must determine that it will not create a hazard to the user;

(ii) You must provide the voluntary user with the information in Appendix D, "Information for Employees Using Respirators When Not Required Under the Standard"; and

(B) You must have a limited written respiratory program for voluntary users. It must include those parts of the standard program necessary to ensure that:

(i) The user is medically able to use the respirator without adverse health effects. Users of tight-fitting respirators other than dust masks must have a medical evaluation.

(ii) The user will properly clean, store and maintain the respirator.

(4) Selection of respirators. Identify and evaluate the respiratory hazard(s) including a reasonable estimate of employee exposures and an identification of the contaminant's chemical state and physical form. You must treat atmospheres with the potential for IDLH conditions as an IDLH hazard and provide appropriate respiratory protection.

(a) General requirements.

(A) You must evaluate respiratory hazards, conditions in the workplace and user factors, then select and provide the appropriate respirators.

(B) All respirators must have NIOSH certification and all use must conform to that certification.

(C) Respirators must correctly fit and be acceptable to the user.

(b) Respirators for IDLH atmospheres.

(A) Provide the following respirators for employee use in IDLH atmospheres:

(i) A full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of 30 minutes, or

(ii) A combination full-face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

(B) Respirators only for escape from IDLH atmospheres must have NIOSH certification for escape from the atmosphere of use.

(C) Treat all oxygen-deficient atmospheres as IDLH.

**EXCEPTION** to paragraph (4)(b)(C): If you can demonstrate that under all foreseeable conditions, the oxygen concentration will stay within the ranges in Table A for the appropriate altitudes set out in the table, then your selection of atmosphere-supplying respirators is not limited to the types listed in (4)(b)(A). Table A

(c) Respirators for atmospheres that are not IDLH.

(A) Provide respirators adequate to protect the health of workers and ensure compliance with all other OR-OSHA requirements, under routine and reasonably foreseeable emergency situations.

(i) Assigned Protection Factors (APFs). Employers must use the assigned protection factors listed in Table B to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used. Table B.

(ii) Maximum Use Concentration (MUC).

(I) The employer must select a respirator for employee use that maintains the employee's exposure to the hazardous substance, when measured outside the respirator, at or below the MUC.

(II) Employers must not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead, they must use respirators listed for IDLH conditions in paragraph (4)(b) of this standard.

(III) When the calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then employers must set the maximum MUC at that lower limit.

(B) The respirator must be appropriate for the chemical state and physical form of the contaminant.

(C) For protection against gases and vapors, provide:

(i) An atmosphere-supplying respirator, or

(ii) An air-purifying respirator, if:

(I) It has an end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or

(II) If there is no ESLI appropriate for your conditions, implement a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. Describe in the respirator program the information and data relied on and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

**NOTE:** The Worker Protection Standard contains criteria for specific change out schedules for respirator canisters and cartridges. See Division 4/W, 170.240.

(D) For protection against particulates, provide:

(i) An atmosphere-supplying respirator; or

(ii) An air-purifying respirator with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator with a filter certified for particulates by NIOSH under 42 CFR part 84; or

(iii) For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator with any filter certified for particulates by NIOSH.

(5) Medical evaluation. Using a respirator may place a physiological burden on employees that depends on the type of respirator, the job and workplace conditions in which the respirator is used, and the medical status of the employee.

(a) General. You must provide medical evaluations to determine each worker's ability to use a respirator without causing adverse health effects. Do this before the worker's fit test and before they perform any work requiring respirator use. The employer may discontinue an employee's medical evaluations when the employee no longer uses a respirator.

(b) Medical evaluation procedures. The employer must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial examination that obtains the same information as the medical questionnaire. The medical evaluation must obtain the information requested by the questionnaire in Appendix C, Part A, Sections 1 and 2, of this standard.

**NOTE:** If the employee refuses the examination, they may not be permitted to work in jobs that require a tight-fitting respirator.

(c) Follow-up medical examination.

(A) The employer must ensure that a follow-up medical examination is provided for an employee if, in the opinion of the PLHCP, this is necessary.

**NOTE:** The PLHCP may require a follow-up examination for an employee who gives a positive response to any question among questions 1 through 9, or 10 through 15 in Appendix C, Part A, Section 2; or whose initial medical examination demonstrates the need for a follow-up medical examination.

(B) The follow-up medical examination must include any medical tests, consultations, or diagnostic procedures that the PLHCP deems necessary to make a final determination.

(d) Administration of the medical questionnaire and examinations.

(A) You must allow the employee to complete the questionnaire in a way that protects the confidentiality of the information. Employers are not allowed to see the answers or to review the completed form. You must allow employees to complete the form during normal working hours or at a time and place convenient to them. If employees need help, allow them to ask your PLHCP or anybody other than their employer or representatives of their employer.

(B) The employer must provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

(e) Supplemental information for the PLHCP.

(A) You must give the PLHCP the required supplemental information before they make any recommendation about a worker's ability to use a respirator. Use Appendix C, Part B, Section 2 of this standard, or an equivalent form to provide this information.

(i) The type and weight of the respirator the employee will use;

(ii) How long and how often the employee will use the respirator (including use for rescue and escape);

(iii) The expected physical work effort while using the respirator;

(iv) Additional protective clothing and equipment to be worn; and

(v) Temperature and humidity extremes that may exist during use.

(B) Supplemental information you provide for an employee's medical evaluation does not have to be provided again for later evaluations unless the information or the PLHCP changes.

(C) You must provide a copy of your written respiratory program and this standard to the PLHCP.

**Note** to Paragraph (5)(e): When the employer replaces a PLHCP, the employer must ensure that the new PLHCP has this information, either by providing the documents directly to the new PLHCP or by having the documents transferred from the former PLHCP to the new PLHCP. However, OR-OSHA does not expect employers to have employees medically reevaluated solely because there is a new PLHCP.

(f) Medical determination. In determining the employee's ability to use a respirator, the employer must:

(A) Obtain a written recommendation about the employee's ability to use the respirator from the PLHCP. The recommendation must provide only the following information:

(i) Any limitations on respirator use relating to the medical condition of the employee, or relating to the workplace conditions, including whether or not the employee is medically able to use the respirator;

(ii) The need, if any, for follow-up medical evaluations; and

(iii) A statement that the PLHCP gave a copy of the recommendation to the worker.

(B) If the respirator is a negative pressure respirator and the PLHCP finds that using it would increase the employee's health risk,

the employer must provide a PAPR until a subsequent evaluation clears the employee for another type.

(g) Additional medical evaluations. At a minimum, the employer must provide additional medical evaluations that comply with this standard if:

(A) An employee reports medical signs or symptoms related to ability to use a respirator;

(B) A PLHCP, supervisor, or the knowledgeable person who manages the respiratory protection program informs the employer that an employee needs a reevaluation; or

(C) Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or

(D) A change occurs in work conditions (such as physical work effort, protective clothing, and temperatures) that may result in a substantial increase in the physiological burden to the employee.

(6) Fit testing. You must:

(a) Ensure that employees using a tight-fitting face piece respirator pass an appropriate qualitative fit test (QLFT) or quantitative fit test (QNFT), using the same make, model, style and size respirator that they will use in the workplace.

(b) Ensure that each worker using a tight-fitting face piece respirator is fit-tested, before initial respirator use; whenever they change to another type, style, model, or make of respirator, and at least annually thereafter.

(c) Do a new fit test on a worker when you observe or the worker, a supervisor, the program administrator, or a PLHCP report any change in the worker's physical condition that could affect the respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

(d) Give employees a reasonable opportunity to select a different respirator face piece and redo the fit test if, after passing a QLFT or QNFT, the employee notifies the employer, supervisor, or PLHCP that the fit of the respirator is unacceptable.

(e) Ensure that all fit tests comply with the accepted QLFT or QNFT protocols in Appendix A of this standard.

(f) Ensure that qualitative fit tests (QLFT) are used only to fit test negative pressure air-purifying respirators that must achieve an assigned protective factor of 50 or less.

(g) Ensure that quantitative fit tests (QNFT), using an accepted QNFT protocol, are only passed by achieving a fit factor of 100 or more for a tight fitting half face piece respirator, and a fit factor of 500 or more for a tight fitting full face piece respirator.

(h) Ensure that fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators is only accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.

(A) Do qualitative fit testing of these respirators by temporarily converting the respirator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.

(B) Do quantitative fit testing of these respirators by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. Do this by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a way to sample air from inside the face piece.

(C) Before returning a face piece to normal use, completely remove any modifications done for fit testing, and restore the face piece to NIOSH-approved configuration.

(7) Use of respirators.

(a) Face piece seal protection.

(A) You must not permit workers to wear tight-fitting face pieces if they have:

(i) Facial hair that comes between the face-to-face piece sealing surface or that interferes with the respirator's valve function; or

(ii) Any other condition that interferes with the face-to-face piece seal or valve function.

(B) If an employee wears glasses or goggles or other personal protective equipment, the employer must ensure that it does not interfere with the seal of the face piece to the face of the user.

(C) Employers must ensure that workers who wear respirators perform a user seal check before every use, using the procedures in Appendix B-1 or, if equally effective, the recommendations of the respirator manufacturer.

(b) Continuing respirator effectiveness.

(A) You must reevaluate the effectiveness of a respirator when there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness.

(B) You must ensure that employees leave the area where respirators are required:

(i) To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use; or

(ii) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece; or

(iii) To replace the respirator or the filter, cartridge, or canister elements.

(C) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the employer or a competent person must replace or repair the respirator before allowing the employee to return to the work area.

(c) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer must ensure that:

(A) One employee or, when needed, more than one employee is stationed outside the IDLH atmosphere;

(B) Visual, voice, or line communication is continuous between the employee(s) in the IDLH atmosphere and the employee(s) outside the IDLH atmosphere;

(C) The employee(s) outside the IDLH atmosphere have the training and equipment to provide effective emergency rescue;

(D) The employer or designee is notified before the employee(s) outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;

(E) The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;

(F) Employee(s) outside the IDLH atmospheres have:

(i) Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either:

(ii) Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or

(iii) Equivalent means for rescue when there is no requirement for retrieval equipment under paragraph (7)(c)(F)(ii).

(d) Procedures for interior structural firefighting. If you require your workers to fight interior structural fires, paragraph (7)(c) applies. You must also do the following:

(A) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times; and

(B) At least two employees are located outside the IDLH atmosphere; and

(C) All employees engaged in interior structural firefighting use SCBA's.

**NOTE 1** to paragraph (7)(d): One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety of health of any firefighter working at the incident.

**NOTE 2** to paragraph (7)(d): Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

(8) Maintenance and care of respirators.

(a) Cleaning and disinfecting. You must provide each respirator user with a respirator that is clean, sanitary, and in good working order. You also must ensure that respirators are cleaned and disinfected using the procedures in Appendix B-2, or equally effective

procedures recommended by the respirator manufacturer, at the following intervals:

(A) Clean and disinfect respirators used exclusively by one worker as often as necessary to keep them sanitary;

(B) Clean and disinfect respirators after each use, or before being worn by different individuals, if used by more than one worker;

(C) Clean and disinfect emergency use respirators after each use; and

(D) Clean and disinfect fit test and training respirators after each use.

(b) Storage. Ensure that respirators are stored as follows:

(A) Store all respirators to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals, and to prevent deformation of the face piece and exhalation valve.

(B) In addition to the requirements of paragraph (8)(b)(A), keep emergency respirators:

(i) Accessible to the work area;

(ii) In compartments or in covers clearly marked as containing emergency respirators; and

(iii) In accordance with any applicable manufacturer instructions.

(c) Inspections.

(A) The employer must require respirator inspections as follows:

(i) Inspect all routine use respirators before each use and during cleaning;

(ii) Inspect emergency use respirators at least monthly and according to the manufacturer's recommendations. Check for proper function before and after each use; and

(iii) Inspect escape respirators before taking them into the workplace for use.

(B) The employer must ensure that respirator inspections include the following:

(i) A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and

(ii) A check of elastomeric parts for pliability and signs of deterioration.

(C) In addition to the requirements of paragraphs (8)(c)(A) and (B), inspect self-contained breathing apparatus monthly. Keep air and oxygen fully charged and recharge them when the pressure falls to 90 percent of the manufacturer's recommended pressure level. Be certain the regulator and warning devices work properly.

(D) For emergency use respirators, the employer must:

(i) Certify the respirator by documenting the date of inspection, the name (or signature) of the inspector, the findings, required remedial action, and a serial number or other means of identifying the respirator; and

(ii) Provide this information on a tag or label attached to the respirator storage compartment, or keep it with the respirator, or include it in paper or electronic inspection reports. Keep this information until the next report replaces it.

(d) Repairs. Do not use respirators that fail an inspection or are otherwise defective. Either discard them or repair them according to these procedures:

(A) Only people with appropriate training may repair or adjust respirators. They must use only the manufacturer's NIOSH-approved parts designed for the particular respirator;

(B) Repairs must conform to the manufacturer's recommendations for the type of repair to be performed;

(C) Only the manufacturer or a technician trained by the manufacturer may repair or adjust the reducing and admission valves, regulators and alarms.

(9) Breathing air quality and use.

(a) The employer must ensure or have their supplier certify that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration meets the following specifications:



(A) Compressed and liquid oxygen must meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and

(B) Compressed breathing air must meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:

- (i) Oxygen content (v/v) between 19.5 and 23.5 percent;
- (ii) Hydrocarbon (condensed) content of no more than 5 milligrams per cubic meter of air;
- (iii) Carbon monoxide (CO) content of no more than 10 ppm;
- (iv) Carbon dioxide content of no more than 1,000 ppm; and
- (v) No noticeable odor.

**NOTE:** Do not fill your own air vessels unless they and the contents meet all the requirements of this standard.

(b) Do not use compressed oxygen in atmosphere-supplied respirators that previously held compressed air.

(c) The employer must ensure that oxygen concentrations more than 23.5 percent are used only in equipment designed for oxygen service or distribution.

(d) The employer must ensure that cylinders to supply breathing air to respirators meet the following requirements:

(A) Cylinders are tested and maintained as prescribed in the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part 180);

(B) Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and

(C) The moisture content in the cylinder does not exceed a dew point of -50 degrees F. (-45.6 degrees C.) at 1 atmosphere pressure.

(e) The employer must ensure that compressors supplying breathing air to respirators are constructed and situated to:

(A) Prevent entry of contaminated air into the air-supply system;

(B) Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F. (5.56 degrees C.) below the ambient temperature;

(C) Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Maintain and replace sorbent beds and filters according to the manufacturer's instructions.

(D) Have a tag at the compressor showing the most recent change date and the signature of the authorized person who did the change.

(f) For compressors that are not oil-lubricated, ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.

(g) For oil-lubricated compressors, use only a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If you use only high-temperature alarms, monitor the air supply often enough to prevent carbon monoxide in the breathing air from exceeding 10 ppm.

(h) The employer must ensure that breathing air couplings are incompatible with outlets for nonrespirable worksite air or other gas systems. Do not allow any asphyxiating substance to get into breathing airlines.

(i) Use only the respirator manufacturer's NIOSH approved breathing gas containers marked and maintained in accordance with the Quality Assurance provisions of the NIOSH approval for the SCBA, as issued in accordance with the NIOSH respirator certification standard at 42 CFR part 84.

(10) Identification of filters, cartridges, and canisters. The employer must ensure that all filters, cartridges and canisters have labels and color codes that comply with the NIOSH standards and that the label remains in place and legible.

(11) Training and information.

(a) The employer must ensure that each employee can demonstrate knowledge of at least the following:

(A) Why the respirator is necessary and how improper fit, use, or maintenance can compromise the protective effect of the respirator;

(B) What the limitations and capabilities of the respirator are;

(C) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;

(D) How to inspect, put on and remove, use, and check the seals of the respirator;

(E) What the procedures are for maintenance and storage of the respirator;

(F) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and

(G) The general requirements of this rule.

(b) Training must be in a language or form that workers understand.

(c) Training must be complete before workers use respirators.

(d) Retrain respirator users annually and when these situations happen:

(A) Changes in the work or the type of respirator make previous training obsolete;

(B) Inadequacies in the employee's knowledge or use of the respirator indicate that they no longer have the basic understanding or skill; or

(C) Any other situation arises in which retraining appears necessary to ensure safe respirator use.

(e) An employer who can demonstrate that a new employee has training within the last 12 months that addresses the elements in paragraph (11)(a)(A) through (G) does not have to repeat that training if, the employee can demonstrate knowledge of those element(s). Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.

(f) Provide every voluntary respirator user with the basic advisory information in Appendix D. Any written or oral format that the employee understands is acceptable.

(12) Program evaluation.

(a) Evaluate the workplace as necessary to ensure effective implementation of the current written program.

(b) Regularly consult your respirator users to get their views on your program's effectiveness and to identify problems. Correct the problems identified. Things to assess include at least:

(A) Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);

(B) Users have and use the correct respirator and components for their exposure hazards;

(C) Proper respirator use; and

(D) Proper respirator maintenance.

(13) Recordkeeping.

(a) Medical evaluation. Retain and make available all medical evaluations required by this standard according to Division 2/Z, 1910.1020. (Division 4/A, 437-004-0005, Medical Records Access, stipulates that Division 2/Z, 1910.1020 applies to agricultural employers.)

(b) Fit testing.

(A) You must keep a record of qualitative and quantitative fit tests for each user including:

(i) The name or identification of the employee;

(ii) Type of fit test;

(iii) Specific make, model, style, and size of respirator tested;

(iv) Date of test; and

(v) The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.

(B) Keep fit test records until records of a new test replace them.

(c) You must keep a written copy of your current respirator program.

(d) On request, you must make written records required by this standard, available to the Oregon OSHA Administrator or their designee for examination or copying.

(14) Appendices. Compliance with Appendix A, Appendix B-1, Appendix B-2, Appendix C, and Appendix D of this rule is mandatory.

(15) Effective Date. OAR 437-004-1041, Respiratory Protection, is effective March 1, 2007. Appendices.

[ED. NOTE: Tables & Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2), 656.726(4).

Stats. Implemented: ORS 654.001 - 654.295.

Hist.: OSHA 3-2006, f. 6-7-06, cert. ef. 3-1-07; OSHA 10-2006, f. & cert. ef. 11-30-06; OSHA 3-2007, f. & cert. ef. 8-13-07; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-1050**

**Head Protection**

**NOTE:** See Division 4/W, 437-004-600, 170.240(c)(10) for information about the chemical-resistant headwear requirements for pesticide handlers.

(1) General requirements. Require employees to wear head protection helmets or hardhats when working in areas where there is a potential for injury to the head such as from falling or flying objects or electrical hazards.

(2) Criteria for protective headwear.

(a) Head protection must comply with any of the following consensus standards:

(A) ANSI Z89.1-2003, "American National Standard for Industrial Head Protection;"

(B) ANSI Z89.1-1997, "American National Standard for Industrial Head Protection;" or

(C) ANSI Z89.1-1986, "American National Standard for Personnel Protection — Protective Headwear for Industrial Workers — Requirements."

**NOTE:** The Oregon OSHA Resource Center has copies of these standards for public review at 350 Winter Street NE, Salem OR.

(b) Protective headwear that the employer demonstrates is at least as effective as protective headwear that is constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(3) Require employees who work close to moving parts of power-driven machinery or sources of ignition and whose hair is long enough to be caught in it or to be ignited, to wear caps or other head coverings that completely restrains the hair.

**NOTE:** See Divisions 4/O and 4/P for equipment and tool guarding requirements.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-1060**

**Hand, Foot, and Extremity Protection**

**NOTES:** See Division 4/P, 437-004-2220(10) for the protective equipment requirements (appropriate gloves, aprons and leg guards) for employees using sharp-edged cutting tools. See Division 4/P, 437-004-2230 for requirements for PPE while using chain saws. See Division 4/W, 437-004-6000, 170.240(c)(5) and (6) for information about the requirements for gloves and chemical-resistant footwear for pesticide handlers.

(1) General requirements for hand protection.

(a) Employers must select and require employees to use appropriate hand protection when the work exposes employees' hands to hazards such as contact with harmful substances; severe cuts, lacerations, or abrasions; punctures; chemical burns; electrical hazards; harmful temperature extremes.

(b) Do not allow the use of leather or other absorbent materials to protect against chemical hazards.

(c) Do not allow employees to wear gloves near moving parts or machines that might catch them.

**NOTE:** See Divisions 4/O and 4/P for equipment and tool guarding requirements.

(2) General requirements for protective footwear.

(a) Require employees to use appropriate protective footwear when there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, chemical exposures, or electrical hazards.

(b) Protective footwear must comply with any of the following consensus standards:

(A) ASTM F-2412-2005, "Standard Test Methods for Foot Protection," and ASTM F-2413-2005, "Standard Specification for Performance Requirements for Protective Footwear;"

(B) ANSI Z41-1999, "American National Standard for Personal Protection — Protective Footwear;" or

(C) ANSI Z41-1991, "American National Standard for Personal Protection — Protective Footwear."

**NOTES:** Look for ANSI compliance information on the shoe, the box, or tags. The Oregon OSHA Resource Center has copies of these consensus standards for public review at 350 Winter Street NE, Salem OR.

(c) Protective footwear that the employer demonstrates is at least as effective as footwear that is constructed in accordance with

one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

(3) Protection of Extremities.

(a) Require employees to wear leggings or high boots of leather, rubber or other suitable material to protect legs from physical hazards such as hot or cold substances, or sharp objects, and from chemical hazards such as spills or splashes.

(b) Require employees to wear sleeves or long gloves of leather, rubber or other suitable material to protect arms from physical hazards such as hot or cold substances, or sharp objects; and from chemical hazards such as spills or splashes.

(c) Do not allow the use of leather or other absorbent materials to protect against chemical hazards.

**NOTE:** See Division 4/P, OAR 437-004-2230(1)(c)(G) for the requirement to provide flexible bassistic nylon pads, chaps (or other equivalent protective equipment for the legs from the thigh to the top of the boot) for employees using chain saws.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-1070**

**Working Underway on Water**

(1) Definitions.

(a) Boat — means every description of water craft used or capable of being used as a means of transportation on the water, but does not include aircraft built to land on the water. Examples include row-boats, powerboats, rafts, barges, pontoons, and dredges.

(b) Underway — means when a boat is in or on the water and on the move — not at anchor, not moored, and not made fast to the shore.

(2) Personal flotation devices.

(a) Workers in boats that are underway must wear Coast Guard approved or equivalent, wearable personal flotation devices (PFD).

**Exception:** A worker below deck or in an enclosed part of a boat like a cabin or pilot house, need not wear the PFD but must have it readily available.

(b) The PFD provided must be:

(A) The right size for the wearer;

(B) Able to perform the function that the manufacturer intended; and

(C) Maintained according to the manufacturer's requirements and recommendations.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2001, f. 1-18-01, cert. ef. 3-1-01; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-1075**

**Working Over or In Water**

(1) Definition. Rescue device means a ring buoy and line, gaff pole, throwable rescue device, or other device that serves as a means to rescue somebody from the water without requiring the rescuer to enter the water.

(2) Scope and Application.

(a) These rules apply where there is a danger of drowning and the water is more than 5 feet deep. These rules do not apply to workers protected by general or personal fall protection.

(b) If employees are engaged in diving and related support operations conducted in connection with Agricultural employment, Division 2, 1910.401 through 1910.440, Commercial Diving Operations, applies.

(3) Personal flotation and rescue devices.

(a) Workers in water, over water on floating or unstable surfaces, or adjacent to water, must wear a Coast Guard approved or equivalent, wearable personal flotation device (PFD).

(b) The PFD must be:

(A) The right size for the wearer,

(B) Able to perform the function that the manufacturer intended, and

(C) Maintained according to the manufacturer's requirements and recommendations.

(c) Piers, docks, wharves and work sites along developed shorelines must have rescue devices available within 200 feet of the water or shoreline work area.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 1-2001, f. 1-18-01, cert. ef. 3-1-01; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-1105****Sanitation**

(1) General.

(a) Scope. This applies to permanent agricultural places of employment under conditions not covered by other standards such as 4/J, OAR 437-004-1110, Field Sanitation and 4/W, OAR 437-004-9990, Worker Protection Standard.

(b) Definitions applicable to this section.

(A) Non-water carriage toilet facility is a toilet facility not connected to a sewer.

(B) Number of employees is, unless otherwise stated, the maximum number of employees present at any one time on a regular shift.

(C) Potable water is water meeting the bacteriological and chemical quality requirements in the OAR chapter 333, division 61, Public Water Systems, of the Oregon State Health Division.

(D) Sanitary means free from agents harmful to health.

(E) Toilet facility is a fixture in a toilet room for defecation, urination, or both.

(F) Toilet room is a room with toilet facilities in or on any place of employment.

(G) Toxic material is a material in concentration or amount that exceeds the applicable limit established by a standard, or, lacking an applicable standard, is so toxic as to be a recognized hazard that is causing or is likely to cause death or serious physical harm.

(H) Urinal is a toilet facility in a toilet room for the sole purpose of urination.

(I) Water closet is a toilet in a toilet room for both defecation and urination and flushed with water.

(J) Wet process is any process or operation that normally results in employee walking or working surfaces becoming wet.

(c) Housekeeping.

(A) Keep all work areas as clean as the work allows.

(B) Work area floors must be kept as dry as conditions allow. Where there are wet processes, there must be drainage or false floors, platforms, mats, or other dry standing places, where practicable. Otherwise, provide waterproof shoes or boots.

(d) Waste disposal.

(A) Any container for solid or liquid waste or refuse that could rot or decompose must not leak. It must be cleanable, sanitary and have a solid tight-fitting cover unless it can be kept sanitary without one.

(B) Remove sweepings, solid or liquid wastes, refuse, and garbage to avoid creating a health hazard and often enough to keep the work area sanitary.

(2) Disposal of waste materials.

(a) Do not allow scrap, waste material or debris to accumulate in work areas.

(b) Remove flammable waste, such as oily rags, or keep it in containers designed or suitable for it.

(c) Where the use of machines or equipment creates hazardous waste materials, they must have suitable collecting or removal systems. If the refuse is unsuitable for removal that way, find a safe method of temporary storage and regular removal.

(3) Water supply.

(a) Potable water.

(A) Every work area must have potable water for drinking and washing.

(B) Portable drinking water dispensers must be kept sanitary. They must be capable of being closed and have a tap.

(C) Do not use open containers such as barrels, pails, or tanks for drinking water.

(D) Do not use common drinking cups and other common utensils.

(b) Non-potable water.

(A) Outlets for non-potable water must have markings that clearly state that the water is unsafe and is not for drinking, washing, or use with or on food.

(B) Non-potable water systems or systems carrying any other non-potable substance must prevent backflow or back siphonage into a potable water system.

(C) Do not use non-potable water for washing any part of the body, cooking or eating utensils, or clothing. Clean work areas, other than food processing and preparation areas and personal service rooms, with non-potable water only if it has no chemicals, fecal coliform, or other substances that could create insanitary conditions or be harmful to employees.

**NOTE:** Water supply systems design and construction standards are in the Oregon Health Division rules, OAR chapter 333, division 61, Public Water Systems.

(4) Toilet facilities.

(a) General.

(A) Except as otherwise stated in this paragraph, there must be toilet facilities that comply with Table 1, in toilet rooms separate for each sex. Base the number of facilities for each sex on the number of employees of that sex. You don't need separate rooms for each sex if the toilet rooms are for one person at a time, can be locked from the inside, and have at least one water closet. Where single-occupancy rooms have more than one toilet facility, count only one facility in each toilet room when using table 1. [Table not included. See ED. NOTE.]

(B) The requirements of (4)(a)(A) above do not apply to mobile crews or to normally unattended work locations if employees have transportation immediately available to nearby toilet facilities that meet the requirements of this subparagraph.

(C) The sewage disposal method must not endanger the health of employees.

(b) Construction of toilet rooms. Each water closet must be in a separate compartment with a door and walls or partitions between fixtures high enough to assure privacy.

(c) Toilet facilities. Toilet facilities at permanent work sites must be reasonably accessible.

(5) Washing facilities. Work areas must have adequate facilities or supplies for cleaning hands.

(6) Change rooms. When a standard requires employees to wear protective clothing because of the possibility of contamination with toxic materials, you must provide change rooms with storage facilities for street clothes and separate storage facilities for the protective clothing. This does not apply to outdoor work.

(7) Consumption of food and beverages on the premises. This applies only where employees are permitted to eat on the premises.

(a) Do not allow workers to eat in a toilet room or in any area exposed to a toxic material.

(b) Provide receptacles made of smooth, corrosion resistant, easily cleanable, or disposable materials for the disposal of waste food. Do not allow them to become over filled. Empty them daily unless unused and keep them clean. They must have a solid tight-fitting cover unless they can be kept clean without a cover.

(c) Do not store food or beverages in toilet rooms or in areas exposed to a toxic material, medicines or live virus.

(8) Vermin control. Every enclosed work place must be built and maintained, as much as practicable, to prevent rodents, insects, and other vermin from entering or living in it.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

**437-004-1110****Field Sanitation for Hand Labor Work**

(1) Scope. This applies to any agricultural establishment where employees do hand-labor operations in the field.

(2) Exceptions. These rules do not apply to:

(a) Logging operations;

(b) The care or feeding of livestock;

(c) Hand-labor operations in permanent structures (e.g., canning facilities or packing houses); or



(d) Machine operators working entirely separate from hand-labor operations.

(3) Definitions.

Agricultural employer — See universal definition in 4/B, OAR 437-004-0100. Agricultural establishment — See universal definition in 4/B, OAR 437-004-0100. Hand labor operation — means agricultural activities or agricultural operations performed by hand or with hand tools, including:

(A) Hand-cultivation, hand-weeding, hand-planting, and hand-harvesting of vegetables, nuts, fruits, seedlings, or other crops (including mushrooms);

(B) Hand packing or sorting, whether done on the ground, on a moving machine, or in a temporary packing shed in the field; and

(C) Except for purposes of OAR 437-004-1110(6), operation of vehicles or machinery, when such activity is in conjunction with other hand-labor operators. Handwashing facility — means a facility providing either a basin, container, or outlet with an adequate supply of potable water, soap, and single-use towels. Potable water — is water meeting the bacteriological and chemical quality requirements in the OAR chapter 333, division 61 Public Water Systems, of the Oregon State Health Division.

**NOTE:** OAR chapter 333, division 61 defines potable water as “Safe Drinking Water — water which has sufficiently low concentrations of micro-biological, inorganic chemical, organic chemical, radiological, or physical substances so that individuals drinking such water at normal levels of consumption, will not be exposed to disease organisms or other substances that may produce harmful physiological effects.”

Toilet facility — means a fixed or portable facility designed for adequate collection and containment of the products of both defecation and urination. Toilet facility includes biological, chemical, flush, and combustion toilets and sanitary privies.

(4) General requirements. Agricultural employers must provide and pay for everything required by this section for employees doing hand-labor operations in the field.

(5) Potable drinking water.

(a) Provide potable water that is available immediately to all employees.

(b) The water must be suitably cool and in sufficient amounts, taking into account the air temperature, humidity, and the nature of the work, to meet the needs of all employees.

(c) Dispense water in single-use drinking cups or by angle jet fountains. Do not use common drinking cups or dippers.

(6) Toilet and handwashing facilities.

(a) Provide one toilet facility and one handwashing facility for each 20 employees or fraction thereof.

(b) Toilet facilities must have adequate ventilation, appropriate screens, self-closing doors that close and latch from the inside and ensure privacy.

(c) Maintain privies and portable toilets as follows:

(A) Structures must be free of hazards, in good repair and be stable.

(B) Except for urinals, multiple units must have separate compartments with doors with inside latches to ensure privacy.

(C) Seats must have lids that raise to allow use as urinals, unless there are separate urinals.

(d) Privies and portable toilets built after the effective date of these rules must comply with the rules of the Department of Environmental Quality.

(e) Provide toilet facilities for each sex, where practicable. Distinctly mark them “women” and “men” in English and in the native language of employees expected to work in the fields or with easily understood pictures or symbols.

(f) The employer must ensure that for each toilet facility:

(A) There is enough toilet paper to meet the workers’ needs during the shift; and

(B) There are toilet paper holders or dispensers for each seat.

(g) Locate toilet and handwashing facilities adjacent to each other and no more than a 5 minute or a 1/4-mile (1,320 feet) unobstructed walk from each hand laborer’s place of work in the field.

(h) Where, due to terrain, it is not feasible to locate facilities as in (g) above, the facilities must be at the point of closest vehicular access.

(7) Maintenance.

(a) Potable drinking water and toilet and handwashing facilities must comply with appropriate public health sanitation practices.

(b) Drinking water containers must be made of materials that maintain water quality. Refill them daily or more often as necessary and keep them covered and clean.

(c) Toilet facilities must work and be clean and safe.

(d) Empty and recharge chemical toilets prior to the start of each season of operation and at least every 6 months thereafter during use or when the tank is three-quarters full, whichever occurs first.

(e) Where crops intended for human consumption are produced, toilets must not contaminate crops.

(f) Refill handwashing facilities with potable water as necessary to ensure an adequate supply and maintain them in a clean and sanitary condition.

(g) Disposal of wastes from facilities, including handwashing water and towels, must not cause unsanitary conditions or contamination of crops.

(8) Field sanitation notice. Employers that grow or harvest food crops for human consumption must post a notice describing the requirements of these rules and advising where workers may file complaints regarding field sanitation matters. It must be in the language of the majority of the workers.

(9) Reasonable use.

(a) The employer must notify each employee of the location of the sanitation facilities and water, and allow each employee reasonable opportunities during the workday to use them. The employer must inform each employee of the importance of good hygiene practices to minimize exposure to the hazards in the field from heat, communicable diseases, retention of urine and agrichemical residues, including, but not limited to the following:

(A) Using the water and facilities provided for drinking, handwashing, and elimination;

(B) Drinking water frequently, especially on hot days;

(C) Urinating as frequently as necessary;

(D) Washing hands both before and after using the toilet; and

(E) Washing hands before eating and smoking.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2011, f. & cert. ef. 12-8-11

### **437-004-1120**

#### **Agricultural Labor Housing and Related Facilities**

(1) Application.

(a) These rules apply to any place, or area of land, where there are living areas, manufactured or prefabricated homes or dwellings or other housing provided by a farmer, farm labor contractor, agricultural employer or other person in connection with the recruitment of workers on an agricultural establishment.

(b) These rules apply to any type of labor housing and related facilities together with the tract of land, established, or to be established, operated or maintained for housing workers with or without families whether or not rent is paid or collected.

(c) Manufactured dwellings and homes must comply with specifications for construction of sleeping places, unless they comply with ORS 446.155 to 446.185 and OAR 918-500-0020(2) that have the requirements and specifications for sanitation and safety design for manufactured dwellings.

(d) These rules apply to housing given to, rented, leased to or otherwise provided to employees for use while employed and provided or allowed either by the employer, a representative of the employer or a housing operator.

(e) These rules, unless otherwise stated, apply to all occupants of the labor housing and facilities.

(f) These rules apply to all labor housing sites owned, operated, or allowed to operate on property under the jurisdiction of any state or municipal authority.

(g) Violations relating to the occupants’ personal housekeeping practices in facilities that are not common use will not result in citations to the employer.

(h) For the purposes of OAR 437-004-1120, labor contractors as defined in ORS 658.405 are employers.

(2) These rules do not apply to:

(a) hotels or motels that provide similar housing commercially to the public on the same terms as they do to workers.

(b) accommodations subject to licensing as manufactured dwelling parks, organizational camps, traveler's accommodations or recreation vehicle parks and open to the general public on the same terms.

(c) manufactured homes or dwellings being moved regularly from place to place because of the work when at parks or camps meant for parking mobile vehicles and open to the general public on the same terms.

(3) Charging occupants for required services. Operators may not charge for services required by this rule (OAR 437-004-1120). This prohibits pay-per-use toilets, pay-per-use bathing facilities or any other method of paying for individual service requirements.

(4) Definitions.

(a) Clean means the absence of soil or dirt or removal of soil or dirt by washing, sweeping, clearing away, or any method appropriate to the material at hand.

(b) Common use facilities are those for use by occupants of more than one housing unit or by occupants of dormitory-style housing.

(c) Common use cooking and eating facility is a shared area for occupants to store, prepare, cook, and eat their own food.

(d) Dining hall is an eating place with food furnished by and prepared under the direction of the operator for consumption, with or without charge, of the occupants.

(e) Facility means a living area, drinking water installation, toilet installation, sewage disposal installation, food handling installation, or other installation required for compliance with the labor housing and related facility rules.

(f) Garbage means food wastes, food packaging materials or any refuse that has been in contact with food stuffs.

(g) Housing site is a place where there are living areas.

(h) Livestock operation is any place, establishment or facility with pens or other enclosures in which livestock is kept for purposes including, but not limited to, feeding, milking, slaughter, watering, weighing, sorting, receiving, and shipping. Livestock operations include, among other things, dairy farms, corrals, slaughterhouses, feedlots, and stockyards. Operations where livestock can roam on a pasture over a distance are outside this definition.

(i) Living area is any room, structure, shelter, tent, manufactured home or dwelling or prefabricated structure, vehicle or other place housing one or more persons.

(j) Manufactured dwelling is a residential trailer, built before January 1, 1962, for movement on the highway, that has sleeping, cooking and plumbing facilities; or, a mobile home, constructed for movement on the highway, that has sleeping, cooking and plumbing facilities, built between January 1, 1962 and June 15, 1976 and meeting the requirements of Oregon mobile home law in effect at the time of construction.

(k) Manufactured home is a structure built for movement on the highway that has sleeping, cooking and plumbing facilities and is used as a residence. Built on or after June 15, 1976 to comply with federal manufactured housing standards and regulations in effect at the time of construction. More information on these definitions is in ORS 446.003(26).

(l) Operator means any person or company that operates labor housing and/or related facilities.

(m) Potable water is water meeting the bacteriological and other requirements of the Public Health Division of the Oregon Department of Human Services.

(n) Prefabricated structure means a building or subassembly which has been in whole or substantial part manufactured or assembled using closed construction at an off-site location to be wholly or partially assembled on-site; but does not include a manufactured home or dwelling. Prefabricated structures are manufactured in accordance with the Oregon state building code and rules adopted

by the Building Codes Division of the Oregon Department of Consumer and Business Services in OAR 918-674.

(o) Privy is the same as outhouse or pit toilet but is not the same as portable toilets.

(p) Recyclable material means containers that are returnable for refund of a deposit or materials gathered as part of a recycling program.

(q) Refuse includes waste materials such as paper, metal, discarded items, as well as debris, litter and trash.

(r) Sanitary means free from agents that may be injurious to health.

(s) Sewage means the water-carried human and animal wastes, including kitchen, bath, and laundry wastes from residences, buildings, industrial establishments, or other places, together with such ground-water infiltration, surface waters, or industrial wastes as may be present.

(t) Toilet room is a room in or on the premises of any labor housing, with toilet facilities for use by employees and occupants of that housing.

(5) Housing registration requirements.

(a) ORS 658.705 requires the operator of Agricultural Labor Housing and Related Facilities to register such housing with Oregon OSHA as in (b) below, except the following:

(A) Housing occupied solely by members of the same family,

(B) Housing occupied by five or fewer unrelated persons, and

(C) Housing on operations that do not produce or harvest farm crops (Oregon OSHA considers "production of crops" to mean production of farm crops for sale").

(b) Each year, before occupancy, the operator or employer must register agricultural labor housing and related facilities with Oregon OSHA as set out below.

(A) The operator must contact Oregon OSHA at least 45 days before the first day of operation or occupancy of the housing and related facilities. Instructions and additional information will come later by mail.

(B) If the housing and related facilities were not registered in the previous year, the operator must call Oregon OSHA to request a consultation visit to the housing. Oregon OSHA will register housing and related facilities not previously registered only after a pre-occupancy consultation that finds the housing or facility to be substantially in compliance with all applicable safety and health rules.

(C) If there were significant changes in the circumstances of the housing or facilities since the last registration, Oregon OSHA may, at its discretion, refer the employer for a consultation prior to re-registering the housing and facilities.

(D) Once registered, the operator must display the registration certificate provided by Oregon OSHA in a place frequented by employees. The operator must also provide and display a translation of the certificate in the language or languages used to communicate with employees.

(c) The Director of the Department of Consumer and Business Services or designee may revoke a labor housing and related facilities registration if Oregon OSHA determines that any of the following apply:

(A) The application had any negligent or willful material misrepresentation, or false statement.

(B) The conditions under which the registration was accepted no longer exist or have changed.

(C) The housing and related facilities are not substantially in compliance with the applicable safety and health rules.

(d) When Oregon OSHA revokes the registration of agricultural labor housing and related facilities, operators or their agents have 30 days to file a written appeal. On receipt of such appeal, the Director of the Department of Consumer and Business Services will hold a contested case hearing on that appeal under ORS 183.413, et seq.

(e) Any group or individual may protest the proposed registration, continued registration or renewal of any labor housing and related facilities registration under the following conditions:

(A) The signed and dated protest must be submitted in writing and received by the Director before issuance of the registration or renewal.

(B) The protest must include the name, address and phone number of the individual or group filing it.

(C) The protest must clearly identify which housing and related facilities is the subject of the protest, including the exact physical location and name of the applicant.

(D) The protest must clearly state the facts and reasons for the protest. Such facts and reasons must be based on factors that are within the scope of ORS 654, 658.705 through 658.850 and any relevant regulations.

(E) When the above provisions are met, such group or individual may participate in the contested case as a party or limited party under OAR 137-003-0005.

(6) Site requirements:

(a) The grounds of labor housing and related facilities must be substantially free from waste water, sewage, garbage, recyclable material, refuse or noxious plants such as poison oak and poison ivy.

(b) During housing occupancy, grass, weeds and brush must be cut back at least 30 feet from buildings.

(c) All housing site land must have adequate drainage. The site must not be subject to flooding when occupied.

(d) Adequately dispose of the waste water and food waste under outside water hydrants.

(e) The operator of labor housing is responsible for the maintenance and operation of the housing and its facilities.

(f) Store all toxic materials such as pesticides, fertilizers, paints and solvents in a safe place.

(g) Do not leave empty pesticide containers such as drums, bags, cans, or bottles in the housing area.

(h) Prevent or control the breeding of mosquitoes, flies, and rodents in the immediate housing area and within 200 feet of any labor housing and related facilities owned or under lawful control or supervision of the operator.

(i) Do not locate labor housing within 500 feet of livestock operations unless the employees in the housing are employed to tend or otherwise work with the animals.

**NOTE:** This does not apply to animals owned by the housing occupants.

(j) Provide electricity to all housing units and related facilities. Subdivision 4/S, Electricity applies to ALH.

(k) Extension cords or plug strips must have circuit breaker or fuse protection either as part of the set or part of the building wiring.

(l) Facilities built or remodeled before December 15, 1989, must have a ceiling or wall-type electric light fixture in working order and at least one wall-type electrical outlet in every living area. Facilities built or remodeled after that date must comply with the code in effect at the time of construction or remodeling.

(m) Provide a ceiling or wall-type electric light in toilet rooms, lavatories, shower or bathing rooms, laundry rooms, hallways, stairways, the common eating area or other hazardous dark areas.

(n) Light privies either directly or indirectly from an outside light source.

(o) Provide enough light in corridors and walkways to allow safe travel at night.

(p) Each housing site must have its street numbers displayed to be easily visible to responding emergency vehicles on public highways or roads.

(q) The lowest point of wooden floor structures must be at least 12 inches above ground.

(7) Water supply.

(a) All domestic water furnished at labor housing and related facilities must conform to the standards of the Public Health Division of the Oregon Department of Human Services.

(A) The site water system must supply at least 15 psi at the outlet end of all water lines regardless of the number of outlets in use.

(b) Have a bacteriological analysis done on the water before occupancy and as often as needed to assure a potable water supply, except when the water comes from a community water system.

(c) Provide enough potable water in the labor housing area for drinking, hand washing, bathing and domestic use. An ample supply is at least 35 gallons of water per day per occupant.

(d) Arrange, construct and if necessary, periodically disinfect the water storage and distribution facilities to satisfactorily protect

the water from contamination. Install all new plumbing in labor housing and related facilities to comply with the Oregon state building code.

(e) When potable water is not available in each dwelling unit, there must be a potable water source within 100 feet of each unit and there must be a working, clean drinking fountain for each 100 occupants or fraction thereof.

(f) Post as, "Unsafe for drinking," non-potable water that is accessible to occupants. The posting must be in the language of the camp occupants or with a universal symbol.

(g) Portable water containers with spigots and tight fitting lids are acceptable for providing and storing drinking water in the housing.

(A) These containers must be made of impervious non-toxic materials that protect the water from contamination.

(B) Wash and sanitize them at least every 7 days.

(h) Do not use containers such as barrels, pails or tanks that require dipping or pouring to get the water.

(i) Do not use cups, dippers or other utensils for common drinking purposes.

(j) Do not allow cross connection between a system furnishing water for drinking purposes and a non-potable supply.

(8) Bathing, hand washing, laundry, and toilet facilities — General.

(a) Provide an adequate supply of hot and cold water under pressure for all common use bathing, hand washing, and laundry facilities at all labor housing and related facilities.

(b) In installations with bathing, laundry facilities, or flush toilets, the floor and walls must be of readily cleanable finish and impervious to moisture.

(c) All common use bathing, hand washing, and laundry facilities must be clean, sanitary and operating properly.

(d) Buildings for common use bathing, hand washing, laundry, and toilet facilities must have heating capable of keeping the facility at 68 degrees or more during use.

(9) Bathing facilities.

(a) Provide drains in all showers to remove waste water. Slope floors so they drain. Do not use slippery materials for flooring.

**NOTE:** Paragraph (b) is effective April 1, 2009. Until then the old ratio of 1 to 15 applies.

(b) Provide at least one shower head with hot and cold water under pressure for every 10 occupants or fraction thereof.

(A) Unisex shower rooms are acceptable in the same ratios. They must have working locks and provide privacy.

(c) Separate common use bathing facilities used for both sexes in the same building by a solid, non-absorbent wall extending from the floor to the ceiling.

(d) Mark separate sex bathing facilities, if provided, with "women" and "men" in English and in the native language of employees expected to occupy the housing or with easily understood pictures or symbols.

(10) Hand washing facilities.

**NOTE:** Paragraph (a) is effective April 1, 2009. Until then the old ratio of 1 to 15 applies.

(a) Provide at least one hand washing sink or basin with hot and cold water under pressure for every 6 occupants or fraction thereof. Each 24 linear inches of "trough" type sink with individual faucets counts as one basin. When each living unit does not have hand washing facilities, locate common use facilities either close to the toilet facilities or close to the sleeping places.

(b) In common use facilities, do not use a single common towel. If you provide paper towels, there must be a container for their disposal.

(11) Laundry facilities.

**NOTE:** Paragraph (a) is effective April 1, 2009. Until then the old rule applies which reads: 437-004-1120(11)

(a) When public laundry and drying facilities are not available within 5 miles, the housing must have readily accessible laundry and drying facilities.

(b) Laundry facilities in the housing area must have trays or tubs, plumbed with hot and cold water in the ratio of 1 for each 25 occupants.



(c) Mechanical washers are optional in the ratio of 1 to 50 occupants with one laundry tray per 100 occupants.

(d) Provide laundry trays, tubs, or machines with plumbed hot and cold water in the combined ratio of 1 for each 30 occupants or each part of 30.

(e) Provide clothes lines or drying facilities to serve the needs of the occupants.

(f) Laundry rooms must have drains to remove waste water.

(g) Each common use laundry room must have a slop sink.

(12) Toilet facilities.

(a) Locate toilet facilities in labor housing and related facilities within 200 feet from the living area that they serve.

(b) Locate toilets, chemical toilets, or urinals in rooms built for that purpose.

(c) Maintain a usable, unobstructed path or walkway free of weeds, debris, holes or standing water from each living area to the common use toilet facilities.

(d) Provide at least one toilet for every 15 occupants or fraction thereof for each gender in the labor housing. Toilets must assure privacy:

(A) If urinals are in the toilet facility and where three or more toilets are required for men, one urinal substitutes for one toilet (24 inches of trough-type urinal equals one urinal), to a maximum of one-third of the total required toilets.

(B) Existing urinals must be non-absorbent, non-corrosive materials that have a smooth and cleanable finish. Urinals installed after the effective date of this standard must meet Oregon state building code.

(C) If there are no common use toilet facilities, calculate the required ratio without regard to gender.

(e) Clean common use toilet facilities daily or more often when needed to maintain sanitation.

(f) Mark separate sex toilet facilities, when provided, with "women" and "men" in English and in the native language of employees expected to occupy the housing or with easily understood pictures or symbols.

(g) Ventilate all labor housing toilet rooms according to the Oregon state building code.

(h) Separate common use toilet facilities used for both sexes in the same building by a solid, non-absorbent wall extending from the floor to the ceiling.

(i) Install privacy partitions between each individual toilet or toilet seat in multiple toilet facilities. The partitions may be less than the height of the room walls:

(A) The top of the partition must be not less than 6 feet from the floor and the bottom of the partition not more than 1-foot from the floor. The width of the partition must extend at least 1 1/2 feet beyond the front of the toilet seat.

(B) Provide a door or curtain so the toilet compartment is private.

(j) Provide common use toilet facilities with toilet paper and holders or dispensers. Also provide disposal containers with lids.

(k) Do not allow obstruction of the path or access to a toilet room. If access is through another room, that room must not be lockable.

(13) Portable toilets, chemical toilets and privies.

(a) The location and construction of privies must conform to Oregon Department of Environmental Quality standards.

(b) Privies must be at least 100 feet from any living area or any facility where food is prepared or served.

(c) Portable toilets and privies must have adequate lighting.

(d) When in use, service portable and chemical toilets at least weekly or often enough to keep them from becoming a health hazard. Clean portable toilets, chemical toilets and privies at least daily.

(14) Sewage disposal and plumbing.

(a) Connect the sewer lines from the labor housing and related facilities to a community sewer system, a septic tank with subsurface disposal of the effluent, pit type privies or other sanitary means conforming to Department of Environmental Quality standards.

(b) Install all plumbing in labor housing and related facilities to comply with Department of Environmental Quality standards and the Oregon state building code.

(15) Garbage and refuse disposal outside of buildings.

**NOTE:** Recyclable material is not garbage or refuse referred to in this section (15).

(a) Keep refuse and garbage containers clean and in good repair.

(b) Provide at least one 30-gallon or larger container per 15 occupants. Containers must be inside the housing site area and accessible to all occupants.

(c) Empty garbage bins and dumpsters at least weekly during use, but always before they become a health hazard or full enough to interfere with full closing of the lid.

(d) Empty common use cans and portable containers into a bin or dumpster, when full or twice weekly whichever is more frequent. Do not allow garbage on the ground.

(e) Keep all refuse and garbage containers covered and the garbage storage area clean to control flies and rodents.

(f) Do not burn any food, garbage or wet refuse.

(g) Dispose of garbage and refuse according to Department of Environmental Quality standards that govern the disposal of garbage, refuse and other solid wastes.

(16) Living areas.

(a) Keep all living areas, safe and in good repair structurally and stable on their foundations. They must provide shelter for the occupants against the elements and protect the occupants from ground and surface water as well as rodents and insects.

(b) The walls and roof must be tight and solid. Floors must be rigid and durable, with a smooth and cleanable finish in good repair.

(c) For living areas without a working permanent heating system or heaters, the ALH operator must supply portable heaters at no cost to the occupant. These heaters must be capable of keeping the temperature in the living area at a minimum of 68 degrees. Heaters must meet these requirements:

(A) Operate by electricity only.

(B) Have working safety devices installed by the manufacturer for the particular type heater.

(C) Be in good working order with no defects or alterations that make them unsafe.

(d) Permanently installed solid fuel or gas fired heaters must meet the following:

(A) Install and vent any stoves or other sources of heat that use combustible fuel to prevent fire hazards and dangerous concentration of gases:

(i) Solid or liquid fuel heaters or stoves installed on or before December 15, 1989, must sit on a concrete slab, insulated metal sheet or other fire resistant material when used in a room with wood or other combustible flooring. Extend it at least 18 inches beyond the perimeter of the base of the stove.

(ii) Solid or liquid fuel heaters or stoves must meet the manufacturer's specifications and the Oregon state building code in effect at the time of installation.

(B) Install fire resistant material on any wall or ceiling within 18 inches of a solid or liquid fuel stove or a stove pipe. Provide a vented metal collar around the stovepipe, or vent passing through a wall, ceiling, floor or roof or combustible material.

(C) Heating systems with automatic controls must cut off the fuel supply on failure or interruption of the flame or ignition, or when they exceed a pre-determined safe temperature or pressure.

(D) All gas appliances and gas piping must comply with the Oregon state building code in effect at time of installation and the manufacturer's instructions.

(E) Do not locate stoves so they block escape from a sleeping place.

(e) Provide screens of at least 16 mesh on the doors and windows of the living area. All screen doors must be tight-fitting, in good repair, and self-closing.

(f) Provide beds, bunks or cots for each occupant and suitable storage facilities, such as wall cabinets or shelves, for each occupant or family unit.

(A) The camp operator must provide a mattress or pad for each bed or bunk.

(i) If you provide foam pads, they must be thicker than 2 inches.

(ii) Do not provide uncovered foam pads.

(iii) Mattresses or pads must not sit on the floor.

(iv) The sleeping surface must be at least 12 inches above the floor.

(g) Mattresses or pads furnished by the camp operator must be clean, in good repair, and free from insects and parasites.

(A) Fumigate mattresses or pads, used uncovered, or treat with an effective insecticide before each season's occupancy. If you provide covers, clean them before each season's occupancy.

(B) Store mattresses or pads in a clean, dry place.

(h) Space the beds, bunks or cots so that there is enough room to allow for rapid and safe exiting during an emergency.

**NOTE:** Do not count children 2 years old and younger when calculating square footage requirements in paragraphs (i), (j), (k), and (l).

(i) In living areas built after August 1, 1975, where workers cook, live, and sleep, provide at least 100 square feet per occupant.

(j) In living areas built before August 1, 1975, where workers cook, live and sleep, provide at least 60 square feet per occupant.

(k) Each sleeping room without double bunk beds must have at least 50 square feet of floor space per employee. Where there are double bunk beds, provide 40 square feet per occupant. Do not use triple bunks.

(l) Beginning on January 1, 2018 all agricultural labor housing, where workers cook, live and sleep in the same area, must provide 100 square feet per occupant.

(m) For units built after April 3, 1980 at least one-half the required floor space in each living area must have a minimum ceiling height of 7 feet. Floor space with a ceiling height less than 5 feet does not count toward the minimum required floor space.

(n) Beginning on January 1, 2018 only areas with a 7 foot ceiling height will count toward the required square footage of any living or sleeping area. Housing built or remodeled between January 26, 2009 and January 1, 2018 must have minimum 7 foot high ceilings for the space to count toward any required square footage.

(o) Provide separate private sleeping areas for unrelated persons of each sex and for each family unit.

**NOTE:** Paragraph (p) is effective April 1, 2009.

(p) Provide windows or skylights with a total area equal to at least 10 percent of the required floor area. At least one-half (nominal) the total required window or skylight area must be openable to the outside. Adequate mechanical ventilation may substitute for openable window space. Not more than one-half the required space can be met with skylights. Openable, screened windows in doors count toward this requirement.

(q) Before occupancy clean all living areas and eliminate any rodents, insects, and animal parasites.

(17) Fire protection.

(a) All fires must be in equipment designed for that use. Do not allow open fires within 25 feet of structures.

(b) Each season, at the time of initial occupancy, each living area must have a working approved smoke detector.

**NOTE:** The camp operator is not responsible for daily maintenance of the detector or the actions of occupants that defeat its function.

(c) Provide fire extinguishing equipment in a readily accessible place, not more than 50 feet from each housing unit. The equipment must provide protection equal to a 2A:10BC rated extinguisher.

**NOTE:** Hoses are acceptable substitutes for extinguishers only if the water supply is constant and reliable. Hoses must be immediately available for firefighting use.

(d) All living areas with more than one room, built before December 15, 1989, with one door, must have, in addition to a door, a window in each sleeping room that can be an exit in case of fire:

(A) This window must have an openable space at least 24 inches by 24 inches, nominal.

(B) The lowest portion of the opening must be less than 48 inches above the floor.

(C) This window must open directly to the outdoors and be readily openable by the occupants from inside without breaking the glass.

(D) Label the escape window as an emergency exit.

(e) Living areas built on or after December 15, 1989, must meet the requirements for emergency exits in applicable rules of the Building Codes Division of the Oregon Department of Consumer and Business Services, including the following:

(E) Required emergency exit windows in sleeping rooms must have a clear net opening of at least 5.7 square feet, minimum vertical opening of 22 inches and minimum horizontal opening of 20 inches.

**NOTE:** Construct and maintain all living areas in labor housing and related facilities to comply with other applicable local and state laws and regulations in effect at the time of construction or remodel.

(f) A second story must have at least two exits when its occupant load is 10 or more. Comply with the Oregon state building code.

(g) Occupants on floors above the second story and in basements must have access to at least two separate exits from the floor or basement as required by the Oregon state building code.

(18) Common use cooking and eating facilities and equipment.

(a) When provided, common use cooking or food preparation facilities or equipment must have the following:

(A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

(B) A minimum equivalent of two cooking burners for every 10 persons or part thereof, or 2 families, whichever requires the most burners.

(i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire-resistant material.

**NOTE:** Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

(C) No liquid petroleum gas (LPG like propane) tanks in use inside any occupied building. Outside tanks must connect to appliances with lines approved for that purpose.

(D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas must be made of or finished with smooth, non-absorbent, cleanable material; and

(E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

(b) Refrigerators and stoves or hot plates must always be in working condition.

(c) Clean the facilities and equipment before each occupancy.

(d) Common use kitchen and dining areas must be separate from all sleeping quarters. There can be no direct opening between kitchen or dining areas and any living or sleeping area.

(e) If the operator becomes aware of or has reason to suspect that anybody preparing, cooking or serving food has a communicable disease as listed in paragraph (22), the operator must bar them from the cooking facility until the disease is no longer communicable.

(f) Buildings must have heating capable of keeping the facility at 68 degrees or more during use.

(g) Facilities must be in buildings or shelters. Doors, windows and openings, if any, must have screens of 16 mesh or smaller.

(19) Dining halls and equipment.

(a) When provided, dining halls or equipment must have the following:

(A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

(B) A minimum equivalent of two cooking burners for every 10 persons or part thereof, 2 families, whichever requires the most burners.

(i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire resistant material.

**NOTE:** Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

(C) No liquid petroleum gas (LPG like propane) tanks in use inside any occupied building. Outside tanks must connect to appliances with lines approved for that purpose.

(D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas must be

made of or finished with smooth, non-absorbent, cleanable material; and

(E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

(b) Refrigerators and stoves or hot plates must always be in working condition.

(c) Clean the facilities and equipment before each occupancy.

(d) Common use kitchen and dining areas must be separate from all sleeping quarters. There can be no direct opening between kitchen or dining areas and any living or sleeping area.

(e) If the operator becomes aware of or has reason to suspect that anybody preparing, cooking or serving food has a communicable disease as listed in paragraph (22), the operator must bar them from the cooking facility until the disease is no longer communicable.

(f) Buildings must have heating capable of keeping the facility at 68 degrees or more during use.

(g) The facility must comply with the 2005 edition of the FDA Food Code.

**NOTE:** Follow Division 4, Agriculture when it differs from the FDA Food Code. The code is available at: <http://www.cfsan.fda.gov/~dms/foodcode.html> or contact the Oregon OSHA Resource Center at 800-922-2689 or in Salem 503-378-3272.

(h) Facilities must be in buildings or shelters. Doors, windows and openings, if any, must have screens of 16 mesh or smaller.

(20) Single unit cooking facilities.

(a) When provided, single unit cooking, eating and dining facilities or equipment must have the following:

(A) A gas or electric refrigerator, capable of keeping food at or below 41 degrees F.

(B) A minimum equivalent of two burners for cooking for every 10 persons or part thereof, or 2 families, whichever requires the most burners.

(i) If a gas or electric hotplate or wood stove is within 18 inches of a wall, that wall must be made of or finished with smooth cleanable, nonabsorbent, grease-resistant and fire resistant material.

**NOTE:** Labeled and listed appliances are exempt from the 18-inch requirement when installed according to their listing.

(C) No liquid petroleum gas (LPG like propane) tanks in use inside. Outside tanks must connect to appliances with lines approved for that purpose.

(D) Food storage shelves, food preparation areas, food contact surfaces and floors in food preparation and serving areas made of or finished with smooth, non-absorbent, cleanable material.

(E) A table and chairs or equivalent seating and eating arrangements to accommodate the number of occupants living in the sleeping place.

(F) A refrigerator and stove or hot plate in working condition.

(b) Clean the facilities before each occupancy.

(21) First aid. OAR 437-004-1305, Medical and First Aid, applies to all labor housing and related facilities. This rule includes requirements for first aid supplies, an emergency medical plan and a plan of communication.

**NOTE:** Division 4/K requires all employees know about the first aid requirements and emergency medical plans. If employees' native language is other than English, this must be taken into account in meeting this requirement.

(22) Disease Reporting. The camp operator must comply with OAR 333-018-0000, Who Must Report and 333-018-0015, What To Report And When: 333-018-0000 Who Must Report.

(23) Each Health Care Provider knowing of or attending a case or suspected case of any of the diseases, infections, or conditions listed in OAR 333-018-0015 shall report such cases as specified. Where no Health Care Provider is in attendance, any individual knowing of such a case shall report in a similar manner. 333-018-0015 What to Report and When.

(24) Reportable diseases, infections, microorganisms, and conditions, and the time frames within which they must be reported are as follows:

(a) Immediately, day or night: *Bacillus anthracis* (anthrax); *Clostridium botulinum* (botulism); *Corynebacterium diphtheriae* (diphtheria); Severe Acute Respiratory Syndrome (SARS) and infec-

tion by SARS-coronavirus; *Yersinia pestis* (plague); intoxication caused by marine microorganisms or their byproducts (for example, paralytic shellfish poisoning, domoic acid intoxication, ciguatera, scombroid); any known or suspected common-source Outbreaks; any Uncommon Illness of Potential Public Health Significance.

(b) Within 24 hours (including weekends and holidays): *Haemophilus influenzae* (any invasive disease; for laboratories, any isolation or identification from a normally sterile site); measles (rubeola); *Neisseria meningitidis* (any invasive disease; for laboratories, any isolation or identification from a normally sterile site); Pesticide Poisoning; poliomyelitis; rabies (human or animal); rubella; *Vibrio* (all species).

(c) Within one Local Public Health Authority working day: *Bordetella pertussis* (pertussis); *Borrelia* (relapsing fever, Lyme disease); *Brucella* (brucellosis); *Campylobacter* (campylobacteriosis); *Chlamydia* (*Chlamydia*) *psittaci* (psittacosis); *Chlamydia trachomatis* (chlamydia); lymphogranuloma venereum; *Clostridium tetani* (tetanus); *Coxiella burnetii* (Q fever); Creutzfeldt-Jakob disease and other transmissible spongiform encephalopathies; *Cryptosporidium* (cryptosporidiosis); *Cyclospora cayentanensis* (cyclosporiasis); *Escherichia coli* (Shiga-toxigenic, including *E. coli* O157 and other serogroups); *Francisella tularensis* (tularemia); *Giardia* (giardiasis); *Haemophilus ducreyi* (chancroid); hantavirus; hepatitis A; hepatitis B (acute or chronic infection); hepatitis C; hepatitis D (delta); HIV infection (does not apply to anonymous testing) and AIDS; *Legionella* (legionellosis); *Leptospira* (leptospirosis); *Listeria monocytogenes* (listeriosis); mumps; *Mycobacterium tuberculosis* and *M. bovis* (tuberculosis); *Neisseria gonorrhoeae* (gonococcal infections); pelvic inflammatory disease (acute, non-gonococcal); *Plasmodium* (malaria); *Rickettsia* (all species: Rocky Mountain spotted fever, typhus, others); *Salmonella* (salmonellosis, including typhoid); *Shigella* (shigellosis); *Taenia solium* (including cysticercosis and undifferentiated *Taenia* infections); *Treponema pallidum* (syphilis); *Trichinella* (trichinosis); *Yersinia* (other than *pestis*); any infection that is typically arthropod vector-borne (for example: Western equine encephalitis, Eastern equine encephalitis, St. Louis encephalitis, dengue, West Nile fever, yellow fever, California encephalitis, ehrlichiosis, babesiosis, Kyasanur Forest disease, Colorado tick fever, etc.); human bites by any other mammal; CD4 cell count < 200/ $\mu$ m<sup>3</sup> or CD4 proportion of total lymphocytes < 14%; hemolytic uremic syndrome.

(d) Within 7 days: Suspected Lead Poisoning (for laboratories; this includes all blood lead tests performed on persons with suspected lead poisoning).

(25) Access to ORS and OAR. Those wishing access to any of the Oregon Revised Statutes (ORS) or Oregon Administrative Rules (OAR) referenced here, may contact the Oregon OSHA Resource Center in Salem or the nearest Oregon OSHA Field Office.

(26) Closure and alternative housing:

(a) The operator of agricultural labor housing must provide replacement lodging without charge to the occupants if a government agency with the authority to enforce building, health or safety standards declares the housing or facilities to be uninhabitable and orders them vacated.

(b) The operator must provide replacement lodging for 7 consecutive days from the time the housing was closed or until the closing agency allows the original housing to reopen, whichever is shorter.

(c) Replacement lodging must meet or exceed the health and safety standards of Oregon OSHA. Oregon OSHA must approve the location of the replacement housing before employees are sent to it.

(d) Operators must arrange for replacement lodging not later than the end of the day the original housing closes or another date designated by the closing agency.

(e) Post the address of the replacement housing:

(A) Not later than the end of the day the original housing closes.

(B) In a place convenient to affected workers.

(C) In all languages spoken by the occupants.

(f) The posting in (e) above must state that the replacement housing is free to occupants of the closed housing.



(g) The operator must give Oregon OSHA a list of names of the occupants and the location of the replacement housing, for each.

(h) When the cause of the closure is beyond the control of the agricultural labor housing operator, sections (a), (b), (c), (d), (e) and (g) above do not apply. To determine whether the cause of closure was beyond the control of the operator, Oregon OSHA will consider these circumstances, including but not limited to:

(A) Whether the cause of the closure is a natural disaster;

(B) Whether the circumstances leading to the closure were known or should have been known to the operator;

(C) Whether operator diligence could have avoided the circumstances leading to the closure.

(i) Agricultural labor housing occupants entitled to temporary replacement housing under this rule must accept or reject that housing when the original housing closes. These rules do not obligate operators to reimburse displaced occupants for housing they obtain without the operator's knowledge or consent.

(A) The operator is responsible for replacement lodging only for as many people as occupied the original closed housing. When an occupant rejects the replacement housing, the operator has no obligation to reimburse that occupant for other replacement housing.

(j) Oregon OSHA may issue a citation and assess a monetary penalty for violation of these rules as in ORS 654.071 and 654.086.

[ED. NOTE: Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 5-2000, f. 5-18-00, cert. ef. 6-1-00; OSHA 4-2008, f. 3-24-08, cert. ef. 4-1-08; OSHA 1-2009, f. & cert. ef. 1-26-09

#### **437-004-1140**

##### **Lighting**

General lighting.

(1) Provide adequate general and local lighting in rooms, buildings and work areas.

(2) Methods for determining the adequacy and effectiveness of lighting include:

(a) Measure the quantity of light against requirements in the American National Standard ANSI A11.1-1965, "American Standard Practice for Industrial Lighting."

(b) The quality of light as to freedom from glare and correct direction, diffusion and distribution.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1150**

##### **Safety Colors for Marking Physical Hazards**

Color identification.

(1) Red. Use red as the basic color to identify:

(a) Danger. Safety cans or other portable containers of flammable liquids must be red with highly contrasting markings. Provide red lights at barricades and at temporary obstructions. The main or background color of danger signs must be red.

(b) Stop. Emergency stop bars on hazardous machines must be red. Use red for emergency stop buttons or emergency electrical switches with contrasting letters or other markings.

(2) Yellow. Yellow is the basic color to signal caution and to mark physical hazards such as: Striking against, stumbling, falling, tripping, and "caught between."

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1180**

##### **Accident Prevention Signs**

(1) Scope. This section applies to the design, application and use of signs or symbols (as included in paragraphs (3) through (5) below) to warn of specific hazards. This does not apply to bulletin boards or safety posters.

(2) Definitions. Sign — A surface marked to warn people of hazards, or to give safety instructions. Excluded are news releases, safety posters and bulletins.

(3) Classification of signs by use.

(a) Danger signs.

(A) Use signs of uniform design to warn of specific dangers and radiation hazards.

(B) Instruct all employees that danger signs warn of immediate danger and that special precautions are necessary.

(b) Caution signs.

(A) Use caution signs only to warn of hazards or to caution against unsafe practices.

(B) Instruct all employees that caution signs warn of a hazard against which they should take precautions.

(c) Safety instruction signs. Use safety instruction signs for general instructions and suggestions about safety.

(4) Sign design.

(a) Design features. Use signs with rounded or blunt corners and no sharp edges, burrs, splinters or other sharp projections. Place the ends or heads of bolts or other fastening devices so that they are not hazardous.

(b) Danger signs. The color of the background must be red.

(c) Caution signs. The color of the background must be yellow and the panel, black with yellow letters. Use black letters against the yellow background.

(d) Safety instruction signs. Use white for the background and make the panel green with white letters. Any letters used against the white background must be black.

(e) Slow-moving vehicle emblem. This emblem (see fig. 7) has a fluorescent yellow-orange triangle with a dark red reflective border. The reflective border defines the shape of the fluorescent color in daylight and creates a hollow red triangle in the path of motor vehicle headlights at night.

(A) Use this emblem only on vehicles that by design move at 25 m.p.h. or less on public roads. Do not use it as a clearance marker for wide machinery to replace required lighting or marking of slow-moving vehicles. The material, location, mounting, etc., of the emblem must conform to the American Society of Agricultural Engineers Emblem for Identifying Slow-Moving Vehicles, ASAE R276, 1967, or ASAE S276.2 (ANSI B114.1-1971). [Figure not included. See ED. NOTE.]

(5) Sign wordings.

(a) Nature of wording. Use wording on signs that is easily understandable.

(b) Biological hazard signs. Use the biological hazard warning sign to warn of the actual or potential presence of a biohazard. Use it to mark equipment, containers, rooms, materials, experimental animals or combinations of them, that contain or are contaminated with viable hazardous agents. For this subparagraph the term "biological hazard," or "biohazard," means only those infectious agents presenting a risk or potential risk to the well-being of humans.

**NOTE:** All dimensions are in inches.

[ED. NOTE: Figures referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1250**

##### **Confined and Hazardous Spaces**

(1) Definitions.

(a) Competent person is somebody who can identify existing and predictable hazards and take measures to eliminate them.

(b) Confined space is a space that:

(A) Is large enough and so configured that an employee can bodily enter and work; and

(B) Has limited or restricted entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits may have limited entry); and

(C) Is not designed for continuous employee occupancy.

(c) Engulfment is the covering of a person by a liquid or finely divided (flowable) solid substance that when inhaled causes death

or that can exert enough force on the body to cause death by strangulation, constriction or crushing.

(d) Entry is passing through an opening into a hazardous or confined space. Entry includes work in the space and occurs when any part of the entrant's body breaks the plane of an opening into the space in a way that creates a hazard.

(e) IDLH Atmospheres. Atmospheres immediately dangerous to life or health (IDLH) are those with less than 19.5 percent oxygen by volume, or which because of the high toxicity of the contaminant, would endanger the life of a person breathing them for even a short period of time.

(f) Oxygen-deficient is an atmosphere with less than 19.5 percent oxygen by volume.

(2) Fuel bins.

(a) Fuel bins must have adequate exits and all necessary devices to provide safety for employees who enter them.

(b) There may be sentry stations or tunnels near the bottom conveyor for employees to use to stoke down congested fuel through openings. Safely built pneumatic bottoms, mechanical agitators or scrapers and similar devices are acceptable.

(3) Entering confined spaces.

(a) Test first. Always test the atmosphere in a confined space before an employee places any part of their body into it. Following the instructions below, test first for oxygen, then flammable atmosphere then toxic atmosphere.

(b) Entry. No person will enter or work in any confined space with an atmosphere immediately dangerous to life or health, except under the following conditions:

(A) They must wear a supplied air or self-contained air breathing apparatus;

(B) They must wear a safety belt with lifeline attached, where practical. Another person, equipped as required in subsection (3)(b)(A) above and with safety belt and lifeline attached, must be at the opening with adequate help available to remove the person if necessary (see (5), Rescue below);

(C) Failure of the person within the enclosure to respond to agreed upon signals requires immediate rescue action by a person or persons equipped as required in subsections (3)(b)(A) and (B) above;

(D) Air supplied to hose masks and positive pressure air helmets must be free from harmful dusts, fumes, mists, vapors, or gases to the extent that breathing it does not constitute harmful exposure. Position the air intake to the blower fan or compressor to prevent contamination of the air by carbon monoxide or other hazardous materials or gases;

(E) Supplied air respiratory equipment must have an automatic pressure relief valve, and connect through a pressure reduction valve in the supply line. Maximum allowable pressure, unless otherwise specifically approved, is 25 pounds per square inch;

(F) To assure safety when using positive-pressure air respiratory equipment, a minimum volume of air delivered to the user must be at least 4 cubic feet of air per minute for a face mask and 6 cubic feet of air per minute for hoods or helmets.

(c) Oxygen-deficient atmospheres. The atmosphere in a sealed or unventilated confined space is considered immediately dangerous to life or health. Nobody will enter such space unless:

(A) All requirements for safety equipment and procedures in (3)(b) above are met; or

(B) A competent person tests the atmosphere with an oxygen indicator or other suitable device immediately before entry to ensure that it contains enough oxygen to sustain life; or

(C) Until mechanical ventilation provides at least one complete change of uncontaminated air immediately before entry and continues while anybody is inside the enclosure. A safety watcher meeting the requirements in (3)(b) above must be at the entry.

(d) Toxic atmospheres. Nobody will enter any sealed or unventilated tank or other confined space that contains or has contained toxic materials or gases, unless:

(A) All requirements for safety equipment and safety procedures in (3)(b) above are met, or a competent person tests the atmosphere with an appropriate instrument or method and finds it to have

contaminants below the threshold limit values of the particular material or gas.

(B) If the atmosphere has concentrations of hazardous contaminants not immediately dangerous to life or health, but above the threshold limit values for the toxic material, the person entering the space must wear respiratory protective equipment approved by the National Institute of Occupational Safety and Health, or recommended by the U.S. Department of Agriculture for the exposure.

(e) Flammable or explosive atmospheres. The atmosphere in any sealed or unventilated tank or other confined space and that contains or has contained combustible or flammable materials or gases is an atmosphere immediately dangerous to life or health.

(A) Nobody must enter such space unless all requirements for safety equipment and safety procedures in (3)(b) above are met or atmosphere tests by a competent person using an appropriate instrument or method shows no flammable or explosive atmosphere is present.

(B) If the atmosphere contains flammable or explosive vapors at or above 20 percent of their lower explosive limit, ventilate the space enough to bring the level below 20 percent of the lower explosive limit. Otherwise only persons meeting the requirements of (c) above may enter the enclosure for emergency work, including preparatory work or work to set up equipment to eliminate the gas.

(f) Ventilation. Natural and/or mechanical ventilation must maintain the atmosphere within the limits permissible for explosive or toxic materials and gases while employees are in the space.

(g) Residues and other sources. When there could be a release of explosive or toxic materials from residues or other sources in a confined space, there must be additional testing as necessary to assure the atmosphere has not become immediately dangerous to life or health. If such conditions arise, immediately leave the contaminated space until the atmosphere is safe for persons wearing respiratory protective equipment.

(h) Physical hazards. Do not allow employees to enter confined spaces that contains physical hazards, until you comply with OAR 437-004-1275.

(i) Engulfment. Do not allow employees to enter confined spaces where there is a hazard from engulfment by collapsing material.

(j) Lifeline and attendant. When entering confined spaces that have loose material (such as chips, sand, grain, gravel, sawdust, etc.) you must wear a safety belt with lifeline. There must be an attendant for the lifeline.

(k) Lockout/tagout. Follow the procedures of OAR 437-004-1275, for intake pipelines that convey hazardous substances into confined spaces before workers enter. Blinds, if used, must clearly show whether the line is open or closed. Close, lock and attach warning tags to valves in such lines nearest the containers. Blinding or lockout of cold water and air lines is not necessary if they have positive control valves near the container and you lock, close and tag the valves.

(4) Training.

(a) Train all workers before they do anything covered by this section. Retrain workers when there are changes in their duties or the spaces related to this section.

(b) Training must cover all hazards associated with the employer's confined and hazardous spaces.

(c) Training must cover this standard and all duties associated with it.

(d) Keep written documentation of all training until it is superseded by new training.

(5) Rescue.

(a) These requirements apply to employers who have employees enter confined spaces to rescue people.

(A) You must give each rescuer the personal protective equipment and rescue equipment necessary to make rescues from hazardous spaces. You must also provide training on the proper use of that equipment.

(B) Train each rescuer in basic first aid and in cardiopulmonary resuscitation (CPR). At least one rescuer with current certification in first aid and in CPR must be available.

(b) When employers arrange to have persons other than their own employees do confined space rescue, the employer must:

(A) Inform the rescue service of the hazards they may confront during the rescue at the host employer's facility; and

(B) Provide the rescue service with access to all confined spaces from which rescue may be necessary so that the rescue service can develop appropriate rescue plans and practice rescue operations.

(c) To accomplish non-entry rescue, attach the other end of the retrieval line to a mechanical device or fixed point outside the hazardous space in a way that rescue can begin as soon as the rescuer becomes aware that rescue is necessary.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1260**

##### **Manure Lagoons, Storage Ponds, Vats, Pits and Separators**

(1) Scope. This applies to facilities not covered by confined space rules. (Examples include pole buildings used to store compost material or manure lagoons and separators.)

(2) General.

(a) Do not enter any vat, pit, separator or other hazardous area where the atmosphere may be immediately dangerous to life unless:

(A) Tests by a competent person, immediately before entry, prove it free of toxic gases and with enough oxygen to sustain life; or

(B) Mechanical or natural ventilation provides at least one complete change of uncontaminated air immediately before entry and continues during enclosure occupancy; or

(C) The person entering the area is using a properly functioning supplied air or self-contained breathing apparatus, and is closely supervised by a safety watcher with similar equipment, at the entrance. They must have adequate help to remove the person if necessary.

(b) Vats and pits that have hazardous materials, manure or that are more than 4' deep, must meet one of the following requirements:

(A) A cover or grating must be in place and strong enough to safely support imposed loads; or

(B) The edges must extend at least 42 inches above the adjacent floor level; or

(C) There is a standard guardrail.

(D) Where vehicles operate near vats or pits the railing must be strong enough to keep them out, or there must be a curb or shear rail that keeps the vehicle out.

(c) Manure lagoons or earthen manure storage ponds must have:

(A) Curbs, shear rails or other barriers where vehicles or equipment operate near enough to drive or roll into the lagoon.

(B) Standard guardrails or other protection where employees work over the contents or near enough to the edge to fall into the lagoon.

(C) Cables or chains that connect a vehicle to an adequate anchorage and are short enough to prevent the vehicle from rolling into the lagoon are acceptable.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1275**

##### **The Control of Hazardous Energy (Lockout/Tagout)**

(1) Scope. This standard covers work on machines, vehicles and equipment when the unexpected energizing or starting of them, or release of stored energy could injure employees.

(2) Application.

(a) This standard applies to the control of energy during servicing and/or maintenance of machines and equipment.

(b) It does not cover normal production operations. It covers servicing and/or maintenance that takes place during normal production operations only if:

(A) An employee must remove or bypass a guard or other safety device; or

(B) An employee must place any part of the body where they do work on the material being processed (point of operation) or where a danger zone exists.

(c) It does not cover routine, repetitive minor tool changes, adjustments and other minor servicing activities, done during normal operations, if they are necessary to the use of the equipment and if the workers use alternative methods that provide effective protection.

(d) This standard does not apply to work on electric powered equipment, when unplugging it would control the hazard and the employee doing the work controls the plug totally. It also does not apply to work on vehicles when the person doing the work has the ignition key under their exclusive control and there are no other sources of hazardous energy that could be released without the key.

(3) Program requirement. Employers must establish an energy control program and use its procedures for putting appropriate lockout or tagout devices on energy isolating devices. They must disable machines or equipment to prevent injury to employees.

(4) Definitions.

(a) Affected employee. One who operates a machine or equipment during service or maintenance under lockout or tagout. Also, those who work near where covered servicing or maintenance is done.

(b) Authorized person. One who locks out or tags out machines or equipment to service or maintain them. An affected employee becomes an authorized person when they do service or maintenance covered here.

(c) Energized. Connected to an energy source or containing residual or stored energy.

(d) Energy isolating device. A mechanical device that physically prevents the transmission or release of energy. Examples: A manual circuit breaker; a switch; a manual switch that disconnects the conductors of a circuit from all ungrounded supply conductors and where employees can operate no pole independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

(e) Energy source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravity or other energy.

(f) Lockable. An energy isolating device with its own lock or with a hasp or other way to attach a lock. Other energy isolating devices are lockable if they can be locked without being dismantled, rebuilt or replaced or permanently altering their energy control capability.

(g) Lockout. The use of a lockout device on an energy isolating device, according to an established procedure to ensure that the controlled equipment is not operable until an authorized person removes the lockout device.

(h) Lockout device. Something that uses a positive means such as a lock, to hold an energy isolating device in a safe position. Included are blank flanges and bolted slip blinds.

(i) Normal operations. A machine or equipment doing its intended function.

(j) Servicing and/or maintenance. Constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. This includes removing jams, lubrication or cleaning of machines or equipment and making adjustments or tool changes, where the process may expose the employee to the unexpected energizing or starting of the equipment or release of hazardous energy.

(k) Setting up. Any work done to prepare a machine or equipment for operation.

(l) Tagout. The placement of a tagout device on an energy isolating device, according to an established procedure, warning employees not to operate the energy isolating device and the equipment being controlled until an authorized person removes the tagout device.

(m) Tagout device. A prominent warning device, such as a tag and a secure, sturdy means of attachment to an energy isolating device according to an established procedure. The tag must warn employees not to operate the energy isolating device and the equipment being controlled until an authorized person removes the tagout device.

(5) General.



(a) Energy control program. Before doing any servicing or maintenance the employer must have a written energy control program with specific procedures, employee training and periodic reviews. It must ensure isolation of the equipment from the energy source and make it inoperative in a way to prevent injury.

(b) Lockout/tagout.

(A) If an energy isolating device is not lockable, the energy control program must use a tagout system that provides as much employee protection as is possible.

(B) If the energy isolating device is lockable, the energy control program must use lockout.

(C) Major repair, renovation or modification of a machine or equipment or installation of new machines or equipment requires new energy isolating device(s) to be lockable.

(c) Employee protection.

(A) When using a tagout device on a lockable energy isolating device, attach the tagout device where you would have put the lockout device.

(B) Full compliance with all parts of this standard related to tagout is necessary to assure the highest safety levels. Additional steps that help provide high employee protection include the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device or the removal of a valve handle.

(d) Energy control procedure.

(A) Develop, document and use procedures for the control of potentially hazardous energy when employees are doing work covered by this section.

**NOTE:** Documenting the required procedure for a particular machine or equipment is not necessary when all of the following are true:

(1) The machine or equipment has no potential for stored or residual dangerous energy or accumulation of stored dangerous energy after shut down;

(2) The machine or equipment has an easily identified and isolated single energy source;

(3) The isolation and locking out of that energy source will eliminate all energy-related hazards;

(4) The machine or equipment is isolated from that energy source and locked out during servicing or maintenance;

(5) A single lockout device will achieve a locked-out condition;

(6) The lockout device is under the exclusive control of the authorized person doing the servicing or maintenance;

(7) The servicing or maintenance does not create hazards for other employees; and

(8) No accidents have happened that involve the unexpected activation or energizing of the machine or equipment during servicing or maintenance done under this exception.

(B) The procedures must specifically outline the scope, purpose, authorization, rules and methods that are mandatory for the control of hazardous energy. They must also include a way to enforce compliance including, but not limited to, the following:

(i) A specific statement of the intended use of the procedure;

(ii) Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

(iii) Specific procedural steps for the placement, removal and transfer of lockout or tagout devices and the responsibility for them; and

(iv) Specific requirements for testing a machine or equipment to verify the effectiveness of lockout devices, tagout devices and other energy control measures.

(e) Protective materials and hardware.

(A) Each employee's lock must have either a key or combination that is unique to that device.

(B) The employer must provide the necessary locks and/or hardware to do all required lockout/tagout functions.

(C) Individually identify each lockout and tagout device. They must be the only devices used for controlling energy. Do not use devices meant for the lockout program for other purposes. They must meet the following requirements:

(i) Durable.

(I) Lockout and tagout devices must withstand their environment.

(II) Make tagout devices so that exposure to weather conditions or wet and damp locations will not cause them to deteriorate or the message on them to become illegible.

(III) Tags must not deteriorate in corrosive environments such as where you handle or store acid and alkali chemicals.

(ii) Standardized. Use lockout and tagout devices whose appearance is uniform within the facility and easily recognized.

(iii) Substantial.

(I) Lockout devices. Lockout devices must be sturdy enough to prevent removal without the use of excessive force or unusual methods or tools.

(II) Tagout devices. Tagout devices and their means of attachment, must be sturdy enough to prevent inadvertent or accidental removal. The attachment means must be single use and self-locking.

(iv) Identifiable. Lockout and tagout devices must show the identity of the employee who applied them.

(D) On energized machines or equipment, tagout devices must warn against hazardous conditions and must include a phrase like: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.

(f) Annual Review.

(A) Do a review of the energy control program at least annually to ensure that it meets the requirements of this standard and employees are following it.

(i) An authorized person must do the review.

(ii) Correct problems found during the review.

(iii) For a lockout program, the review must include a personal review, between the inspector and each authorized person, of that employee's responsibilities under the program.

(iv) For a tagout program, the review must include a personal review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the program.

(B) Document these reviews in writing with the identity of the machine or equipment covered by the program, the date of the review, the employees included in the review, and the person doing it.

(g) Training and communication.

(A) Provide general training that includes the following:

(i) Train authorized persons in the recognition of sources of hazardous energy, the type and amount of energy found in their workplace and the methods of energy isolation and control.

(ii) Instruct affected employees in the purpose and use of the energy control program.

(iii) Instruct other employees who work or may work where there may be energy control procedures, about those procedures and about the prohibition against attempts to restart or energize locked out or tagged out machines or equipment.

(B) For tagout systems, provide the following additional training:

(i) Locks are physical restraints while tags are only warning devices that provide less protection than locks.

(ii) Do not remove a tag attached to an energy isolating means, without authorization of the authorized person responsible for it. Never bypass, ignore or otherwise defeat a tagout device.

(iii) Tags must be legible and understandable by all employees whose work operations are or may be in the area.

(iv) Tags may cause a false sense of security. Understanding their meaning must be part of the overall energy control program.

(v) Securely attach tags to energy isolating devices so that they cannot be inadvertently or accidentally detached.

(C) Employee retraining.

(i) Retrain employees when a change in their job assignment, a change in machines, equipment or processes present a new hazard or when the program changes.

(ii) Retrain employees when a review shows or the employer has reason to believe, that there are problems in the employees' knowledge or use of the program.

(D) Document the employee training in writing with each employee's name and date(s) of training.

(h) Energy isolation. Authorized persons doing the servicing or maintenance must do the lockout or tagout.

(i) Notification of employees. Notify affected employees of the application and removal of lockout or tagout devices before applying the controls and after removing them from the machine or equipment.

(6) Application of control. The established procedures for the application of energy control (the lockout or tagout program) must cover the following points in the following sequence:

(a) Preparation for shutdown. Before an authorized or affected employee turns off a machine or equipment, they must know the type and amount of the involved energy, the hazards of the energy and the method to control it.

(b) Machine or equipment shutdown. Turn off the machine or equipment using the procedures established for it. Do an orderly shutdown to avoid new or increased hazards because of the equipment stoppage.

(c) Machine or equipment isolation. All energy isolating devices must be physically placed and used in ways that isolate the machine or equipment from the energy source(s).

(d) Lockout or tagout device application.

(A) Only authorized persons are to connect lockout or tagout devices to each energy isolating device.

(B) Connect lockout devices in a way that will hold the energy isolating devices in a "safe" or "off" position.

(C) Connect tagout devices in a way that will positively prevent operation or movement of energy isolating devices from the "safe" or "off" position. Directly connect the tag to the energy isolating device, otherwise it must be as close to the device as safely possible and obvious to anyone attempting to operate the device.

(e) Stored energy.

(A) After the application of lockout or tagout devices, relieve or make safe all potentially hazardous stored or residual energy.

(B) If stored energy can again reach a hazardous level, continuously verify its isolation until the servicing or maintenance is done or until the possibility is gone.

(f) Verification of isolation. Before starting work on locked out or tagged out machines or equipment, the authorized person must verify that isolation and de-energizing of the machine or equipment has been done.

(7) Release from lockout or tagout. The authorized person(s) must follow procedures and take actions to guarantee the following before removing lockout or tagout devices and restoring energy to the machine or equipment:

(a) The machine or equipment. Remove non-essential items from the work area and confirm the return of the machine or equipment to pre-lockout or normal running condition.

(b) Employees.

(A) Check the work area to ensure that all employees are safe or removed from the area.

(B) Notify affected employees after removing the lockout or tagout devices but before starting the machine or equipment.

(c) Lockout or tagout devices removal. Only the employee who applies it can remove a lockout or tagout device. However, when that employee is not available, the employer may direct its removal if specific procedures and training for such removal are a part of the employer's energy control program. The employer must show that the specific procedure is as safe as removal by the authorized person who applied it. The specific procedure must include at least the following:

(A) Verification by the employer that the authorized person who applied the device is not at the facility;

(B) Attempting to contact the authorized person to inform him or her about the removal of their lockout or tagout device; and

(C) Ensuring that the authorized person has this knowledge before he or she resumes work at that facility.

(8) Additional requirements.

(a) Testing or positioning of machines, equipment or components thereof. Follow this sequence of actions when it is necessary temporarily to remove lockout or tagout devices and energize the machine or equipment. This must only be done for testing or positioning the machine, equipment or component of it.

(A) Clear the machine or equipment of tools and materials;

(B) Remove employees from the machine or equipment area;

(C) Remove the lockout or tagout devices;

(D) Energize and go on with testing or positioning;

(E) Remove energy from all systems and reapply original energy control measures to continue the servicing and/or maintenance.

(b) Outside personnel (contractors, etc.).

(A) If outside servicing personnel are doing things covered by this standard, the on-site employer and the outside employer must coordinate their respective lockout or tagout procedures.

(B) The on-site employer must be certain that its employees understand and comply with the provisions of the outside employer's energy control program.

(c) Group lockout or tagout.

(A) When a crew, craft, department or other group does service or maintenance, they must use a procedure that gives employees a level of protection equal to that provided by using a personal lockout or tagout device.

(B) Use group lockout or tagout devices according to OAR 437-004-1275(4)(d) including, but not limited to, these requirements:

(i) Primary responsibility is with an authorized person for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);

(ii) The authorized person must know the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment and

(iii) When work involves more than one crew, craft, department, etc., assignment of overall job-associated lockout or tagout control responsibility to an authorized person designated to coordinate affected work forces and ensure continuity of protection; and

(iv) Each authorized person must put a personal lockout or tagout device on the group lockout device, group lockbox, or comparable mechanism when they begin work, and must remove those devices when they stop working on the machine or equipment.

(d) Shift or personnel changes. Have specific procedures for shift or personnel changes to ensure the continuity of lockout or tagout protection. These must include the orderly transfer of lockout or tagout device protection between leaving and arriving employees. The procedure must minimize exposure to hazards related to the ongoing process.

**NOTE:** The following Appendix is a non-mandatory guideline to help employers and employees comply with the requirements.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

## **437-004-1305**

### **Medical Services and First Aid**

(1) Definitions.

Emergency medical service is care by a medically trained person such as in a hospital, clinic, ambulance or rescue vehicle.

Qualified first aid person has evidence to show valid first-aid and CPR training within the last two years.

(2) First aid supplies.

(a) Provide first-aid supplies based on the types of injuries that could occur at the place of employment. The first-aid supplies must be immediately available to all workers on all shifts when needed. Do not lock up or otherwise restrict access to first-aid supplies.

(b) Protect first-aid supplies from damage, deterioration, or contamination. Clearly mark containers. First-aid containers may be sealed to protect the contents from contamination.

**NOTE:** Supplies such as nitrile gloves and a mouth barrier device are personal protective equipment covered by Division 4/I, Personal Protective Equipment.

(3) Medical treatment and services. Emergency medical services for injured or sick employees must be available and summoned in time to give appropriate treatment for the circumstances.

**NOTE:** These services can be by outside sources such as the local 911 response system or by employees who are qualified first-aid persons.

(4) Emergency medical plan.

(a) Determine the appropriate type of medical service for each place of employment. You must do a survey and develop an emergency medical plan. You must evaluate these areas:

(A) Determine the types of injuries and illnesses that are likely to occur at the worksite.

(B) Contact the local emergency response system and get information about their ability to handle these types of emergencies and their response time. Consider things such as nearness of the responding teams, traffic, equipment, average response times, and whether the system is staffed by volunteers or full-time people.

(C) Based on this information, decide whether the local response system can handle your situation or whether you need your own qualified first-aid persons.

(D) Train all employees about the medical plan and their responsibilities during an emergency.

(b) If the local response system is adequate, then the minimum emergency medical plan must contain the emergency phone number and emergency action instructions for employees in case of an injury or illness. Post this emergency medical plan where employees gather or are most likely to read it.

(c) If the response system is not adequate to handle your potential injuries or illnesses, then your plan must also contain clear and specific emergency action instructions for employees in case of injury or illness. The plan of action must have:

(A) The names, locations, and phone numbers of people trained and authorized to give first aid and other treatment.

(B) Any special instructions about communications like two-way radios, telephones or other provisions for emergency communication to contact the emergency medical services.

(C) A plan for transportation to the ambulance or nearest suitable medical facility.

(5) Emergency eyewash, shower equipment, or both.

(a) Based on the hazard, provide employees with an emergency eyewash, shower, or both to decontaminate themselves when one of the following applies:

(A) Employees use a chemical substance that can cause corrosion or permanent tissue damage to the eyes or when areas of the body may be exposed to quantities of materials that are either corrosive or toxic by skin absorption.

(B) Employees handle pesticide products labeled Danger or Danger/Poison, and with a first-aid section on the label that requires rinsing for 15-20 minutes for eye or skin exposure.

**NOTE:** OAR 437-004-1305(5) does not apply to eye flushing supplies required for early entry workers covered under 170.112(c)(8) or agriculture field workers covered under 170.150 of the pesticide Worker Protection Standard in Division 4, Subdivision W.

(b) Emergency eyewashes or showers, whether plumbed potable water systems or self-contained units, must meet the following requirements:

(A) Locate it so exposed employees can reach it and begin treatment in 10 seconds or less. The path must be unobstructed and cannot require the opening of doors or passage through obstacles unless other employees are always present to help the exposed employee.

(B) Install the equipment according to the manufacturer's instructions.

(C) Valves must stay open once activated, without the use of hands.

(D) Follow manufacturer's instructions for use and inspection.

(E) Fluid quality and temperature must be appropriate for the anticipated types of decontamination treatment.

(F) Flow and pressure must provide the needed treatment without risking injury to the employee.

(G) If the eyewash or shower could freeze, take protective measures to prevent this from occurring.

(c) If the product label or material safety data sheet requires specific decontaminants or procedures, you must provide them in addition to the eyewash or shower. Certain substances like acids, chlorine and anhydrous ammonia require special treatment.

**NOTE:** ANSI Z358 has information about the performance requirements for eyewashes and showers.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2010, f. 7-8-10, cert. ef. 1-1-11

#### **437-004-1430**

##### **Sources of Fire**

(1) Definitions. These terms are used in Subdivision 4/L Fire:

(a) Closed container — A container sealed with a lid or other device that prevents the loss of liquid or vapor at ordinary temperatures.

(b) Combustible — A substance or material that is able or likely to catch fire and burn.

(c) Explosive — something capable of causing damage to the surroundings by chemical reaction.

(d) Flammable — Something capable of being easily ignited, burning intensely or having a rapid rate of flame spread.

(e) Flammable liquids — are liquids having a flash point at or below 199.4 degrees F. (93 degrees C.) As defined in the globally harmonized system of classification and labeling (GHS) adopted in OSHA's Hazard Communication Standard, flammable liquids are divided into four categories.

**NOTE:** Examples of some common flammable liquids are:

Category 1: Diethyl ether (solvent sometimes used in starting fluid).

Category 2: Gasoline (Benzene, Ethanol).

Category 3: Kerosene, Stoddard Solvent.

Category 4: Diesel fuel, Naphthalene.

**NOTE:** Additional information can be found in Division 4/B, 437-004-0100 Universal Definitions.

(2) Store combustible waste material, including oily rags in covered metal receptacles.

(3) If using electric lights, equipment, and wiring where there may be flammable or explosive gases, vapors, mists, dust or fibers they must comply with the State Electrical Specialty Code.

**NOTE:** See additional electrical requirements in Division 4/S, OAR 437-004-3075 Agricultural Buildings with Special Hazards.

(4) Locate internal combustion engines so that there is a clearance of at least 6 inches between exhausts and exhaust piping and combustible material.

(5) Do not allow smoking, open flames, the use of spark-producing devices or tools not approved for use in such areas, and other sources of ignition:

(a) In fueling areas.

(b) When servicing fuel systems for internal combustion engines.

(c) When receiving or dispensing flammable liquids.

(d) Where using flammable liquids.

(e) Where storing flammable liquids.

(f) Areas that may have flammable or explosive gases, vapors, mists, dust, fibers or flyings.

**NOTES:** Other sources of ignition include cutting and welding; grinding hot surfaces; frictional heat; static, electrical and mechanical sparks; spontaneous ignition including heat producing chemical reactions; and radiant heat. There are more detailed standards for: The use and storage of flammable liquids in 4/H, OAR 437-004-0720; The use of liquefied petroleum gas (LPG) in 4/H, OAR 437-004-0780 and 437-004-0790; The prevention of fire prevention standards for welding operations are in 4/Q, OAR 437-004-2310.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### **437-004-1440**

##### **Required Postings**

Post signs reading, "No Smoking or Open Flame," in all areas:

(1) For fueling;

(2) For receiving or dispensing flammable or liquids;

(3) For use or storage of flammable liquids; or

(4) Where there may be flammable or explosive gases, vapors, mists, dust, fibers or flyings.

**NOTE:** Signs reading "FLAMMABLE — KEEP FIRE AWAY" will also be in compliance with this rule.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14



**437-004-1450****Extinguishers**

**NOTE:** The Oregon Office of State Fire Marshal and local fire authorities also have rules that apply to portable fire extinguishers.

(1) Provide the class of fire extinguishers designed for use on the class of fire potential in the work area.

**NOTE:** To make it easy to use the right extinguisher, the NFPA 10 Extinguisher Standard uses the following system of classification: Class A: Fires of ordinary combustible materials (such as wood, cloth, paper, rubber, and many plastics) requiring the heat-absorbing (cooling) effects of water, water solutions or the coating effects of certain dry chemicals that retard burning. Class B: Fires of flammable liquids, flammable gases, grease and similar materials where extinguishment is best done by excluding air (oxygen), inhibiting the release of combustible vapors or interrupting the combustion chain reaction. Class C: Fires of energized electrical equipment where safety to the operator requires the use of electrically nonconductive extinguishing agents. (Note: For nonenergized electrical equipment, Class A or B extinguishers may be best.) Class D: Fires of certain combustible metals, such as magnesium, titanium, zirconium, sodium, potassium, etc., requiring a heat-absorbing extinguishing medium not reactive with the burning metals.

(2) Original labels and marking on extinguishers must remain attached and legible.

(3) Mount fire extinguishers on hangers, brackets, in cabinets or on shelves. The maximum height of the top of the extinguisher above the floor is: [Table not included. See ED. NOTE.]

(4) Do not obstruct fire extinguishers. They must be in plain sight or clearly mark their location.

(5) Paths to and space in front of fire extinguishers must be clear and free from obstruction.

(6) Inspect fire extinguishers yearly or more often as needed to keep them usable and fully charged.

(7) Do not use fire extinguishers with carbon tetrachloride, chlorobromomethane or other toxic vaporizing fluids.

[ED. NOTE: Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

**437-004-1460****Fire Prevention Plan**

(1) The plan must be in writing, be kept in the workplace, and be available to employees. Employers with 10 or fewer permanent, year-around workers may have a verbal plan.

(2) The fire prevention plan must include at least these parts:

(a) Procedures to control accumulations of flammable or combustible waste materials;

(b) Procedures for regular maintenance of safeguards installed on heat producing equipment to prevent accidental ignition of combustible materials;

(c) Procedures for reporting possible fire producing situations.

(3) The employer must:

(a) Inform employees of the fire hazards in their work areas; and

(b) Review with each employee, new to a job, those parts of the fire prevention plan necessary for protection.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

**437-004-1470****Employee Equipment and Training**

(1) If workers are expected or required to fight fires, their level of training and the fire fighting equipment they use must be adequate for the level of fire fighting involvement expected or required by the employer.

(2) The employer must provide all needed equipment and training at no cost to employees and be in compliance with Division 2/L, OAR 437-002-0182 Oregon Rules for Fire Fighters; 1910.155 Fire Protection; and 1910.156 Fire Brigades.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 3-2014, f. & cert. ef. 8-8-14

**437-004-1505****Air Receivers and Pressure Systems**

(1) Application. This section applies to compressed air receivers and other equipment making and using compressed air or gas. This section does not apply to the use of compressed air to move materials nor to work in compressed air as in tunnels and caissons. It also does not apply to compressed air machinery and equipment used on transportation vehicles.

(2) General requirements. New and existing equipment.

(a) Construct all new air receivers installed after the effective date of these regulations according to the 1995 edition of the A.S.M.E. Boiler and Pressure Vessel Code Section VIII.

(b) Construct, install and maintain all safety valves according to the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII Edition 1995.

(3) Installation and equipment requirements.

(a) Installation. Install air receivers so that all drains, hand holes and manholes are easily accessible. Do not bury an air receiver underground or put it in an inaccessible place.

(b) Drains and traps. Install a drain pipe and valve at the lowest point of every air receiver to provide for the removal of accumulated oil and water. Adequate automatic traps are acceptable besides drain valves. To prevent excessive amounts of liquid in the receiver, open the drain valve and drain the receiver completely as often as needed.

(c) Gages and valves.

(A) Every air receiver must have an indicating pressure gage that is visible and with one or more spring-loaded safety valves. These valves together must prevent pressure from exceeding the maximum allowable working pressure by more than 10 percent.

(B) No valve of any type must be between the air receiver and its safety valve or valves.

(C) Construct and place safety and control devices so that people cannot defeat them and are protected from the elements.

(D) Test all safety valves frequently to find out if they are in good operating condition.

(4) Compressed air — general.

(a) Never use compressed air or gas to clean clothing that is being worn. Never direct compressed air or gas at a person.

(b) Do not use compressed air for cleaning unless:

(A) It is reduced at the source to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment; or

(B) The outlet device or nozzle reduces end pressure to less than 30 p.s.i. when dead-ended or placed against an object, then only with effective chip guarding and personal protective equipment.

(c) All hose connections must be secure and maintained to be safe. Do not allow the hose to begin whipping.

**NOTE:** See 4/P, OAR 437-004-2230 for standards about using tools run by compressed air.

(5) Piping systems.

(a) All piping systems and their component parts that carry air, steam or other material at more than atmospheric pressure must safely withstand pressures to be placed upon them.

(b) To be acceptable for pressure line service with gaseous substances, non-metallic pipe must have its manufacturer's recommendation and listing for compressed air or gas service. Only use PVC pipe for compressed air if you bury or encase it.

(6) High temperature piping. High temperature is 140° Fahrenheit or higher.

(a) Cover all steam and other high temperature pipe lines within 7 feet of the floor or work platform or passageway with non-combustible insulating material or otherwise protect it against accidental contact with persons.

(b) All steam hose connections must be secure and maintained to be safe. Do not allow the hose to begin whipping.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

**437-004-1525****Boilers and Steam Systems**

**NOTE:** The Oregon Building Codes Agency (Boiler and Pressure Vessel Section) is the authority for Boilers and Pressure Vessels as defined in Oregon Boiler Pressure Vessel Law, ORS 480.510.

(1) All boilers and pressure vessels must meet minimum standards of design and operation in the Oregon Boiler and Pressure Vessel Safety Law.

(2) Permanently mark each control valve, not at the pressure vessel, with its source and function.

(3) Relief valve exhaust systems must withstand the forces involved. Their discharge must not endanger workers.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1610**

##### **General Requirements**

(1) Material storage.

(a) Storage of material must not create a hazard. Stack, block or interlock stored items and limit their height so that they are stable and secure from sliding or collapse.

(b) Storage areas must be free from accumulated materials that are tripping, fire or explosion hazards.

(c) Pile foundations must support maximum loads without sinking, sagging, or tipping.

(d) Storage of toxic, flammable, radioactive, or irritating substances must comply with other appropriate parts of the Oregon Occupational Safety and Health Code.

(e) Where mechanical handling equipment is in use, there must be safe clearance in aisles, at loading docks, through doorways and where turns are made. Aisles and passageways must be clear and in good repair.

(f) Workers must not be under or near elevated loads and moving material unless they have adequate protection.

(g) Block or crib loads suspended in slings or supported by hoists, jacks, or other devices, before allowing workers to be underneath them.

(h) Do not drop or throw material from an elevation to other people.

(i) Use tag lines or guide ropes when manual control is needed over swinging loads.

(j) Load pallet boards, and trays so that the material is stable.

(k) Stored material must not obstruct lights and fire extinguishing equipment, including sprinklers, aisles, exits, or electrical control panels.

(l) When storing materials that could cause hazardous reactions, segregate and mark them with appropriate warning signs.

(2) Stacks and piles.

(a) All material stacks and piles must be on level and solid supports and be stable.

(b) Use binding strips or cross ties when needed to stabilize stacks and piles.

(3) Bricks and blocks.

(a) Brick stacks must not be more than 7 feet high. When a loose brick stack reaches a height of 4 feet, cross tie it and taper it back 2 inches for every foot of height more than 4-foot.

(b) When stacking masonry blocks more than 6 feet high, cross tie and taper them back one-half block per tier above the 6-foot level.

(4) Lumber.

(a) Remove all nails from used lumber before stacking it.

(b) Lumber stacks must be no more than 1-1/2 times higher than the smallest dimension of the base.

(5) Bagged materials.

(a) Stack bagged materials by stepping back the layers and cross keying the bags at least every 10 bags high.

**NOTE:** This requirement does not apply if pallets stabilize the stack of bagged materials.

(b) When removing bags from a pile, keep the pile stable.

(6) Pipe and bar stock. Take pipe and bar stock from the ends of unsecured piles not from the side.

(7) Drums, rolls, cylindrical objects.

(a) Barrels, drums, large pipe, rolls of paper, and other cylindrical objects piled on their sides must have blocks to hold the bottom row. Separators between rows of the pile, must have blocks at each end.

(b) There must be spacing strips between bundles.

(8) Equipment design and construction.

(a) All equipment, structures, and accessories used for handling or storing materials must comply with sound engineering practices and the specifications and recommendations of the manufacturer. They must support the loads acting on them in addition to their own dead loads. Allow for wind, impact, erection and any special loadings that may occur. No combination of these loads may cause a stress on any part that exceeds the allowable stress for that part.

(b) Do not exceed equipment manufacturer's recommended safe load capacities.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1630**

##### **Conveyors**

(1) Controls.

(a) The operator's station must have a way to quickly stop the motor or engine.

(b) If the operator's station is remote from the power source, there must be a way to quickly stop the system at the motor or engine and at the operator's station.

(2) Backstops and brakes. Inclined conveyors, where reversing or running away is a hazard, must have anti-runaway, backstop devices, or suitable guards.

(3) Loading, transfer and discharge points.

(a) Conveyor loading, transfer and discharge points must have a way to guard workers from injury by moving material.

(b) The area around all loading and unloading points must be clear of obstructions.

(4) Guards.

(a) Screw conveyors must have guards to prevent contact with turning flights.

(b) Where a conveyor passes over a work area, aisles or thoroughfares, there must be guards to prevent material from falling.

(c) Return sections of conveyors less than 7 feet above passageways and work areas, must have guards.

(d) Comply with subdivision 4/O, OAR 437-004-1910, Machine Guarding, for guarding conveyor drive mechanisms and power driven parts.

(e) Input conveyors for chippers, burners, furnaces, or other dangerous machines must have guards to prevent workers from falling into the conveyor. If the machine operation does not allow complete guarding of the opening, the worker must wear a life belt tied off to a lifeline.

(f) Workers must not walk across or step over conveyors except on bridges or walkways.

(5) Portable conveyors.

(a) Portable conveyors must be stable at all operating ranges and must have devices or be blocked to prevent unintended movement.

(b) Portable electric conveyors must be grounded. Wiring, switches, and electrical connections outside and exposed to the weather must be weatherproof and dustproof.

(6) Riding prohibited. Workers must not ride on a conveyor.

(7) Ramps, skids, rollways.

(a) Where the person putting material down a chute, ramp, skid, or rollway does not have a clear view of a lower landing where workers might be, there must be a working automatic warning device.

(b) If there is no warning device as required in (8)(a) above, fence off or barricade the underside of the chute, ramp, skid, rollway or landing and mark it with warning signs.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1670**

##### **Automotive Hoists**

(1) Automotive hoists elevated with a load to a position that is a hazard, must be supported by a safety device capable of preventing descent if the lift fails.

(2) Use the lifts according to the manufacturer's recommendations and those of ANSI B153.1-1990.

(3) Place vehicles on lifts according to the manufacturer's recommendations.

[Publications: Publications referenced are available from the agency.]  
Stat. Auth.: ORS 654.025(2) & 656.726(3)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### 437-004-1680

##### Storage of Hazardous Chemicals

(1) Store hazardous chemicals:

(a) Separately, to prevent hazardous reactions. Label storage areas by category to prevent the mixing of incompatible types of chemicals. (Examples of categories include: flammable liquids, acids, bases oxidizers.)

(b) In conformance with manufacturer's instructions on the label or Safety Data Sheet (SDS) to prevent conditions that could adversely affect container integrity or product stability.

(c) Separate from food and personal items to prevent contamination.

(d) Separate from sources of ignition. In locations where flammable vapors may be present, take precautions to prevent fires by eliminating or controlling sources of ignition.

**NOTES:** Division 4/L, 437-004-1440, requires that signs reading "No Smoking or Open Flame" or "FLAMMABLE — KEEP FIRE AWAY" be posted in areas where flammable liquids are received, stored or dispensed. Chemical storage areas should comply with appropriate state and local fire codes. Identify chemical storage buildings with a sign in accordance with NFPA 704. Examples of ignition sources include open flames; smoking; cutting and welding activities; hot surfaces and radiant heat; frictional heat; static, electrical, and mechanical sparks; and, chemical and physical/chemical reactions.

(2) Ventilate storage areas, as needed to keep air contaminants below 25 percent of the lower explosive limit (LEL).

**NOTE:** Permissible exposure limits (PELs) for substances listed in 4/Z, OAR 437-004-9000, Air Contaminants, also apply.

(3) Provide natural or artificial lighting equal to 20 foot-candles for safe entry into the storage area and to permit identification of chemical containers.

(4) Storage, handling, and removal of hazardous chemical containers must not cause hazards to workers.

**NOTES:** Other Division 4 rules with requirements that may apply to chemical storage areas include: 4/H: OAR 437-004-0720 Flammable Liquids. 4/H: OAR 437-004-0950 Hazardous Waste Operations and Emergency Response, when employees are required to cleanup certain emergency chemical spills. 4/K: OAR 437-004-1305(5) Emergency eyewashes and shower equipment, if required for emergency decontamination. 4/L, Fire: OAR 437-004-1430 through 1470, when storing or dispensing flammable liquids. 4/N: OAR 437-004-1610 General Requirements. 4/S, Electricity: OAR 437-004-2810 through 437-004-3075.

(5) The following additional requirements apply where storing

##### Restricted Use Pesticides:

**NOTE:** Restricted Use Pesticides (RUPs) are a category of pesticide products that pose a higher risk to people, animals, or the environment. They can only be purchased by and used under the supervision of a person with a pesticide license.

(a) Lock the storage area to prevent access by unauthorized persons.

(b) Provide separate sections within the storage area for each category of pesticide product. (Examples include: insecticides, herbicides, fungicides, fumigants.) Label these areas by general category.

**NOTE:** The goal of separation is to prevent hazards to employees caused by the mixing of incompatible chemicals and the contamination of one type of product, or storage surface with a more toxic product due to a leak or spill.

(c) Floors and shelves must be constructed of a chemically-resistant material; or coated, sealed, or provided with secondary containment that prevents the absorption of the hazardous chemicals.

(d) When the storage area contains enough chemical that a leak or spill could cause the material to leave the confines of the building, there must be sufficient containment or other means to contain any leaks or spills within the storage area.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

#### 437-004-1700

##### Forklifts and Other Powered Industrial Trucks

(1) General requirements.

(a) This section has safety requirements for the maintenance and use of fork trucks, forklifts, platform lift trucks, motorized hand trucks, and other specialized industrial trucks used in agriculture. These are considered vehicles and additional standards are found in Division 4/U. This does not apply to compressed air or non-flammable compressed gas-operated industrial trucks, nor to agricultural vehicles defined elsewhere in this standard, nor to vehicles intended primarily for earth moving or over-the-road hauling.

(b) Modifications and additions that affect capacity and safe operation must have the manufacturer's prior written approval. Change the capacity, operation and maintenance instruction plates, tags or decals to reflect any changes to the vehicle.

(c) If the truck has front-end attachments not installed by the factory, the truck markings must identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with the load laterally centered.

(d) Keep nameplates and markings in place and legible.

(2) Safety guards.

(a) Overhead guards.

(A) If a lift truck operator could be struck by falling, or stacked objects, the truck must have an overhead guard. The guard must be strong enough to support impact load tests in **Table 1**:

(B) Guards that pass the test must have a metal tag permanently attached to the canopy where reading it from the ground is easy. This tag must show the impact test load, in foot-pounds to which similar guards have been tested.

**NOTE:** Guards required by (2)(a)(A) through (C), or by the following rules, do not have to withstand the impact of a capacity load falling from any height.

(C) Untested guards must be made of material in **Table 2** or material of equivalent strength or stronger.

(D) The construction of canopy guards built to comply with (C) above presumes four upright members. Guards with less than four upright members must be equally strong.

(i) Canopy type overhead guard frames must have structural rigidity.

(ii) All guard mountings or attaching brackets must provide adequate support to the upright members of the canopy type overhead guard.

(iii) Cantilever overhead guards must be of equivalent strength.

(E) Guards must not interfere with good visibility. Openings in the top must not be more than 6 inches in one of their two dimensions. Guards must be large enough to extend over the operator under all normal circumstances of operation, including forward tilt.

(i) If the mast-tilting mechanism fails, the overhead guard must not injure the operator.

(ii) There must be at least 39 inches of clear vertical space between the operator's seat when depressed and the underside of the guard. There must be at least 74 inches of clear vertical space between the platform for standing operators and the underside of the guard.

**NOTE:** Where overall height of truck with forks in lowered position is limited by head room conditions and there is insufficient space for vertical clearance or for the operator to assume a normal driving position, normal overhead guard heights may be reduced, or the overhead guard may be omitted. The height and stability of stacks of piled material, the weight of individual units handled, and the operating space available must provide reasonable safety for the operator if removing the overhead guard is necessary.

(b) Back rest. Lift trucks that handle small objects or loose units must have a vertical load back rest.

(A) It must be strong enough to prevent the load or any part of it from falling toward the operator.

(B) It must not interfere with good visibility.

(C) Size of openings must not be more than 6 inches in one dimension.

(c) Shear point guards. Shear points on forklift loaders and similar type vehicles must have guards.

(3) Fuel handling and storage.



- (a) Store and handle liquid fuels according to 4/H, OAR 437-004-0720.
- (b) Store and handle liquefied petroleum gas fuel according to 4/H, OAR 437-004-0780.
- (c) Changing and charging storage batteries.
  - (a) Battery chargers must be in areas that are safe for that purpose.
  - (b) There must be facilities for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage and for adequate ventilation.
  - (c) Use a conveyor, overhead hoist or equivalent material handling equipment to handle large batteries that power electric forklifts.
  - (d) Use only a carboy tilter or siphon to handle electrolyte.
  - (e) Pour acid into water not water into acid when servicing batteries.
  - (f) Set truck brakes before changing or charging batteries.
  - (g) Vent caps must function and the battery compartment cover(s) must be open to dissipate heat.
  - (h) There must be no smoking in the charging area.
  - (i) Prevent open flames, sparks, or electric arcs in battery charging areas.
  - (j) Keep tools and other metallic objects away from the top of uncovered batteries.
- (5) Lighting for operating areas. Where general lighting is too dim, the vehicle must have its own directional lighting.
- (6) Dockboards (bridge plates). See 4/D, OAR 437-004-0390(1).
- (7) Trucks.
  - (a) Set the brakes on trucks or chock the rear wheels to prevent them from rolling while they are boarded with powered industrial trucks.
  - (b) Use nose jacks when necessary to support a semitrailer and prevent a nose dive during the loading or unloading.
- (8) Operator training.
  - (a) Develop and use a training program for operators of powered industrial trucks. The employer or an outside training entity may give the training. It must contain at least the following:
    - (A) A study and test portion covering at least the rules in this standard, the information provided by the manufacturer for operation of the equipment and any special information dictated by the operating environment.
    - (B) A behind-the-wheel driving portion, supervised by a person competent in the operation of the particular equipment and familiar with the area and circumstances of its use.
  - (C) Tailor both parts to the specific type of equipment, the material being handled and the location of its use.
  - (b) Only fully trained workers may operate powered industrial trucks, except those under direct supervision as part of the behind-the-wheel training program.
  - (c) Conduct refresher training for drivers annually or when their driving record indicates the need for additional training, whichever is more frequent.
  - (d) Employers may not consider a new worker trained and qualified based on experience from a previous employer unless the previous experience was on the same type of equipment under substantially the same operating circumstances and the worker had a safe operating record acceptable to the new employer.
- (9) Truck operations.
  - (a) Do not drive a powered industrial truck up to anyone standing in front of a fixed object.
  - (b) Do not stand or pass under the elevated part of a powered industrial truck.
  - (c) Only the operator may ride on a powered industrial truck unless it has a second seat or area intended for another rider.
  - (d) Do not put any part of the body between or reach through the uprights of the mast or outside the running lines of the truck.
  - (A) Fully lower the forks or platform on an unattended powered industrial truck. Also, neutralize the controls, turn off the power, and set the brakes. Block the wheels if it is on an incline.
  - (B) Unattended is when the operator is 25 feet or more away but vehicle remains in view or anytime the vehicle is not in view.

- (C) When the operator gets off the truck but is within 25 feet and can still see it, the forks or platform must be down, the controls in neutral and the brakes set, unless loading or unloading items to or from the forks or platform.
- (f) Keep a safe distance from the edge of ramps or platforms while on an elevated dock, platform or freight car.
- (g) Whenever a truck has vertical only, or vertical and horizontal controls that elevate with the lifting carriage or forks for lifting personnel, do the following:
  - (A) Use a safety platform secured to the lifting carriage and/or forks.
  - (B) Have a way for people on the platform to shut off power to the truck.
  - (C) Provide protection from falling objects as necessary by the operating conditions.
  - (h) When using a forklift to lift people, take the following precautions:
    - (A) Use a platform with standard guardrails secured to the lifting carriage or forks.
    - (B) The hydraulic system must not be able to drop faster than 135 feet per minute if any part of the system fails.
    - (C) Someone must be in the operator's station while workers are on the platform.
    - (D) Someone must be in the normal operating position while raising or lowering the platform.
    - (E) Other than very slow inching, do not move the truck from point-to-point with the platform raised more than 4 feet while workers are on it.
    - (F) There must be a guard on the area between the platform and the mast to prevent contact with chains or other shear points.
- (10) Traveling.
  - (a) Climb or descend grades slowly.
  - (A) Drive loaded trucks with the load upgrade if the incline is steep enough to spill the load.
  - (B) Tilt the load back and raise the forks or platform only as far as necessary to clear the road surface.
  - (b) Drive only as fast as conditions permit, leaving enough time to stop.
  - (c) Slow down on wet and slippery surfaces.
  - (d) Do not run over loose objects.
- (11) Loading.
  - (a) Do not handle loads heavier than the rated capacity of the truck.
  - (b) Treat trucks with attachments as partially loaded trucks when not handling a load.
  - (c) The forks or platform must be under the load as far as possible and the mast tilted backward to stabilize the load.
  - (d) Do not tilt forward with forks or platform elevated except to pick up a load. Do not tilt an elevated load forward except when it is in a deposit position over a rack, chute or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.
- (12) Maintenance of powered industrial trucks.
  - (a) If a powered industrial truck needs repair, take it out of service until repairs are done.
  - (b) Do not add fuel while the engine is running.
  - (c) Clean up spilled oil or fuel or allow it to completely evaporate before restarting the engine. Do not use the vehicle without the fuel filler cap in place.
  - (d) Do not use a flame to check the electrolyte level in batteries or the level in fuel tanks.
  - (e) Only authorized persons may repair powered industrial trucks.
  - (f) Disconnect the battery before working on the electrical system.
  - (g) Use only replacement parts that assure equivalent safety as the originals.
  - (h) Do not change the relative positions of parts from what they were when the vehicle was made. Do not remove parts except as in (l) below. Do not add counter weighting to fork trucks without approval by the manufacturer.

(i) Check powered industrial trucks daily before using them. Do not use them if any condition is found that adversely affects the vehicle's safety.

(j) Remove from service any vehicle that gives off hazardous sparks or flames.

(k) Keep powered industrial trucks clean, free of lint, excess oil, and grease. Clean the trucks with noncombustible cleaners. Do not use low flash point (below 100 degrees F.) solvents. Follow the directions on the cleaner's label.

(l) You may convert powered industrial trucks from gasoline to liquefied petroleum gas fuel if the converted truck complies with the specifications for LP or LPG trucks. Use only approved conversion equipment.

(13) Control of gases and fumes. Take effective measures to keep the concentration levels of carbon monoxide gas created by powered industrial trucks below the levels in 4/Z, OAR 437-004-9000.

(14) ROPS requirements. Rollover protective structures are covered in 4/U, OAR 437-004-3650.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

### **437-004-1750**

#### **Helicopters**

(1) Scope. This applies to the use of helicopters to harvest ornamental trees.

(2) Briefing. You must hold a briefing before each day's work that covers the safety and communication procedures for the pilot and ground personnel.

(3) Flight path. There must be an established flight path from the pick up point. All employees in the area must know this path before lifting the first load from a new job site or when there is a change in procedures.

(4) Area under the flight path. Equipment or employees must not occupy the area under the flight path during helicopter flight.

(5) Drop zone — where. A pilot and responsible supervisor must establish the location of the drop zone, decking areas, loading areas, and designated safety zones, taking into consideration current operating conditions. Notify all workers on the landing when a change in operating procedures is necessary.

(6) Drop zone — how big. The landing drop zone must be large enough to handle all incoming bundles of trees without crowding the landing crew.

(7) Under the load of helicopter. Workers must never be under the load or the helicopter except one person to hook up or unhook the load. Workers may approach the load to pull the rigging only after the helicopter leaves the area above the landing.

(8) Landing. Landings must have minimal slope for drainage in the drop zone and decking area to prevent bundles from rolling.

(9) Approach. The approach to the landing must be as clear as possible.

(10) Loads. Loads must be properly slung. Tag lines must be short enough to prevent their being drawn up into the rotors. On freely suspended loads, you must use pressed sleeves, swaged eyes or equivalent means to prevent hand splices from spinning open or cable clamps from loosening.

(11) Electric cargo hooks. All electrically operated cargo hooks must have an electrical activating device that prevents inadvertent operation. They must also have an emergency mechanical control for releasing the load. A competent person must test the hooks before each day's operation to assure that the release functions properly, both electrically and mechanically.

(12) Hardhats. Workers must wear hardhats secured with chin straps, eye protection and other personal protective equipment when in the load receiving area.

**NOTE:** See Division 4/I for specific requirements about Personal Protective Equipment.

(13) Clothing. Workers must not wear loose-fitting clothing that could flap in rotor downwash and snag on the hoist line.

(14) Flying objects. Take all necessary precautions to protect employees from flying objects in the rotor downwash. Secure or remove all loose gear within 100 feet of the pickup or landing area.

(15) Hook approach. There must be a safe way for employees to reach the hoist line hook and engage or disengage cargo slings.

(16) Rubber gloves. Workers must wear rubber gloves when handling suspended lines or they must use a grounding device to discharge static charges before touching the load.

(17) Weight limit. The weight of lifted loads must not exceed the helicopter manufacturer's rating.

(18) Limited visibility. The employer must ensure that when there is limited visibility because of dust or other conditions workers use special caution to keep clear of main and stabilizing rotors. The employer must also take precautions to eliminate, as far as practical, the dust or other conditions reducing visibility.

(19) Signal systems. The employer must instruct the aircrew and ground personnel on the signal systems in use and must review the system with the employees before flight operations begin. This applies to both radio and hand signal systems.

(20) Approach limit. Do not allow workers to approach within 50 feet of the helicopter when the rotor blades are turning, unless work duties require their presence in that area.

(21) Stay in view. Require employees who must approach the helicopter when blades are rotating to approach or leave in full view of the pilot and stay in a crouched position. Do not allow workers to be in the area from the cockpit or cabin rearward while blades are rotating.

(22) Communication. There must be constant reliable communication between the pilot and a designated member of the ground crew in the pickup and landing area. The designated member must be clearly distinguishable from other ground personnel.

(23) Fire. There must be no open fires where they could be spread by the rotor downwash.

(24) Fueling. Helicopter fueling areas must be separate from all other operations.

(a) Refueling of any type helicopter with aviation gasoline or Jet B (Turbine) type fuel must never be allowed while the engine is running.

(b) Refuel helicopters that use Jet A (turbine kerosene) type fuel with engines running only if these criteria are met:

(A) No unauthorized employees are within fifty (50) feet of the operation or equipment; and

(B) Fire extinguishers are available and have a combined rating of at least 16A:160BC.

(c) Train employees in the refueling operation and the use of the available fire extinguishing equipment.

(d) There must be no smoking, open flames, exposed flame heaters, flare pots or open flame lights within fifty (50) feet of the fueling area or fueling equipment. The fueling area must be posted with "NO SMOKING" signs.

**EXCEPTION:** Aircraft pre-heaters are exempt. However, do not fuel while the heaters are in operation.

(e) Before refueling, ground the fueling equipment and the helicopter and electrically bond the fueling nozzle to the helicopter. Using conductive hose does not accomplish this bonding. All grounding and bonding connections must be electrically and mechanically firm to clean unpainted metal parts.

(f) Pump fuel only by hand or power, do not pour or use gravity flow. Nozzles must be self-closing or have deadman controls and must not be blocked open. Do not drag nozzles on the ground.

(g) In case of a spill, immediately stop fueling until the person in charge determines that it is safe to resume the operation.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

### **437-004-1805**

#### **Rope, Chain, Rigging, and Hoists**

(1) Scope. These are standards for the safe use of hoists, rope, chain, and fittings.

(2) Definitions.

(a) Mousing — Using small cordage or wire to prevent unintended separation of rigging components.

(b) Rope — Wire rope unless otherwise specified.

(3) Loading and capacity. Do not load any rigging equipment or hoisting device more than its rated safe working load or capacity.

(4) Inspection. Inspect rigging and hoisting devices before use and as necessary during use to ensure safety. Immediately remove from service defective rigging or hoisting devices.

(5) Operators — handling loads.

(a) Workers must not ride hooks, slings, rigging, or loads. Suspend or elevate a person only when using a safe personnel lift.

(b) Personnel lift must meet these requirements:

(A) The structure must be rigid and strong enough to support loads with a safety factor of 4 times the intended load.

(B) The personnel lift must be big enough to accommodate all persons without crowding, and to provide sufficient work space so workers will not hinder or obstruct each other.

(C) There must be standard guardrails on all sides of the personnel lift. (See 4/D, OAR 437-004-0320(6) for guardrail design specifications.)

(D) The personnel lift must have supports on all four corners that provide full stability against tipping while occupied.

(E) Secure the load lifting attachment for the personnel lift to the crane or derrick hook in a way that will prevent accidental release.

(c) Only one person will give operating signals during hoisting operations.

**EXCEPTION:** In an emergency, anyone may give a “stop” signal; such signal must be obeyed.

(d) All persons must be in the clear before a signal is given to move a load or equipment.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1825**

##### **Tackle and Hoisting Equipment**

(1) Blocks, sheaves, shackles and drums.

(a) Use only sheaves and drums with diameters recommended by the wire rope manufacturer for the size rope.

(b) Secure all pins, including bearing and yoke pins, of all blocks against accidental displacement.

(c) Fit all blocks with line guards or design and use them in a way that prevents fouling.

(d) Sheaves carrying ropes that can be momentarily unloaded must have close-fitting guards or other suitable devices to guide the rope back into the groove when the load is applied again.

(e) Secure pins for all shackles used to hang blocks, jacks, or rigging, or that have hoisting chain, with a bolt, nut and cotter pin (safety-type shackle) or a screw pin with cotter pin, or they must be securely moused.

(f) Shackles used to hang blocks, jacks, or other rigging that can experience stress greater than that imposed by a single part of the pulling line must have a strength equal to but not less than two times the stress imposed by the pulling line.

(g) All shackles used for joining or attaching lines must have a strength of not less than 1-1/2 times that of the lines they join.

(h) Use clamps, socketing or other equal ways to securely fasten ends of lines attached to drums. Always keep at least two wraps of lines on drums.

(i) Do not guide lines onto drums with your hands in direct contact with the line. Use a guide pulley, tool, stick or other mechanical means to guide lines onto drums.

(2) Chains.

(a) Repair or remove from use hoisting chain when the increase in length (stretch) of the measured section exceeds 5%; or when there is a bent, twisted, or otherwise damaged link, or when raised scarfs or defective welds appear.

(b) Do not tie knots in a chain.

(c) Do not use lap links, cold shuts, or patent repair links for hoist chains or slings unless they are stronger than the chain.

(d) End fastenings must be capable of sustained loads equal to the breaking strength of the chain.

(3) Hooks and attachment devices.

(a) Remove from service any distorted or deformed hooks, rings, shackles, and other attachment devices or end fastenings.

(b) Do not use makeshift hooks, links, or fasteners such as those formed from rods, bolts, etc., or other such devices. Use only approved factory-made attachments or fasteners.

(c) When necessary to prevent lifting attachments from inadvertently lifting out of the hook, use a safety-type hook or other device.

(4) Wire rope.

(a) Wire rope and replacement wire rope must be the same size, same or better grade, and same construction as originally furnished by the equipment manufacturer or contemplated in the design, unless otherwise recommended by the equipment or wire rope manufacturer.

(b) Guard running wire ropes if they are within 7 feet of the floor or platform.

(c) Prevent friction of ropes with other objects that will cause chafing or breaking wires. Use thimbles of proper size for the rope in all eye-splices to prevent friction and chafing of the eye.

(d) Remove from use wire rope used as guys, for hoisting or supporting objects, in cable-operated components, and on winches or drums, when any of the following exist:

(A) In standing ropes, more than two broken wires in one lay in sections beyond end connections or more than one broken wire at an end connection.

(B) Corroded, damaged, or improperly aligned end connections.

(C) Evidence of any heat damage from any cause.

(D) Wear of 1/3 the original diameter of outside individual wires. Kinking, crushing, bird caging, or any other damage resulting in distortion of the rope structure.

(E) Reductions from nominal diameter exceeding those in Table 1. [Table not included. See ED. NOTE.]

(5) Cable clips or clamps.

(a) When using cable clips or clamps for form eyes, apply the U-bolt so that the “U” section contacts the dead end of the rope.

(b) When using U-bolt rope clips for form eyes, use Table 2 to figure the number and spacing of clips. [Table not included. See ED. NOTE.]

(c) The use of cable clips or clamps is acceptable only where they are readily accessible and subject to frequent inspection. Clips and clamps must be the correct size and properly applied. (See (5)(a) and (5)(b) above.)

(d) Do not use cable clips or clamps for joining lines except where transferring slack lines from one place to another.

(e) Do not use knots or combination knots and cable clip or clamp attachments as end connections for any hoisting rope or sling.

**EXCEPTION:** This rule does not apply to drop hammers of pile drivers.

(6) Fiber rope.

(a) Inspect fiber rope frequently. Do not use rope that shows visual signs of excessive wear, abuse, spots indicating caustic or acid damage, or other defect that would reduce the rated strength below the safe working load.

**NOTE:** The following procedure is recommended for inspection of rope:

(1) Examine the entire length of the rope for cuts or severe abrasions.

(2) Look for spots indicating acid damage.

(3) If there are acid spots, throw a twist in and out of the rope where the spots are; take a short kink in the rope and put on a strain. If the rope has acid damage, you will notice a weakness of the fibers.

(b) In manila rope, eye splices must have at least 3 full tucks, and short splices must have at least 6 full tucks (3 on each side of the centerline of the splice).

(c) In layered synthetic fiber rope, eye splices must have at least 4 full tucks, and short splices at least 8 full tucks (Four on each side of the centerline of the splice).

(d) In fiber rope splices, do not trim strand end tails short (flush with the surface of the rope) immediately adjacent to the full tucks. This precaution applies to both eye and short splices and all types of fiber rope.



(e) For all eye splices in fiber rope, the eye must be big enough to provide an included angle not more than 60° at the splice when the eye is over the load or support.

(f) Do not use knots instead of splices for joining fiber ropes.

(g) When not in use, store fiber rope under cover in a clean, dry, well-ventilated place, free from excessive heat, and protected against corrosives and acid.

(h) Do not use frozen fiber rope. Do not heat frozen rope to thaw it out.

[ED. NOTE: Table referenced is available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1910**

##### **General Equipment Guarding**

(1) Scope — These are general requirements that apply to all equipment.

(2) Definitions.

(a) Ground driven components — Components powered by the turning motion of a wheel as the equipment travels over the ground.

(b) Guard or shield — A barrier to protect against contact with a moving machine part.

(c) Point of operation — The area of a machine that contacts the work material.

(d) Power take-off shafts — Shafts and knuckles between the tractor, or other power source, and the first gear set, pulley, sprocket, or other components on power take-off shaft driven equipment.

(3) Operating instructions. Instruct every employee on their initial assignment about the safe operation and servicing of all equipment they will use. Renew this instruction at least annually. Include at least these safe practices:

(a) Keep all guards in place when the machine is in use;

(b) Permit no riders on farm field equipment other than persons required for instruction or assistance;

(c) Stop engine, disconnect the power source and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment. Instruct employees in the safe procedures necessary to service or maintain the equipment when it must remain running;

(d) Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine;

(e) Refer to and comply with 4/J, OAR 437-004-1275, Lock-out/Tagout.

(4) Methods of guarding. Except as otherwise stated, prevent contact with moving machinery parts as follows:

(a) By a guard or shield or guarding by location;

(b) When a guard or shield or guarding by location is infeasible, use a guardrail or fence.

(5) Strength and design of guards.

(a) Design and place guards to protect against inadvertent contact with the hazard. [Table not included. See ED. NOTE.]

NOTE: Minimum requirements for guards are in Table 1.

(b) Unless otherwise specified, each guard and its supports must be able to withstand the force applied to it.

(c) Guards must be free from burrs, sharp edges, and sharp corners. Secure guards to the equipment or building.

(6) Guarding by location. A component is guarded by location during operation, maintenance, or servicing when, because of its location, no employee can inadvertently come in contact with the hazard.

(7) Guarding by railings. Use guardrails or fences to protect employees from inadvertently entering the hazardous area.

(8) Servicing and maintenance. When a moving machinery part presents a hazard during servicing or maintenance, stop the engine, disconnect the power source, and wait for all machine movement to stop before proceeding, except where the employer can establish that:

(a) The equipment must be running for proper service or maintenance; and

(b) Service or maintenance is not possible while a guard or guards required by these rules are in place.

(9) Miscellaneous general requirements. Cover or install a guard on machines that throw stock, material, or objects. (Such machines as rip saws, rotary mowers and beaters, rotary tillers are a few in this classification.)

(10) Machine controls.

(a) A power control switch to stop the machine or machine feed must be within reach of the operator without leaving their normal operating position.

(b) Mark the power control switch to indicate its function and the machine that it controls. Indicate the positions of ON and OFF.

(c) On fixed machines, use red or orange to mark "Stop" buttons. Each machine must have one or more stop buttons according to the working position of the operator or operators.

(d) Locate and guard the machine control switch to prevent its unexpected or accidental movement. Recess electrical switch "Start" buttons.

(11) Anchoring fixed machinery. Securely anchor machines designed for a fixed location to prevent walking or moving.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1940**

##### **Farm Field Equipment**

(1) Application. Rule 437-004-1940 applies to all farm field equipment except that the parts below do not apply to equipment manufactured before October 25, 1976:

(a) 1940(4);

(b) 1940(5);

(c) 1940(6)(b)(A).

(2) Definition. Farm field equipment — Tractors or implements, including self-propelled implements, or any combination.

(3) Power take-off guarding.

(a) Guard all power take-off shafts with a master shield or by other protective guarding.

(b) Tractors must have a master shield or guard strong enough to support the operator if they get on or off the tractor using the shield as a step.

(c) Guard equipment driven by a power take-off to protect against employee contact with rotating parts of the power drive system. Where power take-off driven equipment requires removal of the tractor master shield, ensure the equipment includes protection from that portion of the tractor power take-off shaft that protrudes from the tractor.

(d) There must be signs on tractors and power take-off driven equipment to remind operators to keep safety shields in place.

(4) Other power transmission components.

(a) Guard the mesh or nip points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and idlers by protective shield, location, guardrail or fence.

(b) Guard all revolving shafts, including projections such as bolts, keys, or set screws, by protective shield, location, or guardrail or fence.

(c) Exceptions to the guarding requirements are as follows:

(A) Smooth off shafts and shaft ends (without any projecting bolts, keys, or set screws), revolving at less than 10 rpm, on feed handling equipment used on the top surface of materials in bulk storage facilities; and

(B) Smooth off shaft ends protruding less than one-half the outside diameter of the shaft and its locking means.

(5) Functional components. Guard as much as possible, all moving parts that must be exposed to operate. Ensure the guard does not interfere with the normal operation of the equipment. Examples of these components are snapping or husking rolls, straw spreaders and choppers, cutterbars, flail rotors, rotary beaters, mixing augers, feed rolls, conveying augers, rotary tillers, and similar units.

(6) Access to moving parts.

(a) Ensure that guards, shields, and access doors are in place when equipment is running.

(b) Where removal of a guard or access door will expose an employee to any component that continues to rotate after the power is disengaged, provide the following:

- (A) A readily visible or audible warning of rotation; and
- (B) A safety sign warning the employee to:
  - (i) Look and listen for evidence of rotation; and
  - (ii) Not remove the guard or access door until all components stop.

(7) Electrical disconnect means.

(a) Prevent application of electrical power from a location not under the immediate and exclusive control of the employee or employees maintaining or servicing equipment by:

(A) Providing an exclusive, positive locking means on the main or ignition switch which can be operated only by the employee or employees performing the maintenance and servicing; or

(B) In the case of material handling equipment in a bulk storage structure, by physically locating on the equipment an electrical or mechanical means to disconnect the power.

(b) Ensure all circuit protection devices, including those that are an integral part of a motor, are of the manual reset type.

(c) Exceptions to (b) above are where:

(A) The employer can establish that because of the nature of the operation, distances involved and the amount of time normally spent by employees in the area of the affected equipment, use of the manual reset device would be infeasible;

(B) There is an electrical disconnect switch available to the employee within 15 feet of the equipment being maintained or serviced; and

(C) There is a sign near each hazardous part warning the employee that unless they use the electrical disconnect switch, the motor could automatically reset while the employee is working on the hazardous component.

(8) Additional requirements.

(a) Use a clutch or other effective means for stopping powered machines not driven by an individual motor.

(b) Ensure sufficient clearance for all friction clutches and keep them adjusted to prevent any drag or creeping when disengaged.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-1970**

##### **Farmstead Equipment**

(1) Application. Rule 437-004-1970 applies to all farmstead equipment except that the parts below do not apply to equipment manufactured before October 25, 1976:

- (a) 1970(4);
- (b) 1970(5);
- (c) 1970(6)(b)(A).

(2) Definition. Farmstead equipment — Equipment that is normally stationary. This includes, but is not limited to, material handling equipment and accessories for this equipment whether or not it is an integral part of a building.

(3) Power take-off guarding.

(a) Guard all power take-off shafts with either a master shield or by other protective guarding.

(b) Guard power take-off driven equipment to prevent contact with positively driven rotating parts of the power drive system. If power take-off driven equipment requires removal of the tractor master shield, ensure that the equipment includes protection from that part of the tractor power take-off shaft that protrudes from the tractor.

(c) There must be signs on power take-off driven equipment to remind operators to keep safety shields in place.

(4) Other power transmission components.

(a) Guard the mesh or nip points of all power driven gears, belts, chains, sheaves, pulleys, sprockets, and idlers by protective shield, location, guardrail or fence.

(b) Guard all revolving shafts, including projections such as bolts, keys, or set screws, by protective shield, location, or guardrail or fence.

(c) Exceptions to the guarding requirements are as follows:

(A) Smooth off shafts and shaft ends (without any projecting bolts, keys, or set screws), revolving at less than 10 rpm, on feed handling equipment used on the top surface of materials in bulk storage facilities; and

(B) Smooth off shaft ends protruding less than one-half the outside diameter of the shaft and its locking means.

(5) Functional components.

(a) Guard to the fullest extent all functional components that must be exposed to operate. The guard must not substantially interfere with the normal operation of the equipment. Examples of these components are choppers, rotary beaters, mixing augers, feed rolls, conveying augers, grain spreaders, stirring augers, sweep augers, and feed augers.

(b) Guard sweep arm material gathering mechanisms on the top surface of materials within silo structures. Locate the lower or leading edge of the guard no more than 12 inches above the material surface and no less than 6 inches in front of the leading edge of the rotating member of the gathering mechanism. Ensure the guard is parallel to, and extends the fullest practical length of, the material gathering mechanism.

(c) Paragraph (b) above does not apply to bulk grain storage bins and similar structures where no workers are present except for installation or removal of the sweep arm material gathering mechanisms. During such work, disconnect and lockout the electrical power source following the procedures in OAR 437-004-1275, Division 4/J, Lockout/Tagout.

(d) Guard exposed auger flighting on portable augers with either grating type guards or solid baffle style covers as follows:

(A) Ensure the largest dimensions or openings in grating type guards through which materials must flow are 4-3/4 inches. Ensure the area of each opening is no larger than 10 square inches. Locate the opening no closer to the rotating flighting than 2-1/2 inches.

(B) Ensure slotted openings in solid baffle style covers are not wider than 1-1/2 inches, or closer than 3-1/2 inches to the exposed flighting.

(C) Openings larger than those in (A) and (B) above are allowable if necessary to permit the free flow of material that has a tendency to bridge over. Ensure these openings are no larger than required for proper functioning of the auger. Design, arrange or locate the guard so that no part of an employee's body may contact the auger flighting.

(6) Access to moving parts.

(a) Ensure that guards, shields, and access doors are in place when the equipment is in operation.

(b) Where removal of a guard or access door will expose an employee to any component that continues to move after the power is disengaged, provide the following:

- (A) A readily visible or audible warning of rotation; and
- (B) A safety sign warning the employee to:

- (i) Look and listen for evidence of rotation; and
- (ii) Not remove the guard or access door until all parts stop.

(c) There must be a guard with openings no larger than 1/2 inch when the blades of a fan are less than 7 feet above the floor or working level.

(7) Additional guarding requirements.

(a) Properly safeguard carton or bag stitching machines to prevent employees from contacting the stitching head and other pinch or nip points.

(b) Guard the point of operation of all machines. Design and construct the guard to prevent any part of the operator's body from being in the danger zone during the operating cycle. [Table not included. See ED. NOTE.]

**NOTE:** Table 2 gives the distances that point-of-operation guards must be from the danger line in relation to the size of the opening.

[ED. NOTE: Table referenced is available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2000**

##### **Powered Saws**

(1) Scope — This applies to nonportable powered saws.

- (2) General.
  - (a) Machines must not vibrate when the tool is run at full speed.
  - (b) Arbors and mandrels must have firm and secure bearing and be free from play.
  - (c) Do not use any automatic cutoff saw that strokes continuously without operator control of each stroke.
  - (d) Saw frames and tables must have lugs cast on the frame or an equivalent way to limit the size of the saw blade to avoid over-speed.
  - (e) Circular saw fences must attach to the table or table assembly without changing their alignment with the saw. The fences for tilting tables or tilting arbors must remain parallel with the saw regardless of the angle of the saw with the table.
  - (f) Circular saw gages must slide in accurately machined grooves or tracks to insure exact alignment with the saw for all positions of the guide.
  - (g) Hinged saw tables must be lockable in any position and in alignment with the saw.
  - (h) Guard all belts, pulleys, gears, shafts, and moving parts to comply with OAR 437-004-1970, division 4/O.
  - (i) Electrically ground all equipment to comply with OAR 437-004-2810, division 4/S.
  - (j) A guard must cover the rear portion of the saw beneath or behind the table when exposed to contact. An exhaust hood may serve this purpose if appropriate.
  - (k) Do not mount any saw, cutter head or tool collar on a machine not made to work with them.
  - (l) There must be combs (featherboards) or suitable jigs to use when a standard guard cannot be used, like for dadoing, grooving, jointing, moulding, and rabbeting.
- (3) Machine controls and equipment.
  - (a) There must be a mechanical or electrical power control switch so the operator does not have to leave the point of operation to shut off the machine.
  - (b) Use a locking-type belt shifter or other positive device on machines driven by belts and shafting.
  - (c) Provide a positive method to prevent a machine from automatically restarting after a power failure.
  - (d) Locate power and operating controls within reach of the operator. Do not allow the operator to reach over the cutter head to make adjustments. This does not apply to constant pressure controls used only for setup.
  - (e) Provide a positive means to make electric motor driven machine controls and devices inoperable during repairs or adjustments.
  - (f) Protect foot-operated controls from unexpected or accidental activation.
  - (g) Cover feed rolls, of feeder attachments, to protect the operator from contacting hazardous parts.
- (4) Band saws.
  - (a) Completely enclose band wheels. Construct guards of at least No. 14 U.S. gauge metal, nominal 2-inch wood material, or mesh or perforated metal of not less than U.S. gauge No. 20 with 3/8-inch or smaller openings.
  - (b) Enclose all portions of the band saw blade except the working side of the blade between the guide and the table.
- (5) Radial arm saws.
  - (a) Radial arm saws must have a hood that completely encloses the upper portion of the blade down to a point that includes the end of the saw arbor.
  - (b) The saw blade must not extend beyond the front edge of the table or roll case.
  - (c) A lower blade guard must guard the lower part of the blade and stay in contact with the material during the entire cut.
  - (d) When ripping, radial arm saws must have anti-kickback fingers on each side of the saw.
  - (e) Mark the direction of saw rotation on the hood.
  - (f) Attach a permanent warning sign prohibiting rip or plough cuts from the rear of the guard. Rip and plough only against the direction of blade rotation.

- (g) Blades or cutting heads on radial arm saws must automatically return gently and stay at the back of the table.
 

**NOTE:** Use a counterweight or other effective means, a retractor device, or tilt the arm sufficiently to keep the saw at the back when released by the operator.
  - (6) Table saws.
    - (a) Circular crosscut table saws must have a hood that covers the saw at least to the depth of the teeth.
    - (b) The hood must automatically adjust itself to the thickness of and remain in contact with, the material being cut. When the guard may mar the surfaces of material, it may be raised slightly to avoid contact.
    - (c) The hood must protect the operator from flying splinters and broken saw teeth.
    - (d) Fully guard rip table saws, and combination rip and cross-cut table saws as required in OAR 437-004-2000(4)(a) and (b). They must have a spreader and anti-kickback fingers. The spreader is not necessary when rabbeting, ploughing, grooving or for cutting dados.
    - (e) Fully guard the part of the table saw beneath the table.
    - (f) Use push sticks to guide short stock and ends through table saws without self-feeding devices.
    - (7) Wobble saws. Do not insert wedges between a saw disk and its collar to form a "wobble saw" for rabbeting.
 

**NOTE:** This rule does not apply to properly designed and adjustable rabbeting blades.
    - (8) Cracks in blades. Do not use a circular saw blade with a crack greater in length than those in the following table: [Table not included. See ED. NOTE.]
 

[ED. NOTE: Tables referenced are available from the agency.]  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06
- 437-004-2100 Grinders**
- (1) Scope — These rules apply to all grinders except:
    - (a) Standards for portable, hand-held power-driven grinders are in OAR 437-004-2230, Division 4/P.
    - (b) Natural sandstone wheels.
    - (c) Metal, wooden, cloth or paper wheels or discs with a layer or layers of abrasive on the surface.
  - (2) Definitions.
    - (a) Abrasive Wheel — cutting device made of abrasive grains held together by organic or inorganic bonds, including diamond and reinforced wheels.
    - (b) Off-hand Grinding — The grinding of anything held in the operator's hand.
    - (c) Portable Grinding — A grinding operation where the grinding machine is hand held and easily moved from one place to another.
    - (d) Safety Guard — An enclosure for an abrasive wheel. It has a peripheral and two side members. Its purpose and design is to contain the pieces of the wheel if the wheel breaks while in use.
  - (3) Use.
    - (a) Mount grinders securely on the floor, bench, foundation or other structure.
    - (b) Do not use grinders that vibrate or are out of balance.
    - (c) Do not use abrasive wheels that are out of round or out of balance.
    - (d) Off-hand grinding machines must have work rests that are:
      - (A) Rigid and adjustable to compensate for wheel wear.
      - (B) Kept adjusted to within 1/8 inch of the wheel to prevent work from jamming between the wheel and the rest.
    - (e) Securely tightened after each adjustment.
    - (f) Do not adjust a moving wheel.
    - (g) Do side grinding only on wheels designed for that purpose.
 

**NOTE:** Dressing on the side of straight wheels is acceptable only with very light pressure.
  - (4) Mounting.
    - (a) Assure that grinding wheels fit freely but not loosely on the spindle, sleeves or adapters and remain free under all grinding conditions.



(b) Do not operate an abrasive wheel designed to be held by flanges unless it is properly mounted between suitable flanges. Flanges must be at least 1/3 the diameter of the wheel, except for those types requiring flanges of a special design.

(c) Install blotters (compressible washers) between flanges and abrasive wheel surfaces to insure uniform distribution of flange pressure.

(d) Properly position the safety guard after mounting a wheel.

(e) Run the grinder at operating speed after mounting an abrasive wheel with the safety guard in place or in a protected enclosure for at least one minute before using it. Keep employees away from the front of the wheel during this time.

(f) Do not use wheels larger than those recommended by the manufacturer.

(5) Safety guards.

(a) Use abrasive wheels larger than 2 inches in diameter only on machines with safety guards.

(b) These do not require safety guards:

(A) Specially-shaped abrasive wheels mounted in a mandrel-type bench or floor stand and used for and commonly known as "sickle grinding stones or wheels."

(B) Abrasive wheels where the work itself provides full protection but only while the wheel is within the area of protection.

**NOTE:** Abrasive wheel safety guards must meet the design specifications of the American National Standard Code for the Use, Care, and Protection of Abrasive Wheels (ANSI B7.1-1988).

(c) Abrasive wheels that cover the spindle end, nut, and outer flange projection of the wheel must have guards. Guard the sides and periphery of the wheel except for that degree of exposure permitted below.

(A) Bench and floor stands.

(i) The maximum permissible angle of exposure is 90°. Begin this exposure at a point not more than 65° above the horizontal plane of the wheel spindle.

(ii) Do not exceed 125° exposure where the nature of the work requires contact with the wheel below the horizontal plane of the spindle. Begin this exposure at a point not more than 65° above the horizontal plane of the wheel spindle.

(B) Swing frame grinders. The maximum permissible angle of exposure is 180°. Enclose the top half of the wheel.

(C) Top grinding. Do not exceed 60° exposure of the grinding wheel periphery where the work contacts the top of the wheel.

(d) The peripheral protecting part of safety guards must adjust to compensate for wheel wear when the operator stands in front of the opening.

(e) Maintain 1/4 inch between the wheel periphery and the adjustable tongue or the guard above the wheel.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2220**

##### **General Requirements — Small Tools**

(1) Employers are responsible for the safe condition of tools and equipment used by employees. This includes tools and equipment that belong to employees.

(2) Do not use defective tools.

(3) When not in use, place tools where they will not create a hazard.

(4) Do not use tools whose electric cords have damaged insulation or defective parts.

(5) Do not leave power supply lines or hoses where they may be damaged or create a hazard.

(6) Tool handles must have no sharp edges or splinters and be firmly attached to the tool. Wooden handles of tools must be of firm straight grained stock.

(7) Dress or grind the heads of shock tools (such as hammers, sledges, and cold chisels) as they begin to mushroom or crack. When they show a tendency to chip, take them out of service.

(8) Keep the cutting edges of tools uniformly sharp.

(9) Use heavy leather holsters, guards or equivalent protection for sharp-edged or sharp-pointed tools carried on the worker's person.

(10) When using sharp-edged cutting tools, wear appropriate protective equipment such as gloves, aprons and leg guards.

(11) Use spark-resistant hand tools in explosive or flammable atmospheres.

**NOTE:** Compressed air used for cleaning. See 4/M, OAR 437-004-1505(4)

for rules about cleaning with compressed air or gas.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2230**

##### **Guarding and Operation of Portable Powered Tools**

(1) Portable powered tools.

(a) Portable circular saws.

(A) All portable, power-driven circular saws with a blade diameter greater than 2 inches must have guards above and below the base plate or shoe. The upper guard must cover the saw to the depth of the teeth, except for the minimum arc to permit tilting the base for bevel cuts. The lower guard must cover the saw to the depth of the teeth, except for the minimum arc that allows proper retraction and contact with the work. When the tool is taken out of the work, the lower guard must automatically and quickly return to covering position. This does not apply to meat cutting saws.

(B) In addition to the provisions in (1)(a)(A) above, the lower guard must have a lug or lever, remote from the blade teeth, that allows the operator to safely lift the guard for starting unusual cuts.

(b) Switches and controls.

(A) All hand-held powered circular saws with a blade diameter more than 2 inches, electric, hydraulic or pneumatic chain saws and percussion tools without positive accessory holding means must have a constant pressure switch or control that will shut off the power when pressure is released.

(B) The following hand-held powered tools must have a constant pressure control switch. They may have a lock-on control if a single motion of the same finger or fingers that turns it on can turn it off.

(i) Tappers, drills, fastener drivers, horizontal, vertical and angle grinders with wheels more than 2 inches in diameter. Disc sanders with discs more than 2 inches in diameter. Belt sanders, reciprocating saws, saber, scroll and jig saws with blade shanks more than a nominal 1/4-inch and other similarly operating powered tools.

(C) All other hand-held powered tools may have either a positive "on-off" control, or other controls as in (1)(b)(A) and (B) above.

(i) Saber, scroll and jig saws with non-standard blade holders may use blades with shanks which are non-uniform in width, if the narrowest part of the shank is an integral part in mounting the blade.

(ii) Measure the blade shank width at the narrowest part of the blade when saber, scroll and jig saws have non-standard blade holders.

(iii) "Nominal" in this subparagraph means +0.05-inch.

(D) Exclusions. This subparagraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, garden appliances, household and kitchen appliances, personal care appliances or to fixed machinery.

(c) Power chain saws.

(A) In addition to (1)(b)(A) above, all power chain saws must meet American National Standard B175.1-1991, Safety Code for Power Chain Saws.

(B) Inspect power chain saws daily when in use and always keep them in good repair. Do not use saws with cracked or loose handle bars or defective parts.

(C) Stop power chain saw engines before fueling.

(D) Power chain saws must have a working chain brake if originally equipped with one.

(E) Chain brakes and other safety features must always work correctly.

(F) All hand-held gasoline powered chain saws must have a constant pressure throttle control that will shut off power to the saw chain when the pressure is released.

(G) Employees using chain saws must wear flexible ballistic nylon pads, chaps or other equivalent protection in a manner that protects the legs from the thigh to the top of the boot. Employers must provide and pay for this equipment.

(H) Do not drop-start chain saws or other power saws.

**NOTE:** Drop-starting saws is permitted outside of the basket of an aerial lift only after ensuring that the area below the aerial lift is clear of people.

(I) The operator must have secure footing when starting the saw.

(J) Start and operate the saw only when all other workers are clear.

(K) Stop the engine when carrying the power saw but not between cuts during consecutive felling, bucking, limbing or cutting operations.

(i) The chain must not be turning and the operator's hand must be off the throttle lever while moving between work locations.

(ii) Carry small chain saws at your side with the bar of the saw pointed to the rear.

(L) Stop the engine for all cleaning, refueling, adjustments, and repairs to the motor.

(d) Portable belt sanders. Belt sanders must have guards at each nip point where the sanding belt runs onto a pulley. These guards must prevent the operator's hands or fingers from contacting the nip points. The unused run of the sanding belt must have guards against accidental contact.

(e) Cracked saws. Do not use cracked saws.

(f) Grounding. Portable electric powered tools must meet the requirements of Subdivision 4/S.

(2) Pneumatic tools and hose.

(a) Only use compressed air supply hose and hose connections rated for the pressure and service required by the tools they serve.

(b) There must be a shut-off valve at the manifold or permanent pipe outlet of the compressed air supply.

(c) Do not couple or uncouple hose without first shutting off the compressed air supply unless the couplers have check valves that automatically shut it off.

(d) Pneumatic fastener-driving tools and other power-driven fastener tools, except as allowed in (e) below, must have a safety device to prevent ejection of nails, staples or fasteners when the tool is not in firm contact with the work.

(e) You may use power-driven fastener-driving tools without the safety device only when using staples with a diameter of .0475-inch (18 gauge A.W.G.) or less and the operator and all workers within 15 feet are wearing suitable eye protection. This does not apply to office staplers.

(f) Do not use oxygen or combustible gases to drive pneumatic tools.

(g) Direct the exhaust from pneumatic power tools away from the operator.

(3) Portable abrasive wheels

(a) Definitions:

(A) Mounted wheels. Mounted wheels of 2-inch diameter or smaller, of various shapes. They may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels.

(B) Organic bonded wheels. Organic wheels are wheels bonded by an organic material such as resin, rubber, shellac or other similar bonding agent.

(C) Portable grinding. A grinding operation where the grinding machine is hand-held and may move easily from one location to another.

(D) Reinforced wheels. The term "reinforced" as applied to grinding wheels defines a class of organic wheels that contain strengthening fabric or filament. The term "reinforced" does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.

(E) Safety guard. A safety guard is an enclosure to restrain the pieces of the grinding wheel if it breaks while in use.

(F) Tuck pointing. Removal, by grinding, of cement, mortar or other non-metallic jointing material.

(G) Tuck pointing wheels. Tuck pointing wheels, Type 1, reinforced organic bonded wheels have diameter, thickness and hole size

dimension. They are subject to the same limitations of use and mounting as Type 1 wheels.

(H) Limitation: Wheels used for tuck pointing should be reinforced, organic bonded.

(I) Type 11 flaring cup wheels. Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always done on the rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels.

(J) Type 11 Flaring Cup Wheels Figure 1 Side grinding wheel with a wall flared or tapered outward from the back. Wall thickness at the back is normally greater than at the grinding face (W).

(K) Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. Also, when unthreaded hole wheels are specified the inside flat, K dimension, must be large enough to hold a suitable flange.

(L) Type 6 straight cup wheels. Type 6 cup wheels have diameter, thickness, hole size, rim thickness and back thickness dimensions. Grinding is always done on the rim face, W dimension.

(M) Type 6 Straight Cup Wheels Figure 2 Side grinding wheel with a diameter, thickness and hole with one side straight or flat and the opposite side recessed. This type, differs from Type 5 in that the grinding is on the wall of the abrasive created by the difference between the diameter of the recess and the outside diameter of the wheel. Therefore, the wall dimension "W" takes precedence over the diameter of the recess as an essential intermediate dimension to describe this shape type.

(N) Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified, the inside flat, K dimension, must be large enough to hold a suitable flange.

(O) Type one straight wheels. Type 1 straight wheels have diameter, thickness and hole size dimensions and should be used only on the periphery. Mount type 1 wheels between flanges. Type 1 Straight Wheels Figure 3 Peripheral grinding wheel with a diameter, thickness and hole. [Figures not included. See ED. NOTE.]

(P) Limitation: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless or surface grinding applications. Maximum hole size for all other applications should not exceed one-half wheel diameter.

(b) General requirements. Use abrasive wheels only on machines with safety guards as in OAR 437-004-2230(3)(a) through (d).

(A) Exceptions. The requirements of paragraph OAR 437-004-2230(3)(a) do not apply to the following classes of wheels and conditions.

(i) Wheels for internal work while within the work being ground;

(ii) Mounted wheels, 2 inches and smaller in diameter, used in portable operations (see definition of Mounted Wheel); and

(iii) Types 16, 17, 18, 18R, and 19 cones and plugs and threaded hole pot balls where the work offers protection.)

(iv) A safety guard must cover the spindle end, nut and flange projections. Mount the safety guard so as to maintain proper alignment with the wheel. The strength of the fastenings must exceed the strength of the guard.

(v) Exception. If the work provides a suitable measure of protection to the operator, safety guards may allow exposure to the spindle end, nut and outer flange. Where the work entirely covers the side of the wheel, you may omit the side covers of the guard.

(vi) Exception. On portable machines designed for and used with, type 6, 11, 27, and 28 abrasive wheels, cutting off wheels and tuck pointing wheels, you may leave the spindle end, nut and outer flange exposed.

(b) Cup wheels. Protect cup wheels (Types 6 and 11) by:

(A) Using safety guards in OAR 437-004-2230(3)(a); or,

(B) Using special "revolving cup guards" that mount behind the wheel and turn with it. They must be steel or other material with adequate strength and must enclose the wheel sides upward from the

back for one-third of the wheel thickness. The mounting features must conform with all regulations. (See OAR 437-004-2230(3)(e).) Keep a maximum clearance of 1/16-inch between the wheel side and the guard; or,

(C) Using another form of guard that insures protection equal to that provided by the guards in OAR 437-004-2230(3)(a)(A) or (B).

(c) Vertical portable grinders. Safety guards on machines known as right angle head or vertical portable grinders must have a maximum exposure angle of 180 degrees. Place the guard between the operator and the wheel during use. Adjust the guard to deflect pieces of a broken wheel away from the operator. (See Figure 4.) [Figures not included. See ED. NOTE.]

(d) Other portable grinders. The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines must not exceed 180 degrees. Enclose the top half of the wheel. (See Figures 5 and 6.) [Figures not included. See ED. NOTE.]

(e) Mounting and inspection of abrasive wheels.

(A) Immediately before mounting, inspect all wheels to make sure they are not damaged. Check the spindle speed of the machine before mounting the wheel to be sure it does not exceed the maximum operating speed marked on the wheel.

(B) Grinding wheels must fit freely on the spindle and remain free under all grinding conditions. Keep a controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) to avoid excessive pressure from mounting and spindle expansion.

(C) All contact surfaces of wheels, blotters and flangers must be flat and free of foreign matter.

(D) When using a bushing in the wheel hole it must not exceed the width of the wheel nor contact the flanges.

(E) Do not operate an abrasive wheel designed to be held by flanges unless it is properly mounted between suitable flanges. Flanges must be at least one-third the diameter of the wheel, except for those types requiring flanges of a special design.

(F) Install blotters (compressible washers) between flanges and abrasive wheel surfaces to insure uniform distribution of flange pressure.

(f) Excluded machinery. OAR 437-004-2230(3) does not cover natural sandstone wheels and metal, wooden, cloth or paper discs with a layer of abrasive on the surface.

(4) Tools driven by internal combustion engines.

(a) Tools driven by internal combustion engines must have a positive "On" and "Off" ignition switch that will remain in either position.

(b) Tools driven by internal combustion engines must have effective means to control power except those that operate at constant speed. Throttle controls must return the engine to idling speed when released.

(c) Tools driven by internal combustion engines must have a self-rewinding starting device or be equally safe.

(d) Exhaust ports on tools driven by internal combustion engines must have mufflers and deflect exhaust fumes away from the operator when the tool is in use in its normal operating position.

(e) Stop the engine before fueling tools driven by an internal combustion engine.

(f) You must be able to quickly remove sling-carried tools powered by attached portable internal combustion engines.

(g) Inspect the fuel system of sling-carried tools before each use. Fix any defect immediately.

(5) Explosive actuated fastening tools.

(a) Definitions.

(A) Angle control. A safety feature designed to prevent a tool from operating when tilted beyond a pre-determined angle. Cased Power Load. A power load with the propellant contained in a closed case. Caseless Power Load. A power load with the propellant in solid form not requiring containment.

(A) Direct-Acting Tool. A tool in which the expanding gas of the power load acts directly on the fastener to be driven.

(B) Explosive power load, also known as load. Any form of any substance that can produce a propellant force.

(C) Fixture. A special shield that gives equal protection where the standard shield is not usable.

(D) Hammer-operated piston tool — low-velocity type. A tool that uses a heavy mass hammer and a load to move a captive piston to drive a stud, pin or fastener into a work surface. It always starts the fastener at rest and in contact with the work surface. Its design must limit the mean velocity of the stud, pin or fastener to a maximum of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(E) Head. That part of a fastener that extends above a work surface after being properly driven.

(F) High-velocity tool. A tool or machine that uses a load to propel or discharge a stud, pin or fastener, at velocities greater than 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(G) Indirect-Acting Tool. A tool in which the expanding gas of the powder load acts directly on a captive piston that in turn drives the fastener.

(H) Low-velocity piston tool. A tool that uses a load and captive piston to drive a stud, pin or fastener into a work surface. Its design must limit the mean velocity to a maximum of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(I) Misfire. A condition in which the powder load fails to ignite after an attempt to fire the tool.

(J) Powder-Actuated Fastening System. A method comprising the use of a powder-actuated tool, a power load and a fastener.

(K) Powder-Actuated Tool, also known as Tool. A tool that uses the expanding gases from a power load to drive a fastener.

(L) Protective shield or guard. A device or guard to confine flying particles, attached to the muzzle end of the tool.

(M) Stud, pin, or fastener. A fastening device specifically designed and manufactured for use in explosive-actuated fastening tools.

(N) Test Velocity. A series of deliberately free-flighted fasteners whose velocities are measured 6 1/2 feet from the muzzle end of the tool using accepted ballistic test methods.

(O) To chamber. To fit properly without the use of excess force and without being loose in the chamber.

(P) Tool. Unless indicated otherwise, an explosive-actuated fastening tool and all its accessories.

(b) General requirements.

(A) Explosive-actuated fastening tools actuated by explosives or any similar means that propel a stud, pin, fastener or other object to affix it to another object must meet the design requirements in paragraph (b) below. This requirement does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard and the like or to stud welding equipment.

(B) Operators and assistants using tools must wear eye protection. If required by the working conditions, use head and face protection as required under Personal Protective Equipment (4/I).

(b) Inspection, maintenance, and tool handling.

(A) High-velocity tools. High velocity tools must have these characteristics:

(i) The muzzle end of the tool must have a protective shield or guard at least 3 1/2 inches in diameter, mounted perpendicular to and concentric with the barrel. It must confine any flying fragments or particles that might be a hazard when fired.

(ii) Where a standard shield or guard will not work or where it does not provide adequate protection, an alternate device is acceptable. It must be built by the manufacturer of the tool, and provide an equal degree of protection.

(iii) It must be impossible to fire the tool unless it has a standard protective shield or guard, or the special device in (ii) above.

(I) The firing mechanism must prevent the tool from firing during loading or preparation to fire, or if dropped while loaded.

(II) Firing of the tool must require at least two separate and distinct actions of the operator. The final firing movement must be separate from the action of bringing the tool into the firing position.



(v) The tool must not work unless the operator is holding the tool against the work surface with a force at least 5 pounds more than the total weight of the tool.

(vi) The tool must not be operable with the standard guard indexed to the center position if any bearing surface of its guard tilts more than 8 degrees from contact with the work surface.

(vii) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.

(B) Tools of the low-velocity piston type must have the characteristics in (i) through (iv) below. The muzzle end of the tool must allow suitable protective devices, designed and built by the manufacturer of the tool, to be mounted perpendicular to the barrel. There must be a standard spall shield with each tool.

(I) In ordinary use the tool must not propel or discharge a stud, pin or fastener while loading or during preparation to fire or if dropped while loaded.

(II) Firing of the tool must depend on at least two separate and distinct actions of the operator. The final firing movement must be separate from the operation of bringing the tool into the firing position.

(iii) The tool must not be operable unless the operator is holding it against the work surface with a force at least 5 pounds greater than the total weight of the tool.

(iv) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.

(C) Hammer operated piston tools, low-velocity type, must have the characteristics in (i) through (iv) below.

(i) The muzzle end of the tool must allow suitable protective devices, designed and built by the manufacturer of the tool, to be mounted perpendicular to the barrel. There must be a standard spall shield with each tool.

(ii) In ordinary use the tool must not propel or discharge a stud, pin or fastener while loading or during preparation to fire or if dropped while loaded.

(iii) Firing of the tool must depend on at least two separate and distinct actions of the operator. The final firing movement must be separate from the operation of bringing the tool into the firing position.

(iv) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.

(c) Requirements for loads and fasteners.

(A) There must be a standard way to identify the power levels of loads.

(B) Do not use a load (cased or caseless) that will accurately chamber in any existing approved commercially available low-velocity piston tool or hammer operated piston tool, low-velocity type, if it will cause a fastener to have a mean velocity greater than 300 feet per second when measured 6.5 feet from the muzzle end of the barrel. No individual test firing of a series can exceed 300 feet per second by more than 8 per cent.

(C) Only use fasteners specifically made for a given tool.

(d) Operating requirements.

(A) Before using a tool, inspect it to see that it is clean, all moving parts operate freely and that the barrel is free of obstruction.

(B) When a tool develops a defect during use, immediately stop using it.

(C) Do not load tools until just prior to the intended firing time. Do not point loaded or empty tools at anyone.

(D) Do not leave loaded tools unattended.

(E) If the tool misfires, hold it in the operating position for at least 30 seconds. Then try to operate the tool a second time. Wait another 30 seconds with the tool in the operating position. If it still does not fire remove the explosive load according to the manufacturer's instructions.

(F) Do not leave tools unattended where they are available to unauthorized persons.

(G) Do not drive fasteners into very hard or brittle materials like cast iron, glazed tile, surface-hardened steel, glass block, face brick or hollow tile.

(H) Do not drive fasteners into soft materials so that the projectile could exit the other side:

(i) Do not drive fasteners directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner or into steel surfaces closer than 1/2-inch from the unsupported edge or corner, unless the tool has a special guard. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or 1/4-inch in steel.)

(ii) When fastening other materials, such as a 2-inch by 4-inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than 7/32-inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.

(J) Do not drive fasteners through existing holes unless you use a positive guide for accurate alignment.

(K) Do not drive a fastener into a spalled area caused by an unsatisfactory fastening.

(L) Do not use explosive actuated tools in an explosive or flammable atmosphere.

(M) Use all tools with the correct shield, guard or attachment recommended by the manufacturer.

(N) Take damaged or defective tools out of service. Inspect tools at regular intervals and repair them according to the manufacturer's specifications.

[ED. NOTE: Figures referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 7-2008, f. & cert. ef. 5-30-08

#### **437-004-2240**

##### **Power Lawnmowers**

(1) General requirements.

(a) Powered walk-behind, riding-rotary and reel lawnmowers designed for sale to the general public must meet the design specifications in "American National Standard Safety Specifications for Power Lawnmowers" ANSI/OPEI B71.1-1996. These specifications do not apply to a walk-behind mower converted to a riding mower by the addition of a sulky. Also, these specifications do not apply to flail mowers, sickle bar mowers or mowers designed for commercial use.

(b) Guard or place all power-driven chains, belts and gears to prevent accidental contact with the operator, during normal starting, mounting and operation of the machine.

(c) There must be a shutoff device to stop the motor or engine. It must require manual and intentional reactivation to restart the motor or engine.

(d) Clearly mark all positions of the operating controls.

(e) The phrase, "Caution. Be sure the operating control(s) is in neutral before starting the engine," or similar wording must be clearly visible at an engine starting control point on self-propelled mowers.

(2) Walk-behind and riding rotary mowers.

(a) Enclose the mower blade except on the bottom. The enclosure must extend to or below the lowest cutting point of the blade in the lowest blade position.

(b) There must be instructions near the opening warning not to use the mower without either the catcher assembly or the guard in place. This does not apply to side discharge mowers or those with a mulching plug in place.

(c) Properly and completely installed catcher assemblies must not create a hazard.

(d) The word "Caution," or stronger wording, must be on the mower at or near each discharge opening.

(e) Blade(s) must stop from the manufacturer's specified maximum speed within 15 seconds after declutching or shutting off power.

(3) Walk-behind rotary mowers.

(a) The horizontal angle of the grass discharge opening(s) in the blade enclosure, must not direct discharge toward the operator area.

(b) There must be one of the following at all openings in the blade enclosure intended for the discharge of grass:

(A) A minimum unobstructed horizontal distance of 3 inches from the end of the discharge chute to the blade tip circle.

(B) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar must be no higher than the bottom edge of the blade enclosure.

(c) Keep the handle attached to the mower to prevent loss of control by unintentional uncoupling while the engine is running.

(d) There must be a positive upstop or latch for the handle in the normal operating position(s). The upstop must not be subject to unintentional disengagement when using the mower. The upstop or latch must not allow the center or the handle grips to come closer than 17 inches horizontally behind the closest path of the mower blade(s) unless manually disengaged.

(e) A swing-over handle, that complies with the above requirements, is acceptable.

(f) Wheel drive disengaging controls, except deadman controls, must move opposite to the direction of the vehicle motion in order to disengage the drive. Deadman controls must automatically interrupt power to a drive when the operator lets go and may operate in any direction to disengage the drive.

(4) Riding rotary mowers.

(a) Opening(s) must not allow grass or debris to discharge directly toward any part of an operator seated in a normal operator position.

(b) One of the following must be at all grass discharge openings in the blade enclosure:

(A) A minimum unobstructed horizontal distance of 6 inches from the end of the discharge chute to the blade tip circle.

(B) A rigid bar fastened across the discharge opening, secured to prevent removal without the use of tools. The bottom of the bar must be no higher than the bottom edge of the blade enclosure.

(c) Mowers must have stops to prevent jackknifing or locking of the steering.

(d) Mowers must have working brakes or a manufacturer designed system for stopping.

(e) Hand-operated wheel drive disengaging controls must move opposite to the direction of vehicle motion to disengage the drive. Foot-operated wheel drive disengaging controls must be depressed to disengage the drive. Deadman controls, both hand and foot operated, must automatically interrupt power to a drive when the operator removes the actuating force and may operate in any direction to disengage the drive.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2260**

##### **Other Portable Tools and Equipment**

(1) Jacks.

(a) Definitions.

(A) Jack. A jack is an appliance for lifting and lowering or moving horizontally a load by pushing.

(B) Rating. The maximum safe load throughout its course of travel.

(b) Loading and marking.

(A) Do not use a jack with a rating less than the weight of the intended load.

(B) Keep the rated load legibly and permanently marked on the jack.

(c) Operation and maintenance.

(A) If the jack is not on a firm foundation, block its base. If the cap might slip, place a block between it and the load.

(B) Watch the stop indicator and do not go past the limit of travel.

(C) Quickly crib, block or otherwise secure the load after raising it.

**NOTE:** This does not apply when changing wheels on 4-wheeled vehicles when only one wheel is raised and the employee does not place any part of their body under the vehicle.

(D) Hydraulic jacks exposed to freezing temperatures must contain an adequate antifreeze liquid.

(E) Inspect jacks often enough to assure safe operation but at least:

(i) Once every 6 months for constant or intermittent use; or

(ii) Immediately after an abnormal load or shock.

(F) Mark defective jacks and do not use them until repairs are made.

(2) Abrasive blast cleaning nozzles. Blast cleaning nozzles must have an operating valve that must be held open manually. Provide a support on which the nozzle may rest when it is not in use.

(3) Hand-powered equipment.

(a) Each hand-powered hoist must have an effective brake or equivalent and a ratchet and pawl strong enough to hold the maximum load in any position.

(b) Do not allow hand crank handles to work loose from the drive shaft.

(4) Wheelbarrows, hand trucks, dollies, pallet jacks.

(a) Wheelbarrows, hand trucks, dollies and pallet jacks must be appropriate for the specific work. Do not load them beyond safe capacity. Bodies and frames must be metal or strong wood and able to withstand severe handling and the intended loads.

(b) Keep wheelbarrows, hand trucks, dollies and pallet jacks in good repair.

(c) Do not leave wheelbarrows, hand trucks, dollies, and pallet jacks where they can tip, fall or roll.

(5) Varmint Killers (Explosive Gas and Oxygen) A device for injecting a mix of propane (LPG) and oxygen into ground holes and then igniting it to kill varmints.

**NOTE:** OAR 437-004-0710 Compressed Gases apply to all cylinders of gas.

(a) Follow all manufacturer instructions for use and maintenance of this equipment or this standard, whichever is safest.

(b) When transporting these devices in vehicles (other than in the field of use), or when done using them for more than one hour, back out the regulator pressure control screws.

(c) Employees under 18 years old may not operate this equipment.

(d) Employers must train all employees to operate this equipment safely and according to the manufacturer's instructions and these rules.

(e) Operating procedures.

(A) Tanks, valves, couplings, regulators, hose, and apparatus must be free from oily or greasy substances. Do not handle oxygen tanks or apparatus with oily hands or gloves. Never allow a jet of oxygen to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

(B) Handling tanks.

(i) Unless tanks are secured on a special truck, remove regulators and install valve-protection caps, when provided, before moving tanks.

(ii) Close tank valves when work is done.

(iii) Close valves of empty tanks.

(iv) Do not use a hammer or wrench to open tank valves. If opening the valve by hand does not work, check with the supplier.

(v) Do not repair or tamper with tank valves. Notify the supplier if you have trouble with a tank and follow their instructions as to its disposition.

(vi) Do not remove the stem from a diaphragm-type tank.

(C) Attachments and use.

(i) Fuel-gas tanks must have the valve end up when they are in use. Store and ship liquefied gases with the valve end up.

(ii) Before removing a regulator from a tank valve, close the tank valve and release the gas from the regulator.

(iii) Do not use regulators with cracked, broken, or defective parts.

(iv) Before attaching the regulator to a tank, fully release the regulators pressure adjusting screw.

(v) Close the tank valve and release the gas from the regulator before removing it from the tank.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-2310**

##### **General Requirements**

(1) Scope. This subdivision applies to agricultural welding, except the following types for which Subdivision 2/Q applies:

(a) Production type or amount of welding.

(b) Welding in confined spaces like tanks, vats, pits, or those defined in Subdivision 4/J, OAR 437-004-1250(1). This section (4/Q) covers some confined space welding topics. In those cases, follow this section in addition to the rules in Subdivision 2/Q.

(c) Welding with toxic or dangerous coatings or fluxes. This includes manganese, lead, zinc, cadmium, mercury, beryllium, or fluorine compounds.

(d) Welding or heating galvanized materials.

(2) Definition. Welder and welding operator is any operator of electric or gas welding and cutting equipment.

(3) Fire prevention and protection.

(a) Basic precautions. The basic precautions for fire prevention in welding or cutting work are:

(A) Fire hazards. Move either the object you are welding or cutting or any movable fire hazards in the area to a safe place.

(B) Guards. If you can move neither of the above, then use guards to confine the heat, sparks and slag to protect the immovable fire hazards.

(b) Special precautions. When the work falls within the scope of (3)(a)(B) above, additional precautions may be necessary:

(A) Combustible material. Wherever there are floor openings or cracks in the flooring, close them or take precautions so that sparks will not drop through to combustible materials on the floor below. Use the same precautions with cracks or holes in walls, open doorways and open or broken windows.

(B) Fire extinguishers. Keep appropriate fire extinguishing equipment ready for use.

(4) Before beginning. Before beginning, block portable equipment to prevent accidental movement.

(5) Welding or cutting containers.

(a) Clean first. Do not weld, use a torch or do abrasive cutting or other hot work on drums, barrels, tanks or other containers until they have been cleaned so that there are no flammable materials present or any substances that when subjected to heat, might produce flammable or toxic vapors. Disconnect and/or blank any pipe lines or connections to the drum or vessel.

(b) Test often. Use testing equipment prior to and frequently during the welding, torch or abrasive cutting or other hot work to insure that the container is free and remains free of flammable or toxic vapors.

(c) Vent and purge. Vent all hollow spaces, cavities or containers to air or allow gases to escape before preheating, cutting or welding.

(6) Protection of personnel.

(a)(A) General.

(B) Cable. Put welding cable and other equipment so that it is clear of passageways, ladders and stairways.

(b) Eye protection.

(A) Selection.

(i) Use helmets or hand shields when arc welding or arc cutting, excluding submerged arc welding. Helpers or attendants must use proper eye protection.

(ii) Use goggles or other suitable eye protection when gas welding or oxygen cutting. Spectacles without side shields, with suitable filter lenses are acceptable for gas welding on light work, for torch brazing or for inspection.

(iii) All operators and attendants of resistance welding or resistance brazing equipment must use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes.

(iv) Provide suitable goggles for brazing work not covered in (6)(b)(A)(i) through (6)(b)(A)(iii) above.

(B) Specifications for protectors.

(i) Helmets and hand shields must be an insulator for heat and electricity. Helmets, shields and goggles must not be flammable and must withstand sterilization.

(ii) Wear helmets and hand shields to protect the face, neck and ears from direct radiant energy from the arc.

(iii) "Lift front" welders' helmets must have a stationary safety glass on the inside of the frame next to the eyes to protect the welder from flying particles when the front is up. Where lens containers do not permit the use of safety glass, wear safety goggles.

(iv) When not using the "lift front" helmet with three glasses or when using the flat type helmet, wear other spectacle-type safety goggles in addition to the filter lens and cover glass.

(v) Use vented goggles to prevent fogging of the lenses as much as practicable.

(vi) Lenses must be tempered glass, substantially free from scratches, air bubbles, waves and other flaws.

(vii) Lenses must have permanent distinctive markings to show the source and shade.

**NOTE:** The following is a guide for the selection of the proper shade numbers. These recommendations may vary to meet the individual's needs.

Selection guide.

(viii) Filter lenses must meet the test for transmission of radiant energy prescribed by any of the consensus standards listed below:

(I) ANSI Z87.1-2003, "American National Standard Practice for Occupational and Educational Eye and Face Protection;"

(II) ANSI Z87.1-1989 (R-1998), "American National Standard Practice for Occupational and Educational Eye and Face Protection;" or

(III) ANSI Z87.1-1989, "American National Standard Practice for Occupational and Educational Eye and Face Protection."

**NOTE:** The Oregon OSHA Resource Center has copies for public review at 350 Winter Street NE, Salem OR 97309-0405.

(c)(A) Protective clothing. Protect employees exposed to the hazards created by welding, cutting or brazing with personal protective equipment according to 4/I, OAR 437-004-1005.

(B) Material. Do not wear clothing that is easily ignited or highly flammable, like that made from synthetic materials.

(d) Work in confined spaces.

(A) General. Where a welder must enter a confined space, follow the rules for confined space work elsewhere in this Subdivision, 4/Q, and in 4/J, 437-004-1250.

(B) Ventilation. Ventilation is a prerequisite to work in confined spaces. For ventilation requirements see OAR 437-004-2310(7).

(C) Securing cylinders and machinery. When welding or cutting is done in any confined space, the gas cylinders and welding machines must be left on the outside. Before starting, block heavy portable equipment wheels to prevent accidental movement.

(D) Electrode removal. When you stop arc welding for a period of time, like lunch or overnight, remove all electrodes from the holders and turn the machine off.

(E) Gas cylinder shutoff. When you stop gas welding or cutting for a period of time, like lunch or overnight, close the torch valves and shut off the gas supply to the torch at a point outside the confined area.

(7) Health protection and ventilation.

(a) General. Use general ventilation or a local exhaust system to keep the amount of toxic fumes, gases, or dusts below the limits in 4/Z, 437-004-9000.

(b)(A) Ventilation for general welding and cutting.

(B) General. Use mechanical ventilation when welding or cutting on metals not covered in (7)(e) through (7)(h) below. (For specific materials, see the ventilation requirements of (7)(e) through (7)(h) below.)

(i) In a space of less than 10,000 cubic feet (284 m<sup>3</sup>) per welder.

(ii) In a room having a ceiling height of less than 16 feet (5 m).

(iii) In confined spaces or where the welding space contains partitions, balconies or other structural barriers to the extent that they significantly obstruct cross ventilation.



(c)(A) Local exhaust hoods and booths. Mechanical local exhaust ventilation may be by means of either of the following:

(B) Hoods. Place movable hoods as close as practical to the work and with enough airflow for a velocity in the direction of the hood of 100 linear feet (30 m) per minute in the welding zone. The rates of ventilation to get this control velocity using a 3-inch (7.6 cm) wide flanged suction opening are in the following table: [Tables not included. See ED. Note.]

(d) Ventilation in confined spaces.

(A) Air replacement. Ventilate all welding and cutting in confined spaces to prevent the build-up of toxic materials or possible oxygen deficiency. This applies not only to the welder but also to helpers and other people in the area. Air replacing the withdrawn air must be clean and respirable.

(B) Airline respirators. Where it is impossible to provide such ventilation, use air-line respirators or hose masks approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health.

(C) Self-contained units. In areas immediately dangerous to life or health (IDLH), use self-contained breathing equipment. Use breathing equipment approved by the National Institute for Occupational Safety and Health.

(D) Outside helper. When welding in confined spaces and where welders and helpers use hose masks, hose masks with blowers or self-contained breathing equipment approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health, a worker must be on the outside of the confined space to insure the safety of those working within.

(E) Oxygen for ventilation. Never use oxygen for ventilation.

(e) Cleaning compounds.

(A) Manufacturer's instructions. In the use of cleaning materials, because of their possible toxicity or flammability, follow appropriate precautions such as manufacturer's instructions.

(B) Degreasing. Degreasing and other cleaning involving chlorinated hydrocarbons must be where no vapors will reach or be drawn into the atmosphere surrounding any welding operation. In addition, keep trichloroethylene and perchlorethylene out of atmospheres penetrated by the ultraviolet radiation of gas-shielded welding operations.

(f) Preservative coatings.

(A) Test first. Before welding, cutting or heating on any surface covered by a preservative coating whose flammability is unknown, a competent person must test to determine its flammability.

(B) Strip if needed. Prevent ignition of highly flammable hardened preservative coatings. When coatings are known to be highly flammable, strip them from the area to be heated to prevent ignition.

(g) Toxic preservative coatings.

(A) Enclosed spaces. In enclosed spaces, strip all surfaces covered with toxic preservatives of all toxic coatings for a distance of at least 4 inches from the area of heat application or the employees must use a respirator that protects them from toxic vapors.

(B) Strip if needed. Remove the preservative coatings a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not increase appreciably. Artificial cooling of the metal surrounding the heated area is acceptable to limit the size of the area you must clean.

(h) Cutting of stainless steels. Oxygen cutting, using either a chemical flux or iron powder or gas-shielded arc cutting of stainless steel, must include mechanical ventilation adequate to remove the fumes.

[ED. NOTE: Tables referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 2-2010, f. & cert. ef. 2-25-10

#### **437-004-2350**

#### **Oxygen-Fuel Gas Welding and Cutting**

(1) Scope. This subdivision applies to agricultural welding, except the following types that are covered by Subdivision 2/Q:

(a) Production type or amount of welding.

(b) Welding in confined spaces like tanks, vats, pits, or those defined in 4/J, OAR 437-004-1250(1). This section (4/Q) covers some confined space welding topics. In those cases, follow this section in addition to the rules in 2/Q.

(c) Welding with toxic or dangerous coatings or fluxes. This includes manganese, lead, zinc, cadmium, mercury, beryllium, or fluorine compounds.

(d) Welding or heating galvanized materials.

(2) General requirements.

(a) Flammable mixture. Do not use any device or attachment, not approved for the purpose, that allows air or oxygen to mix with flammable gases prior to consumption, except at the burner or in a standard torch.

(b) Maximum pressure. Never generate (except in approved cylinder manifolds), pipe or use acetylene at a pressure in excess of 15 p.s.i.g. (103 kPa gauge pressure) or 30 p.s.i.a. (206 kPa absolute). (The 30 p.s.i.a. (206 kPa absolute) limit is to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.) This requirement does not apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use. Never use liquid acetylene for any purpose.

(c) Apparatus. Use only approved apparatus such as torches, regulators or pressure-reducing valves.

(3) Cylinders and containers.

(a) Approval and marking.

(A) DOT. All portable cylinders used for the storage and shipment of compressed gases must meet regulations of the U.S. Department of Transportation, **49 CFR parts 171-179**.

(B) Markings. Compressed gas cylinders must have legible markings that identify the gas content. They must show either the chemical or the trade name of the gas. These markings must not be easily removable. If possible, the marking must be on the shoulder of the cylinder and conform to the American National Standard Method for Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI/CGA C-4, 1990.

(C) Connections. Compressed gas cylinders must have connections that comply with the American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI/CGA V-1, 1987.

(D) Protection cap. All cylinders with a water weight capacity of more than 30 pounds (13.6 kg) must have a means of connecting a valve protection cap or a collar or recess to protect the valve.

(b) Storage of cylinders, General.

(A) No heat. Keep cylinders away from radiators and other sources of heat.

(B) Inside storage. Inside buildings, store cylinders in a well-protected, well-ventilated, dry location, at least 20 feet (6.1 m) from highly combustible materials such as oil or excelsior. Locate storage spaces where cylinders will not be knocked over or damaged by passing or falling objects. Do not keep cylinders in unventilated enclosures such as lockers and cupboards.

(C) Empties. Empty cylinders must have their valves closed.

(D) Caps. Valve protection caps must always be in place, hand-tight, except when cylinders are in use or connected for use.

(E) Secure. Securely lash cylinders in place when necessary to prevent them from falling.

(c) Fuel-gas cylinder storage. Store acetylene cylinders valve end up.

(d) Oxygen cylinder storage.

(A) Oxygen storage. Do not store oxygen cylinders:

(i) Near highly combustible material, especially oil and grease;

(ii) Near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or any other substance likely to cause or accelerate fire.

(B) Not near fuel cylinders. Separate stored oxygen cylinders from fuel-gas cylinders or combustible materials (especially oil or grease), by at least 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high with a fire-resistance rating of at least one-half hour.

(e) Operating procedures.

(A) No oil or grease. Cylinders, cylinder valves, couplings, regulators, hose, and apparatus must be free from oily or greasy substances. Do not handle oxygen cylinders or apparatus with oily hands or gloves. Never allow a jet of oxygen to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

**(B) Handling cylinders.**

(i) Do not drop cylinders or allow them to strike each other.

(ii) Do not use valve-protection caps to lift cylinders from one vertical position to another. Do not use bars under valves or valve-protection caps to pry cylinders loose when frozen to the ground or otherwise fixed.

(iii) Unless cylinders are secured on a special truck, remove regulators and install valve-protection caps, when provided, before cylinders are moved.

(iv) Cylinders without fixed hand wheels must have keys, handles or non-adjustable wrenches on valve stems while they are in service. In multiple cylinder installations a single key or handle is acceptable for each manifold.

(v) Close cylinder valves before moving cylinders.

(vi) Close cylinder valves when work is done.

(vii) Close valves of empty cylinders.

(viii) Keep cylinders far enough away from the actual welding or cutting operation so that sparks, hot slag, or flame will not reach them. Otherwise, provide fire-resistant shields.

(ix) Do not set cylinders where they might become part of an electric circuit. Never tap an electrode against a cylinder to strike an arc.

(x) Do not use cylinders as rollers or supports, whether full or empty.

(xi) Do not use cylinders with altered or defaced numbers and markings.

(xii) Only the gas supplier, may mix gases in a cylinder. Only the owner of the cylinder or person authorized by them, may refill a cylinder.

(xiii) Do not allow anybody to tamper with safety devices in cylinders or valves.

(xiv) Do not drop or roughly handle cylinders.

(xv) Unless connected to a manifold, do not use oxygen from a cylinder without first attaching an oxygen regulator to the cylinder valve. Before connecting the regulator to the cylinder valve, open the valve slightly for an instant and then close it. Always stand to one side of the outlet when opening the cylinder valve.

(xvi) Do not use a hammer or wrench to open cylinder valves. If opening the valve by hand doesn't work, notify the supplier.

(xvii)(I) Do not repair or tamper with cylinder valves. Notify the supplier if you have trouble with a cylinder and follow their instructions as to its disposition.

(II) Do not remove the stem from a diaphragm-type cylinder.

**(C) Attachments and use.**

(i) Fuel-gas cylinders must have the valve end up when they are in use. Store and ship liquefied gases with the valve end up.

(ii) Before connecting a regulator to a cylinder valve, open the valve slightly and then close it immediately. Never crack a fuel-gas cylinder valve near other welding work or near sparks, flame, or other possible sources of ignition.

(iii) Before removing a regulator from a cylinder valve, close the cylinder valve and release the gas from the regulator.

(iv) There can be nothing on top of an acetylene cylinder when in use that may damage the safety device or interfere with the quick closing of the valve.

(v) If closing the valves will not stop leaks in cylinders and attachments, take them outdoors away from sources of ignition and allow them to slowly empty.

(vi) Put a warning near cylinders with leaking fuse plugs or other leaking safety devices. It must warn employees not to approach them with a lighted cigarette or other source of ignition. Plainly tag the cylinder and notify the supplier. Follow their instructions.

(vii) Do not tamper with safety devices.

(viii) Never use fuel-gas from cylinders through torches or other devices with shutoff valves without reducing the pressure through a suitable regulator attached to the cylinder valve or manifold.

(ix) Always open the cylinder valve slowly.

(x) Do not open an acetylene cylinder valve more than one and one-half turns of the spindle, and preferably no more than three-fourths of a turn.

(xi) If a cylinder takes a special wrench leave it in position on the stem of the valve while the cylinder is in use. For manifolded or coupled cylinders at least one such wrench must always be available for immediate use.

(xii) Do not use regulators with cracked, broken, or defective parts.

(xiii) Inspect union nuts and connectors on regulators before use. Do not use those with faulty seats.

(xiv) Before attaching the regulator to a cylinder, fully release the regulator's pressure adjusting screw.

(xv) Close the cylinder valve and release the gas from the regulator before removing it from the cylinder.

**(D) Blowpipes and torches.**

(i) Approved backflow preventer or flashback preventers must be between the blowpipe or torch and the hoses.

(ii) Use only friction lighters, stationary pilot flames or other recognized sources of ignition to ignite torches. Do not use matches or other hand held open flames.

(iii) When welding or cutting stops for an extended period of time, for example, during the lunch break, overnight or longer:

(I) Close the oxygen and fuel-gas cylinder or manifold valves;

(II) Open torch valves momentarily to release all gas pressure from the hoses and then close them;

(III) Release the regulator pressure adjusting screws; and

(IV) When the welding or cutting stops for a few minutes, closing only the torch valves is acceptable.

(iv) Follow the manufacturer's procedures for the sequence of operations in lighting, adjusting, and extinguishing blowpipe flames and connecting to the gas supply.

(v) Use a suitable cylinder truck, chain or steadying device to secure cylinders while in use.

(vi) Post signs conspicuously in fuel-gas storage areas. They must say, "DANGER — NO SMOKING, MATCHES OR OPEN LIGHTS," or equivalent wording.

(vii) Acetylene gas must not contact unalloyed copper except in a blowpipe or torch.

(viii) Do not use oxygen in pneumatic tools, in oil preheating burners, to start internal-combustion engines, to blow out pipelines, to "dust" clothing or work, to create pressure, or for ventilation.

(ix) After connecting welding or cutting apparatus to oxygen and fuel-gas cylinders, or when starting to reuse the apparatus after a half hour or more, let each gas flow through its respective hose separately for a few seconds to purge the hose of any mixture of gases.

(x) Never put down a torch unless the oxygen and fuel-gas have been completely shut off at the torch.

**NOTE:** Regulation of manifolds, piping systems, acetylene generators and calcium carbide are found in Division 2, 1910.253.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

**437-004-2400**

**Arc Welding and Cutting**

(1) Scope. This subdivision applies to agricultural welding, except the following types that are covered by Subdivision 2/Q:

(a) Production type or amount of welding.

(b) Welding in confined spaces like tanks, vats, pits, or those defined in 4/J, OAR 437-004-1250(1). This section (4/Q) covers some confined space welding topics. In those cases, follow this section in addition to the rules in 2/Q.

(c) Welding with toxic or dangerous coatings or fluxes. This includes manganese, lead, zinc, cadmium, mercury, beryllium, or fluorine compounds.

(d) Welding or heating galvanized materials.

(2) Instruction. Only trained and qualified workers will be allowed to run arc welding equipment.

(3) Application of arc welding equipment.

(a) General. Equipment that complies with the Requirements for Electric Arc-Welding Apparatus, NEMA EW-1-1983, National Electrical Manufacturers Association or the Safety Standard for Transformer-Type Arc-Welding Machines, ANSI/UL 551, 1993, Underwriters' Laboratories assures consideration of safety in design.

(b) Voltage. Do not exceed the following limits:

(A) Alternating-current machines.

(i) Manual arc welding and cutting — 80 volts.

(ii) Automatic (machine or mechanized) arc welding and cutting — 100 volts.

(B) Direct-current machines.

(i) Manual arc welding and cutting — 100 volts.

(ii) Automatic (machine or mechanized) arc welding and cutting — 100 volts.

(C) Special processes. When special welding and cutting processes require higher open circuit voltages than those above, there must be a way to prevent the operator from making accidental contact with the high voltage.

(4) Installation of arc welding equipment.

(a) General. Installation including power supply must be according to the requirements of subdivision 4/S.

(b) Grounding. Ground the frame or case of the welding machine (except engine-driven machines) according to subdivision 4/S.

(5) Operation and maintenance.

(a) Machine hook up. Before starting operations check all connections to the machine to make certain they are properly made. The work lead must be firmly attached to the work; magnetic work clamps must be free from adherent metal particles of spatter on contact surfaces. Coiled welding cable must be spread out before use to avoid serious overheating and damage to insulation.

(b) Grounding. Check the grounding of the welding machine frame. Give special attention to safety ground connections of portable machines.

(c) Manufacturers' instructions. Follow the printed rules and instructions supplied by the manufacturers.

(d) Electrode holders. When not in use place electrode holders so they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks.

(e) Electric shock. Do not use cables with splices within 10 feet (3 m) of the holder.

(f) Damage. Do not use work lead cables or electrode lead cables with damaged insulation or exposed conductors.

(g) Cable. Do not coil or loop the electrode cable around your body.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2810**

##### **General Requirements**

(1) Scope. This standard (4/S) covers electrical work and equipment in buildings and on premises. It applies to all work and equipment covered by other sections of Subdivision 4/S.

(2) Unless stated otherwise in OAR 437-004-2810 through 437-004-3075, all electrical work, equipment and systems must comply with standards under the jurisdiction of the Oregon Building Codes Division, Department of Consumer and Business Services.

(3) Do not allow employees to work near live power sources without protection from shock.

(4) Isolate exposed live electrical conductors from contact by persons or equipment.

**NOTE:** Paragraphs (3) and (4) above do not apply to electric fences or containment devices.

(5) Lights 7 feet or closer to the floor or work surface must have a guard, fixture or holder to protect the bulb or tube from breakage.

(6) Only qualified persons, authorized by the employer may make electrical repairs. (See Subdivision 4/B.)

(7) Install or remove fuses from live terminals only with special tools insulated for the voltage.

(8) When the exact location of underground electric power lines is unknown, workers using jackhammers, bars or other hand tools that may contact a line must use insulated protective gloves.

(9) Before beginning work near exposed lines or equipment, the employer must determine if they are live. If they are, you must advise the employees of the position of the lines, the hazards involved and the protective measures they must use.

(10) Before beginning work like digging, drilling or remodeling, that may lead to hidden power sources the employer must locate them and determine their voltage. Locate underground lines by calling 1-800-332-2344 or in the Portland Metropolitan area 246-6699. The employer must then:

(a) Post and maintain proper warning signs where such circuits exist; and

(b) Advise the employees of the position of the lines, the hazards involved and the protective measures they must use.

**NOTE:** If the work covered by (8) and (9) above might involve voltages over 750v, see OAR 437-004-3050.

(11) There must be sufficient space near electrical equipment to permit safe operation and maintenance.

(a) Near exposed parts, the minimum clearance from floor to ceiling must be at least 76 inches. There must be a clear radius of at least 36 inches in front of the panel.

(b) There must be enough clearance to permit at least a 90 degree opening of all doors or hinged panels.

(c) Do not store anything in front of electrical panels.

(12) There must be suitable barriers or other means to ensure that work space for electrical equipment is not used as a passageway when energized parts are exposed.

(13) Require workers to report all electric shocks to management or supervisors immediately.

(a) Check the equipment causing the shock and remove from service or repair it before further use.

(14) Electrical equipment must be free from recognized hazards that may cause death or serious physical harm. Use the criteria below to determine the safety of equipment.

(a) Electrical equipment must be listed or labeled, except custom-made components and utilization equipment. (See Division 4/B, OAR 437-004-0100, for definitions of listed and labeled.)

(b) Mechanical strength and durability, and for parts that enclose and protect other equipment, the adequacy of the protection.

(c) Classification by type, size, voltage, current capacity or specific use.

(d) Other factors that contribute to the practical safeguarding of employees using or likely to contact the equipment.

(15) Follow manufacturer's instructions or recommendations when installing listed or labeled equipment.

(16) In wet or damp locations, use only fixtures approved for that purpose. Install them so that water cannot enter or accumulate in wireways, lampholders, or other electrical parts.

(17) All pull boxes, junction boxes and fittings must have approved covers. Metal covers must be grounded.

(18) All wall plugs and switches must have approved, unbroken covers or faceplates and no broken parts.

(19) Receptacles, plugs, fixtures, lamp-holders lamps and other holders and outlets must have no exposed live parts.

**NOTE:** Rosettes and cleat-type lamp-holders may have exposed parts if they are 8 feet or higher above the floor.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-2850**

##### **Temporary Lighting and Wiring**

(1) Temporary Wiring.

(a) Walkways and similar locations must be kept clear of power cords.

(b) Ground all temporary wiring.

(c) Keep wiring equipment as vapor, dust, or fiber tight as intended by the manufacturer. There must be no loose or missing screws, gaskets, threaded connections, or other impairments to this tight condition.



(d) Take precautions to make open wiring inaccessible to unauthorized personnel.

(e) Temporary electrical power and lighting installations are acceptable during construction, remodeling, maintenance, repair, or demolition of buildings, structures, equipment, or similar activities.

(f) Temporary electrical power and lighting installations are acceptable for not more than 90 days for decorative lighting and as in (e) above.

(2) Temporary Lighting.

(a) Temporary lights must be at least 7 feet above the work surface or have guards to prevent contact with the bulb.

(b) Temporary lights must have electric cords, connections and insulation rated for their use.

(c) Do not suspend temporary lights by their cords unless the manufacturers' instructions allow the practice.

(d) Do not use brass shell, paper lined portable hand lamp holders. Hand lamps must have a handle and a substantial guard over the bulb.

(e) Portable extension lamps used where flammable vapors, gases, combustible dusts, easily ignitable fibers or flyings are present, must be approved for the type of hazard involved. Do not modify, repair or add to these systems without approval of the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2860**

##### **Flexible Cable and Extension Cords**

(1) Extension cords used with portable electric tools and appliances must be at least three-wire type and have an approved grounding plug and receptacle providing ground continuity.

(2) Use only extension cords rated for the intended use.

(3) Do not use worn or frayed electric cords and cables.

(4) Protect flexible cables and extension cords against damage caused by traffic, sharp corners, pinching or projections.

(5) Cover or elevate cables that pass through work areas to protect them from damage.

(6) Do not use staples to fasten flexible cables and extension cords. Do not hang them from nails or suspend them by wire.

(7) Do not use flexible cables and extension cords as a substitute for fixed structural wiring.

(8) Flexible cables and extension cords must not run through holes in walls, ceilings, or floors or through doorways, windows, or similar openings, except during construction.

(9) Electrical conductors must be spliced or joined in splicing devices suitable for the use, by brazing, welding or soldering with a fusible metal or alloy.

(a) Secure soldered splices first mechanically and electrically without solder, then solder. (Use rosin-core solder, NOT acid core solder, when joining electrical conductors.)

(b) Insulation on splices and joints and the free ends of conductors must be equivalent to the original insulation.

(c) Splices for flexible cords must provide flexibility and use characteristics of the original cord. Vulcanized splices or equivalent means, such as shrinkable materials, are acceptable for repairs.

(10) Do not plug extension cords together to make them longer.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2870**

##### **Attachment Plugs and Receptacles**

(1) Attachment plugs must be heavy enough to endure rough use and have a suitable cord grip to prevent strain on the terminal screws.

(2) Use only approved, grounding type attachment plugs.

(3) Use only approved concealed contact type receptacles for attachment plugs. They must extend ground continuity. They must allow removal of the plug without exposing live parts to contact.

(4) Polarized attachment plugs, receptacles and cord connectors must have proper continuity.

(5) Use only attachment plugs, receptacles and cord connectors that have the grounded (common) terminal conductor identified. If the terminal is not visible, the connection hole must be marked with the word "white."

(6) The terminal for the equipment grounding conductor (bare wire) must have:

(a) A green colored, not easily removable terminal screw with hexagonal head; or

(b) A green colored, hexagonal, not easily removable terminal nut; or

(c) A green colored pressure wire connector.

(d) If the terminal for the grounding conductor is not visible, mark the conductor entrance hole with the word "green" or otherwise identify it with the color green.

(e) A grounded conductor must not be attached to any terminal or lead to reverse the designated polarity.

(7) Where portable cords supply different voltages or types of current (A.C. or D.C.) receptacles and attachment plugs must not be interchangeable.

(8) Attachment plugs or other connectors supplying equipment at more than 300 volts must have skirts or otherwise confine arcs.

(9) Do not use a grounding terminal or grounding-type device on a receptacle, cord connector, or attachment plug for purposes other than grounding.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2880**

##### **Cord and Plug-Connected Equipment**

(1) Portable or plug-connected equipment with noncurrent-carrying metal parts must be grounded.

(2) It is not necessary to ground portable tools and appliances with approved double insulation, or its equivalent, but they must have distinctive markings.

(3) Ground exposed noncurrent-carrying metal parts of fixed electrical equipment, including motors, frames, electrically driven machinery, refrigerators, freezer, electric ranges, clothes dryers, etc.

(4) Cord and plug-connected high-pressure spray washing machines must have a factory installed ground-fault circuit interrupter that is an integral part of the attachment plug or is in the supply cord within 12 inches of the attachment plug.

(5) Enclose or separate parts of electric equipment that in ordinary operation produces arcs, sparks, flames, or molten metal. Isolate this equipment from all combustible material.

(6) Do not use electrical equipment without descriptive markings that identify the approving organization (such as U.L.) for the product. Other markings that give voltage, current, wattage, or other ratings as necessary must also be visible.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2900**

##### **Grounding and Bonding**

(1) The path from circuits, equipment, structures, and conduit enclosures to ground must be permanent and continuous with enough capacity to conduct safely the currents that might be imposed on it. The path must also have impedance low enough to limit the potential above ground and to result in the operation of the over current devices in the circuit.

(2) Driven rod electrodes must, where practicable, have a resistance to ground not to exceed 25 ohms. Where the resistance is not as low as 25 ohms, use two or more electrodes connected in parallel.

(3) Check grounding circuits to ensure that the circuit between the ground and the grounded power conductor has a resistance low enough to permit enough current to flow to cause the fuse or breaker to interrupt the circuit.

(4) Conductors used for bonding and grounding stationary and moveable equipment must be able to carry the anticipated current.

(5) Outside conductors, 600 volts, nominal or less. Paragraphs (a), (b), (c), and (d) below apply to branch circuit, feeder, and ser-

vice conductors rated 600 volts, nominal, or less and run outdoors as open conductors. Paragraph (e) below applies to lamps installed under these conductors.

(a) Conductors on poles must provide a horizontal climbing space not less than the following:

(A) Power conductors below communication conductors — 30 inches.

(B) Power conductors alone or above communication conductors: 300 volts or less — 24 inches; more than 300 volts — 30 inches.

(b) Clearance from ground to open conductors must conform to the following minimum clearances:

(A) 10 feet above finished grade, sidewalks, or from any platform or projection from which they might be reached.

(B) 12 feet over areas subject to vehicle traffic other than truck traffic.

(C) 15 feet over areas other than those in paragraph (5)(b)(D) below, where there may be truck traffic.

(D) 18 feet over public streets, alleys, roads, and driveways.

(c) Conductors must have a clearance of at least 3 feet from windows, doors, porches, fire escapes, or similar locations. Conductors run above the top level of a window do not have to be 3 feet away.

(d) Conductors must have a clearance of not less than 8 feet from the highest point of roofs over which they pass, except that:

(A) Where the voltage between conductors is 300 volts or less and the roof has a slope of not less than 4 inches in 12, the clearance from roofs must be at least 3 feet; or

(B) Where the voltage between conductors is 300 volts or less and the conductors do not pass over more than 4 feet of the overhang portion of the roof and they terminate at a through-the-roof raceway or approved support, the clearance from roofs must be at least 18 inches.

(e) Lamps for outdoor lighting must be below all live conductors, transformers, or other electric equipment, unless the equipment has a disconnecting means that is lockable in the open position or unless there are adequate clearances or other safeguards for lamp replacement.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-2950**

##### **Switches and Circuit Breakers**

(1) There must be at least 3 feet of clear space in front of switch centers or panels. Passageways to switch centers or panels must be unobstructed.

(2) There must be enclosures or screens around live parts of electrical switchboards and panelboards.

(3) Each disconnecting means for motors and appliances, and each service feeder or branch circuit at the point where it originates, must have legible markings to indicate their purpose unless the purpose is evident.

(4) Locate or shield disconnecting means to avoid injury to employees. Do not use open knife switches.

(5) Securely mount boxes for disconnecting means and keep their covers in place.

(6) Boxes and disconnecting means in damp or wet locations must be waterproof.

(7) There must be sufficient light for all indoor working spaces around service equipment, switchboards, panelboards, and motor control centers.

(8) The minimum headroom of working spaces around service equipment, switchboards, panelboards, or motor control centers must be 6 feet 3 inches.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3000**

##### **Identification and Load Ratings**

(1) Name plates, rating data, and marks of identification on electrical equipment and electrically operated machines must be present and legible.

(2) Do not change the circuit protection in existing installations to increase the load to more than the load rating of the circuit wiring.

(3) Do not allow tampering, bridging, or using oversize fuses. Require workers to report immediately to management or a qualified electrician, any fuses or breakers that blow repeatedly.

(4) Do not attempt to restart electric motors that kick out repeatedly.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3050**

##### **Work Near Overhead Lines**

Clearance or Safeguards Required

**NOTE:** High voltage is 750 v or higher.

(1) Isolate exposed overhead conductors from contact by persons or equipment.

(2) Do not store irrigation pipe within 100 feet of overhead high voltage conductors.

(3) Do not allow upending if irrigation pipe is within 100 feet of overhead conductors.

(4) Do not set up or operate any part of a water or irrigation system, or any other device that discharges a conductive liquid, so that the discharge is toward or may come within 10 feet of overhead high-voltage lines or any other exposed electric conductor.

(5) Do not require or permit an employee to pass or work near high-voltage lines, unless you effectively guard against danger from contact.

(6) No work activity may bring workers or equipment within 10 feet of high-voltage lines.

(7) Do not operate equipment or machines near power lines except:

(a) When electrical distribution and transmission lines are deenergized and visibly grounded at the point of work or where insulating barriers are in place to prevent physical contact with the lines;

(b) For lines rated 50 kV. or below, minimum clearance between the lines and any part of the object must be 10 feet;

(c) For lines rated more than 50 kV. minimum clearance between the lines and any part of the object must be 10 feet plus 0.4 inches for each 1 kV., more than 50 kV., or twice the length of the line insulator but never less than 10 feet.

(d) In transit, the clearance must be a minimum of 4 feet for voltages less than 50 kV., 10 feet for voltages more than 50 kV. up to and including 345 kV., and 16 feet for voltages up to and including 750 kV.

(e) A person must observe clearances and give timely warning for all work where it is difficult for the operator to maintain the desired clearance by sight.

(8) **Warning Sign Required:** The employer must post and keep in plain view of the operator on each derrick, power shovel, drilling rig, hay loader, hay stacker or similar apparatus, any part of which is capable of vertical, lateral or swinging motion, a warning sign legible at 12 feet reading "Unlawful to operate this equipment within 10 feet of high-voltage lines."

(9) **Notification to Power Company and Responsibility for Safeguards:** When any work may be within 10 feet of any high-voltage line, the person or persons responsible for the work must promptly notify the power company and is responsible for the completion of required safety measures before beginning the work.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3075**

##### **Agricultural Buildings with Special Hazards**

(1) Scope. These standards apply to the following agricultural buildings or parts of buildings or adjacent areas.

(a) Agricultural buildings where excessive dust and dust with water may accumulate. This includes all areas of poultry, livestock and fish confinement systems, where litter dust or feed dust, including mineral feed particles may accumulate.

(b) Agricultural buildings where a corrosive atmosphere exists. This includes areas where poultry and animal excrements may cause corrosive vapors; corrosive particles may combine with water; the area is damp and wet due to periodic washing for cleaning and sanitizing with water and cleansing agents; or where similar conditions exist.

(2) Wiring. Use types UF, NMC, copper SE, or other cables or raceways suitable for the location, with approved termination fittings. Secure all cables within 8 inches of each cabinet, box, or fitting.

(3) Enclosures. Boxes, fittings, wiring devices, switches, circuit breakers, controllers and fuses including push-buttons, relays, and similar devices must have enclosures as in (a) and (b) below.

(a) Buildings with excessive dust and dust with water must use dustproof and weather proof enclosures.

(b) Buildings with a corrosive atmosphere must use enclosures for those conditions.

(4) Motors and machines. Motors and other rotating electrical machinery must be totally enclosed or designed to minimize the entrance of dust, moisture, or corrosive particles.

(5) Lighting fixtures. Install lighting fixtures to minimize the entrance of dust, foreign matter, moisture and corrosive material.

(a) Guard lighting fixtures exposed to physical damage.

(b) Lighting fixtures exposed to water must be watertight.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3100**

##### **Excavation**

(1) Definition. Excavation — A man-made cut, hole, pit, trench or depression in the earth.

**NOTE:** Before any digging you must comply with Oregon's "Call Before You Dig" law. Call 1-800-332-2344.

(2) Five feet or more. Employees must not enter any excavation 5 feet or deeper unless protective systems are in place to protect from cave-in or sloughing.

(3) Less than 5 feet. Employees must not enter any excavation less than 5 feet deep when the sides are losing their shape, are loose or show other signs of being unstable unless protective systems are in place to protect from cave-in or sloughing.

(4) Strength. Systems installed in the excavation must be strong enough and engineered to provide protection from hazards of the particular excavation.

(5) Design. Systems must be as follows:

(a) Designed by a registered professional engineer.

(b) Designed using the manufacturer's or other tabulated data.

(6) Follow instructions. When using manufactured systems, follow the instructions and do not exceed the limitations of the system.

(7) System size. Systems must extend from the bottom of the excavation to at least the top edge.

(8) Sloping. Sloping is an acceptable system to protect workers. Sloping must be at a ratio of at least 1 1/2 to 1. That means a horizontal setback of 1 1/2 feet for every 1-foot of trench depth.

(9) Access/Exit. There must be a safe way, such as a ladder or steps, to get into and out of excavations 4 or more feet deep. In trenches, these exits must be at least every 25 linear feet.

(10) Water. Workers will not enter excavations where there is accumulating water, either from ground seepage or surface run-off, unless there are adequate protections from hazards caused by the water.

(11) Inspect daily. A person familiar with these rules and the work must inspect all excavations daily, before workers enter or reenter.

(12) Spoils and equipment. Keep soil and material removed from the excavation (spoils) at least two feet away from the edge of the excavation or restrained. Equipment that could roll or fall into the excavation must also be at least two feet back or restrained.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-3410**

##### **Agricultural, Commercial and Industrial Vehicles**

(1) Scope. This applies to all motor vehicles used by employees.

(2) Definitions.

(a) Agricultural vehicle — A vehicle specifically designed or modified for use exclusively in agricultural operations, and not licensed for use on public roads under Oregon laws.

**NOTE:** Included in this definition is farm field equipment such as tractors, harvesters, planters or any combination thereof; unlicensed trucks and wagons or trailers such as feeder trucks or wagons and specialized crop handling vehicles; and mobile elevating and rotating work platforms such as orchard aerial lift devices.

(b) Commercial-type vehicles — Motor vehicles primarily for the transportation of persons or material on roads. Commercial type vehicles used to transport workers are:

(A) Class 'A' vehicle — A bus type vehicle or van that can carry 12 or more workers; or the "work crew" vehicle built or altered for carrying passengers.

(B) Class 'B' vehicle — A vehicle or van especially built for transporting work crews in compartments separate from the space used to transport supplies, tools and equipment.

(C) Class 'C' vehicle — A flatbed, pickup body or dump truck type vehicle, or vehicle of similar open body construction.

(D) Class 'D' vehicle — A passenger car or station wagon type.

**NOTE:** Typically a bus type vehicle has two axles and six tires or three or more axles. This does not include vans.

(c) Industrial-type vehicles — Vehicles designed for non-highway use, primarily for pulling trailers or other mobile loads, straddle trucks such as lumber carriers, power industrial trucks, and other types of vehicles especially designed for handling materials.

**NOTE:** When this rule uses "vehicle" by itself, it includes all the above definitions.

(3) General requirements.

(a) Operation of vehicles.

(A) Nobody may operate any unsafe vehicle. Fix unsafe conditions before using it.

(B) Only trained and authorized employees may operate any vehicle.

(C) Only the operator may ride on vehicles unless there are safe riding facilities for additional riders. Persons are never to ride on fenders, axles, hitches, tongues, buckets, forks, drawbars or any other area not intended to carry passengers.

(D) Do not drive a vehicle up to anyone who is in front of a stationary object.

(E) The operator must look in the direction of travel, and have a clear view of the path of travel, unless guided by a signal person with a clear view of the route.

(F) Except when using a towbar, keep manual control over vehicles under tow.

(G) Do not stand or walk under an elevated part of a vehicle whether loaded or empty unless it is blocked or cribbed according to OAR 437-004-3410(5)(d).

(H) Workers may not be under loads or units of materials during movement.

(I) Do not overload any vehicle. Keep loads stable and well balanced.

(J) Employees must not ride in a loaded or partially loaded cargo space while the vehicle is moving unless the load is adequately shored, braced, or otherwise secured.

(K) Do not drive a vehicle with an unstable or insecure load.

(L) Block the wheels and set the brakes when loading Agricultural Vehicles, Class C, Commercial -Type Vehicles and Industrial-Type Vehicles who's movement might cause a hazard. This does not apply when loading "on the go."

(M) The parking brake must be set on parked commercial and industrial vehicles. Block or turn to a curb the wheels of vehicles parked on an incline.

(N) Do not put arms or legs between working parts or outside the running lines of vehicles.



(O) Vehicles must have a safe way of access and exit.

(P) Do not jump on or off moving vehicles.

(Q) There must be no stunt driving or horseplay.

**NOTE:** Appendix A is a reprint of Oregon Revised Statutes that govern the use of some agricultural vehicles and equipment on public highways and roads. While Oregon OSHA has the legal authority to cite these sections, law enforcement officers are the usual source of enforcement. We offer these laws here as a courtesy to Oregon agricultural employers and in the interest of employee safety.

(b) Hauling of explosives. Only a driver and one other person may ride in a vehicle hauling explosives.

(c) Operating near power lines. For requirements when operating vehicles around high voltage power lines, see Subdivision 4/S.

(d) Parking. When the operator of a commercial or industrial vehicle is not at the controls, the brakes must be set or the wheels blocked to prevent movement. Also, fully lower or block elevated attachments or components against descent. Unattended vehicles must be shut off. If parked on a slope, the wheels of commercial and industrial vehicles must be blocked or chocked.

(e) When towing, there must be a pin or other positive method of keeping the hitch pin in the hitch.

**NOTE:** Unattended is when the operator cannot see the vehicle or when they are more than 25 feet from it.

(4) Vehicle components.

(a) General.

(A) The engine shut-off device must be within reach of the operator when in their normal operating position.

(B) There must be steps, ladders, handholds, or grab bars on vehicles for safe access. Steps must have slip-resistant surfaces.

(C) The operator's station and work platforms on all agricultural vehicles must have guardrails or other fall protection when any of the following conditions exist:

(i) The operator is standing or not protected from falling by the framework, body, or design of the equipment; or

(ii) The floor of the operator's station is more than 22 inches above the adjacent floor level; or

(iii) The operator's station, regardless of height, is located so that a worker could fall into the path of equipment or into moving parts.

**NOTE:** For guardrails or similar barricades, the toprail must be 36 inches to 44 inches above the deck; the railing must have a midrail except when it would impair the operator's view to crop gathering or other functions.

(D) All vehicles loaded by cranes, power shovels, loaders or similar equipment must have a cab shield or canopy adequate to protect the operator from shifting or falling materials.

(E) The backs of vehicle cabs exposed to shifting loads must have a substantial bulkhead or similar device.

(F) Loads must not prevent doors of vehicle cabs from opening.

(G) When transporting workers and materials simultaneously, there must be a barrier to protect the workers and driver from the hazards of the materials. Otherwise, anchor or restrain the load.

(H) Class "A" and "B" commercial vehicles and industrial vehicles must have seats and back rests firmly secured in place, and such sides and ends as necessary to prevent riders from falling off the vehicle.

(I) The operator's platform must have a slip-resistant floor.

(J) Operating levers controlling hoisting or dumping devices on haulage bodies must have a latch or other device that prevents accidental starting or tripping of the mechanism.

(K) Trip handles for tailgates of dump trucks must work without endangering the operator.

(L) Surfaces of foot pedals must be slip resistant or have slip resistant coverings.

(b) Passenger compartments.

(A) Floors and decks must have safe footing.

(B) Floors and interior of sides and ends and tops of compartments used for transporting workers must be free of protruding objects that might cause injury.

(c) Windshields — windows.

(A) Windshields and windows must be safety glass that meets the requirements for safety glazing material for use anywhere in a motor vehicle as defined in the American National Standard, Safe-

ty Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1990, or a material that will furnish equivalent safety.

(B) Replace defective or broken glass that impairs the vision of the operator. Remove and replace broken or shattered glass that could cause injury to occupants.

**NOTE:** There is no requirement to change non-safety glass installed as "original equipment" in agricultural vehicles acquired before March 31, 1975 if it is unbroken. However, when it is replaced, the replacement glass must be approved safety glass.

(d) Brakes.

(A) All commercial and industrial vehicles must have brakes that can control them while fully loaded on any grade over which they might run.

(B) Parking brakes must be able to hold the loaded vehicle on any grade on which it may park, on any surface free of ice or snow.

(C) Brakes must be in safe working condition.

(e) Steering. Use steering or spinner knobs only if the steering mechanism is a type that prevents road reactions from causing the steering wheel to spin. The steering knob must be within the periphery of the wheel.

(f) Lights. Vehicles operated at night must have sufficient light at the operator's station.

(5) Inspection, testing, maintenance, and repair.

(a) Check vehicles as often as needed to assure that they are in safe operating condition and free of damage that could cause failure while in use.

(b) Before using it, fix defects that affect the safe operation of the vehicle.

(c) Do not continue to use a vehicle that becomes unsafe during use.

(d) Block or crib heavy machinery, equipment, elevated parts or parts supported by slings, hoists, jacks, or other devices, to prevent falling or shifting before employees work under or between them.

(A) Fully lower or block bulldozer and scraper blades, end-loader, end-loader buckets, dump bodies, and similar equipment when working on them or when they are not in use.

(B) All controls must be in neutral with motors off and brakes set, unless the work requires otherwise.

(e) Vehicles with dump bodies or other elevating parts must have positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body. This device must support a raised body during maintenance or inspection work.

(f) Disconnect the battery when repairing a vehicle electrical system if accidental closing of the circuit could cause injury.

(6) Transportation of workers.

(a) Do not transport workers in flatbed trucks, dump trucks and pickups unless:

**NOTE:** This does not apply to field work or loading or unloading moving vehicles.

(A) Tilting, sliding or otherwise movable decks or bodies are secured to prevent accidental movement. Secure dump truck bodies or lock the hoist lever.

(B) Flatbed vehicles without seats must have sides and end gates at least 24 inches high. Workers must sit on the floor.

(b) Close pickup and dump truck tailgates and make workers sit on the floor unless there are seats secured in place and sides at least 42 inches high. A chain or rope must be across the rear of such vehicles with seats.

(c) When workers sit on low boxes or similar equipment, there must be side rails that increase the height of pickup and dump truck bodies to at least 36 inches. Omit the side rails when there is heavy canvas secured as a top and sides.

(d) In Class "A" and "B" commercial vehicles with seats workers must not sit on the floor in the aisles while the vehicle is moving. Not more than one worker per row of seats may stand. No workers may stand or sit in the driver's area ahead of the front row of seats. Never place boards across an aisle to provide additional seating space. Do not put seats in an aisle. Standing workers must use handholds.

(e) When transporting workers in any vehicle, nobody may stand for more than 1-hour or for more than 45 miles of travel, whichever is less. After that, they must get a rest period of at least 15 minutes or be given a seat.

(7) Fueling.

(a) When fueling vehicles there may be no smoking within 35 feet.

(b) Stop vehicle engines, except diesels, while fueling.

(c) Do not fuel vehicles within 35 feet of any open fires, flame or other sources of ignition.

(d) Refilling of vehicle tanks that use liquefied petroleum gases must be done outside. Do not overfill the tanks.

(8) Hauling of gasoline and other flammables.

(a) Do not transport gasoline and other flammable liquids on commercial vehicles carrying workers except:

(A) In closed containers of not more than 5 gallons capacity, and

(B) The containers must be accepted, labeled or listed. (As per definitions in OAR 437-004-0100 Universal Definitions), and

(C) Do not carry containers inside the passenger compartment, and

(D) Secure the containers to prevent shifting and put them in well-ventilated compartments or racks.

(b) You can haul gasoline in containers of more than 5 gallons in Class "C" commercial vehicles if all workers ride in the cab of the vehicle or in a separate compartment.

**NOTE:** Appendix A is a reprint of Oregon Revised Statutes that govern the use of some agricultural vehicles and equipment on public highways and roads. While Oregon OSHA has the legal authority to cite these sections, law enforcement officers are the usual source of enforcement. We offer these laws here as a courtesy to Oregon agricultural employers and in the interest of employee safety.

(9) Warning devices.

(a) All commercial and industrial vehicles must have an audible warning (horn) device that can be clearly heard above the surrounding noise near the vehicle.

(b) Vehicles with obstructed view to the rear must have a back-up alarm audible above the surrounding noise level, unless:

(A) The vehicle backs up only when an observer signals that doing so is safe; or

(B) The vehicle operator first verifies that no person is in the path of the reverse travel, or can enter it unobserved.

(c) When towing mobile farm equipment, if the driver cannot see the workers in or on the towed unit, there must be a way to communicate with them. Otherwise, there must be a way for the riders in the towed unit to stop it in case of an emergency.

(10) Control of exhaust gases.

(a) Exhaust pipes must direct the exhaust gases away from the operator and passengers.

(b) Insulate or isolate exhaust pipes exposed to contact.

(11) Safety equipment — vehicles operated on public roads.

(a) There must be a first aid kit on Class A and B commercial type vehicles that transport workers. First aid kits must be clean, stocked and readily available to the driver or crew.

(b) There must be a B/C fire extinguisher on Class A and B commercial type vehicles that transport workers.

(c) Vehicles designed to run less than 25 mph must display a "slow moving vehicle" emblem as in 4/J, OAR 437-004-1180, Accident Prevention Signs, Symbols, Tags of the Oregon Occupational Safety and Health Code and in ORS 483.457, "Slow Moving Vehicle Emblem."

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

#### **437-004-3420**

##### **Working from Vehicles and Vehicle Loads**

(1) Riding on loads. Employees must not ride on top of loads that may dangerously shift, topple over, or otherwise become unstable. Employees must sit when riding loads, except when doing field work at slow, even speeds over smooth ground.

(2) Field operations. When employees work on the cargo space of moving trucks or trailers, as in field operations, the operator must:

(a) Reduce vehicle speed to the slowest possible.

(b) Operate the vehicle at a steady, smooth rate. Avoid erratic moves.

(c) Travel parallel to rows or corrugations. When necessary to cross corrugations or ditches, warn employees to sit down in a safe place, away from the edge, and to hold on to a secure hand hold.

(d) Except for vehicles being loaded while moving, set the brakes during loading.

(3) Load stability. Secure loads against dangerous displacement either by piling or securing to prevent shifting, toppling, over or other instability.

(4) Access to the load. There must be adequate access to safely reach the top of the load for manual loading or unloading of high loads.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3430**

##### **Training for Agriculture Tractor Operators**

Training. Train all employees who drive an agricultural tractor about the operating practices below and about any other practices peculiar to the work environment. Do this training at the time of initial assignment to driving duties and at least annually after that.

(1) Securely fasten your seat belt if the tractor has a ROPS.

(2) Where possible, avoid operating the tractor near ditches, embankments, and holes.

(3) Reduce speed when turning, crossing slopes and on rough, slick or muddy surfaces.

(4) Stay off slopes too steep for safe operation.

(5) Watch where you are going, especially at row ends, on roads, and around trees.

(6) Do not permit others to ride unless there is a safe seat.

(7) Operate the tractor smoothly — no jerky turns, starts, or stops.

(8) Hitch only to the drawbar and hitch points recommended by the tractor manufacturer.

(9) When the tractor is stopped, set brakes securely and use park lock if available.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3460**

##### **Industrial Vehicles**

(1) Modifications. The manufacturer or a professional engineer must direct modifications and additions that affect capacity and safe operation of industrial vehicles. Change the capacity, operations, and maintenance instruction plates, tags, or decals to reflect the changes.

(2) Nameplates and markings. All nameplates and markings must be in place and legible.

(3) Capacity markings. The rated capacity of each power industrial truck must be legible and in plain view of the operator.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3480**

##### **Bridges, Roads and Ramps**

(1) Application. This applies to bridges, roads and ramps on agricultural places of employment.

(2) Roads.

(a) Roads must be wide enough to allow safe operation of equipment.

(b) Low clearance areas that could present a hazard must have warning signs.

(c) Do not drive vehicles on or over broken planking, deep holes, large rocks, logs or other dangerous surface defects.

(d) Remove obstructions to clear view at intersections or sharp curves or take precautions to relieve the hazards.

(3) Bridges, runways and ramps.

(a) Bridges, runways or ramps and loading docks must be built to safely support any anticipated load. Ramp surfaces must have a material that minimizes the danger of skidding. Structural members must be sound and free of decay or deterioration that could reduce safety.

(b) Bridges and culverts must be wide enough to allow safe operation of equipment.

(c) The road surface of bridges and culverts must be safe, free of holes, broken planking, and sloughing, caving, or slipping fill materials or approaches.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3550**

##### **Servicing Multi Piece and Single Piece Rim Wheels**

(1) Workers must use a safety tire rack, cage, or equivalent protection over tires mounted on split rims with locking rings or similar devices, when:

(a) Inflating tires; or

(b) Adding air to tires on or off the vehicle if the tire was run while flat or if the rim or locking device was disturbed in any way.

**NOTE:** A tire is flat if it has lost more than 50% of its normal pressure.

(2) Airlines used to inflate tires must have clip-on chucks.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-3600**

##### **Roll-Over Protective Structures (ROPS) for Tractors in Agriculture**

(1) Definitions.

(a) Agricultural tractor — A two- or four-wheel drive type vehicle, or track vehicle, of more than 20 engine horsepower, designed to furnish the power to pull, carry, propel, or drive implements designed for agriculture. Self-propelled implements are excluded.

(b) Low profile tractor — A wheeled tractor with these characteristics:

(A) The front wheel spacing equals the rear wheel spacing, measured from the centerline of each right wheel to the centerline of the opposite left wheel;

(B) The clearance from the bottom of the chassis to the ground is less than 18 inches;

(C) The highest point of the hood is 60 inches or less; and

(D) The tractor is designed so that a seated operator straddles the transmission.

(c) Tractor weight — Includes the protective frame or enclosure, all fuels, and other components required for normal use of the tractor. Add ballast as necessary to get a minimum total weight of 110 pounds (50.0 kilograms) per maximum power takeoff horsepower at the rated engine speed or the maximum gross vehicle weight specified by the manufacturer, whichever is the greatest. Front end weight must be at least 25 percent of the tractor test weight. If power take-off horsepower is not available, use 95 percent of net engine flywheel horsepower.

(2) General requirements. Agricultural tractors manufactured after October 25, 1976 and before January 1, 2007, must meet these requirements:

(a) Roll-over protective structures (ROPS) for tractors used in agriculture. A roll-over protective structure must be on each tractor operated by an employee. Except as in OAR 437-004-3600(5), ROPS on wheel-type tractors must meet the test and performance requirements of one of these: The American Society of Agricultural Engineers Standard (ASAE) S306.3-1974, "Protective Frame for Agricultural Tractors — Test Procedures and Performance Requirements" and Society of Automotive Engineers (SAE) Standard J334-1970, "Protective Frame Test Procedures and Performance Requirements." ASAE Standard S336.1-1974, "Protective Enclosures for Agricultural Tractors — Test Procedures and Performance Requirements" and SAE J1194-1994.

These ASAE and SAE standards are incorporated by reference. Get copies from:

American Society of Agricultural Engineers

2950 Niles Road, PO Box 229

St Joseph, MI 49085

Society of Automotive Engineers

485 Lexington Avenue

New York, NY 10017

Copies are available for review at the Oregon OSHA Resource Center, 350

Winter Street NE, Salem, Oregon 97301-3882.

(b) Agricultural tractors manufactured on or after January 1, 2007, must meet these requirements:

(A) Roll-over protective structures (ROPS) for tractors used in agriculture. A roll-over protective structure must be on each tractor operated by an employee. Except as in OAR 437-004-3600(5), ROPS on wheel-type tractors must meet the test and performance requirements of:

(i) 29 CFR 1928.52 Protective frames for wheel-type agricultural tractors — test procedures and performance requirements. Link: [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=13076](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=13076); and

(ii) 29 CFR 1928.53 Protective enclosures for wheel-type agricultural tractors — test procedures and performance requirements. Link: [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=13077](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=13077) Copies of Federal OSHA rules are available at the Oregon OSHA Resource Center, 350 Winter Street NE, Salem, Oregon 97301-3882.

(3) Seat belts.

(a) When these rules require ROPS, the employer must:

(A) Have a seat belt that meets the requirement of this rule on each tractor;

(B) Ensure that workers use a seat belt while the tractor is moving; and

(C) Ensure that the worker tightens the seat belt enough to hold them in the protective area of the ROPS.

(b) Each seat belt must meet the requirements in Society of Automotive Engineers Standard J114-1994, J140-1995, J141-1995, J339-1994, and J800-1994, except;

(c) On suspended seats, fasten the seat belt to the movable part of the seat to accommodate the ride motion of the operator.

(d) The seat belt anchorage must be able to withstand a static tensile load of 1,000 pounds (453.6 kilograms) at 45 degrees to the horizontal equally divided between the anchorages. The seat mounting must be able to withstand this load plus a load equal to four times the weight of all applicable seat components applied at 45 degrees to the horizontal in a forward and upward direction. In addition, the seat mounting must be able to withstand a 500-pound (226.8 kilograms) belt load plus twice the weight of all applicable seat components both applied at 45 degrees to the horizontal in an upward and rearward direction. Floor and seat deformation is acceptable if there is no structure failure or release of the seat adjusted mechanism or other locking device.

(e) The seat belt webbing material must be resistant to acids, alkalis, mildew, aging, moisture, and sunlight.

(4) Protection from sharp surfaces. Sharp edges and corners at the operator's station must not contribute to operator injury in case of a tip over or roll-over.

(5) Exempted uses. OAR 437-004-3600(2) and (3) do not apply to the following uses:

(a) "Low profile" tractors used in orchards, vineyards or hop yards where the vertical clearance would interfere with normal use, and while their use is incidental to the work done in that location.

(b) "Low profile" tractors used inside a farm building or greenhouse where the vertical clearance does not allow a tractor with ROPS to operate, and while their use is incidental to the work done in that location.

(c) Tractors with mounted equipment that is incompatible with ROPS (e.g., corn pickers, cotton strippers, vegetable pickers and fruit harvesters);

(d) Track-type agricultural tractors whose overall width (as measured between the outside edges of the tracks) is at least three times the height of their rated center of gravity, and whose rated maximum speed in either forward or reverse is not greater than 7 mph, when used only for tillage or harvesting operations and while their use is incidental thereto, and that:



(A) Does not involve operating on slopes more than 40 percent from the horizontal; and

(B) Does not involve operating on piled crop products or residue, such as, silage in stacks or pits; and

(C) Does not involve operating near irrigation ditches, or other excavations more than 2 feet deep which contain slopes more than 40 percent from the horizontal; and

(D) Does not involve construction type work, such as bulldozing, grading or land clearing.

(6) Remounting. When ROPS is removed for any reason, remount it to meet the requirements of these rules.

(7) Labeling. Each ROPS must have a permanent label that gives the:

(a) Manufacturer's or fabricator's name and address;

(b) ROPS model number, if any;

(c) Tractor makes, models, or series numbers that it is designed to fit; and

(d) That the ROPS model was tested according to the requirements of these rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

### **437-004-3650**

#### **Roll-Over Protective Structures — Industrial Vehicles**

(1) Application. There must be roll-over protective structures (ROPS) on certain industrial vehicles manufactured after July 1, 1969. ROPS requirements apply to the following types of industrial vehicles and equipment: Rubber-tired self-propelled scrapers; front-end loaders and dozers; wheel-type industrial tractors; crawler tractors; crawler-type loaders; and motor graders, with or without attachments. This requirement does not apply to sideboom pipe laying tractors, or other vehicles whose structure prevents overturn. 4/U, OAR 437-004-3600 covers ROPS for tractors used only in farming.

(2) ROPS — general requirements.

(a) Roll-over protective structures and their supporting attachments to industrial vehicles must be capable of supporting twice the weight of the vehicle, applied at the point of impact.

(b) The design objective for roll-over protective structures on industrial vehicles is to minimize the likelihood of a complete vehicle overturn, and to minimize the possibility of the operator being crushed.

(c) There must be a vertical clearance of at least 52 inches between the work deck and the ROPS canopy.

(d) Once removed, remount ROPS with bolts or welding or equal or better quality as required for the original mounting.

(3) Defects.

(a) Repairs to defective ROPS must be of equal quality or better materials and welding as on the original structure.

(b) Minimum performance criteria for roll-over protective structures for designated vehicles are in the following Society of Automotive Engineers (SAE) standards:

(A) Prime movers, for scrapers, water wagons, bottom dump wagons, side dump wagons, rear dump wagons, towed fifth wheel attachments. (SAE J1040, 1994)

(B) Wheeled front-end loaders and wheeled dozers. (SAE J1040, 1994)

(C) Track-type tractors and front-end loaders. (SAE J1040, 1994)

(D) Motor graders. (SAE J1040, 1994)

(E) Wheel-type agricultural and industrial tractors. (SAE J167, 1992)

(F) Falling object protective structures (FOPS). (SAE J231, May 1981)

(4) Identification of ROPS. Each ROPS must have the following information permanently affixed to the structure:

(a) Manufacturer or fabricator's name and address;

(b) ROPS model number, if any; and

(c) Machine make, model, or series number that the structure fits.

(5) Approved structures. Any machine in use, with roll-over protective structures, complies with these rules if it meets the roll-over protective structure requirements of the U. S. Army Corps of Engineers, or the Bureau of Reclamation of the U. S. Department of the Interior, in effect on April 5, 1972. The requirements in effect are:

(a) U. S. Army Corps of Engineers: General Safety Requirements, EM-385-1-1 (September 1996).

(b) Bureau of Reclamation, U. S. Department of the Interior: Safety and Health Regulations for Construction, Part II (September 1971).

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

### **437-004-3660**

#### **Vehicle-Mounted Elevating and Rotating Work Platforms**

**NOTE:** This section does not apply to aerial devices made and used in orchards or tree operations, such as pruning.

(1) Definitions.

(a) Aerial device. Any vehicle-mounted device, telescoping or articulating, or both, for positioning personnel.

(b) Platform. Any personnel-carrying device (basket or bucket) which is part of an aerial device.

(2) Design requirements.

(a) The equipment operation manual must be with the equipment or the workers using it. Workers must follow the manufacturer's instructions and procedures. Work must not exceed equipment limitations and restrictions.

(b) "Field modification" of aerial lifts for uses other than those intended by the manufacturer are acceptable, if the manufacturer certifies in writing that the modification conforms with ANSI A92.2-1990 and this section and is at least as safe as the equipment was before modification. This certification may also be by any other equivalent entity, such as a nationally recognized testing laboratory.

(c) Platforms must have standard guardrails that conform with 4/D, OAR 437-004-0320(6).

(d) Gates in platform enclosures must have safety latches that prevent unintended opening.

(e) Articulating boom and extensible boom platforms, primarily designed to carry personnel, must have both platform (upper) and lower controls. Upper controls must be in or beside the platform within easy reach of the operator. Lower controls must allow overriding of the upper controls. Markings must clearly show each control's function.

(3) Specific requirements. Extensible and articulating boom platforms.

(a) Test lift controls before use to determine that they are in safe working condition.

(b) Allow only trained persons to operate an aerial lift.

(c) Do not belt off to an adjacent pole, structure or equipment while working from an aerial lift.

(d) Stand firmly on the floor of the basket, do not sit or climb on the edge of the basket or use planks, ladders or other devices for a work position.

(e) Wear a body belt and a lanyard attached to the boom or basket when in an aerial lift. The lanyard must be as short as possible for the work but in no case longer than 6 feet.

(f) Do not exceed the manufacturer's boom and basket load limits. Keep those limits legibly posted on the boom.

(g) Set the brakes and position the outriggers on pads or a solid surface. Chock the wheels before using an aerial lift on an incline.

(h) Do not move an aerial lift truck when the boom is elevated with people in the basket, except for equipment specially designed for such movement.

(i) Do not alter the insulated portion of an aerial lift in a way that might reduce its insulating value.

(j) Except as in (3)(h) above, before moving an aerial lift for travel, inspect the boom(s) to see that it is properly cradled and outriggers are stowed.

(4) Working near overhead high voltage lines.

(a) Required clearances for stationary work. Do not require or permit anybody to enter or work near high-voltage lines unless danger from accidental contact with the lines is guarded against or eliminated. Clearances and distances in 4/S, OAR 437-004-3050 apply.

(b) Clearance or safeguards for moving equipment. Do not move equipment in a way that might allow the people or objects to come within 10 feet of high-voltage lines.

(A) For equipment in transit, on smooth surfaces, the clearance must be at least 4 feet for voltages less than 50 kV., 10 feet for voltages more than 50 kV., up to and including 345 kV., and 16 feet for voltages up to and including 750 kV.

(B) When it is hard for the operator to see well enough to keep the desired clearance, somebody must watch the work and warn the operator.

(C) Movement of the structures supporting the high-voltage lines or any of their equipment, fixtures or attachments must not reduce the 10-foot clearance requirement.

(c) Warning signs required. Post a warning sign, readable from 12 feet, that says, "Unlawful to operate this equipment within 10 feet of high-voltage lines."

(d) Notification to power company and responsibility for safeguards. When working or placing material or equipment within 10 feet of any high-voltage line, the employer must promptly notify the operator of the high-voltage line. Employers are responsible for completing the safety measures required before allowing any work that could impair the clearance.

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98

#### **437-004-6000**

##### **Adoption by Reference of Federal Standard**

Oregon OSHA administers and enforces the Worker Protection Standard (40 CFR 170) as adopted with this rule. All parts of the WPS apply in addition to, and not instead of, any other part of Division 4, Agriculture. Should any conflict exist between the WPS and other Division 4 rules, the employer must comply with the rule offering the most protection to workers. The Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 40 CFR 170, in the Federal Register:

##### **Subpart A — GENERAL PROVISIONS**

(1) 40 CFR 170.1 Scope and purpose, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(2) 40 CFR 170.3 Definitions, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(3) 40 CFR 170.5 Removed.

(4) 40 CFR 170.7 General duties and prohibited actions, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(5) 40 CFR 170.9 Violations of this part, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

##### **Subpart B — STANDARD FOR WORKERS**

(6) 40 CFR 170.102 Applicability of this subpart, published 5/3/95, FR vol. 60, no. 85, p. 21952.

(7) 40 CFR 170.103 Exceptions, published 5/3/95, FR vol. 60, no. 85, p. 21952.

(8) 40 CFR 170.104 Exemptions, published 12/12/08, FR vol. 73, no. 240, pp. 75592-75600.

(9) 40 CFR 170.110 Restrictions associated with pesticide applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(10) 40 CFR 170.112 Entry restrictions, published 6/21/06, FR vol. 71, no. 119, pp. 35543-35547; 6/29/07, FR vol. 72, no. 125, p. 35663; 12/12/08, FR vol. 73, no. 240, pp. 75592-75600.

(11) 40 CFR 170.120 Notice of applications, published 6/26/96, FR vol. 61, no. 124, p. 33207.

(12) 40 CFR 170.122 Providing specific information about applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(13) 40 CFR 170.124 Notice of applications to handler employers, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(14) 40 CFR 170.130 Pesticide safety training, published 12/12/08, FR vol. 73, no. 240, pp. 75592-75600.

(15) 40 CFR 170.135 Posted pesticide safety information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(16) 40 CFR 170.150 Decontamination, published 6/26/96, FR vol. 61, no. 124, p. 33212.

(17) 40 CFR 170.160 Emergency assistance, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

##### **Subpart C — STANDARD FOR PESTICIDE HANDLERS**

(18) 40 CFR 170.202 Applicability of this subpart, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(19) 40 CFR 170.203 Exceptions, published 5/3/95, FR vol. 60, no. 85, p. 21952.

(20) 40 CFR 170.204 Exemptions, published 12/12/08, FR vol. 73, no. 240, pp. 75592-75600.

(21) 40 CFR 170.210 Restrictions during applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(22) 40 CFR 170.222 Providing specific information about applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(23) 40 CFR 170.224 Notice of applications to agricultural employers, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(24) 40 CFR 170.230 Pesticide safety training, published 5/3/95, FR vol. 60, no. 85, p. 21953

(25) 40 CFR 170.232 Knowledge of labeling and site-specific information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(26) 40 CFR 170.234 Safe operation of equipment, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(27) 40 CFR 170.235 Posted pesticide safety information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

(28) 40 CFR 170.240 Personal protective equipment, published 9/1/04, FR vol. 69, no. 169, p. 53341; OR-OSHA note added with AO 9-2006, filed and effective 9/22/06.

(29) 40 CFR 170.250 Decontamination, published 6/26/96, FR vol. 61, no. 124, p. 33213; OR-OSHA note added with AO 9-2006, filed and effective 9/22/06.

(30) 40 CFR 170.260 Emergency assistance, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 7-2004, f. & cert. ef. 12-30-04; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 9-2009 f. & cert. ef. 9-21-09

#### **437-004-9000**

##### **Oregon Rules for Air Contaminants**

An employee's exposure to any substance in Oregon Tables Z-1, Z-2, or Z-3 of this section must be limited in accordance with the requirements of the following paragraphs of this section.

(1) Oregon Table Z-1.

(a) Substances with limits preceded by "C" — ceiling values. An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is not preceded by a "C", must at no time exceed the ceiling exposure limit given for that substance. If instantaneous monitoring is not feasible, then assess the ceiling as a 15-minute time-weighted average. This exposure level must never be exceeded at any time during the workday.

(b) Other substances — 8-hour time-weighted averages (PEL-TWA). An employee's exposure to any substance in Oregon Table Z-1, the exposure limit of which is not preceded by a "C", must not exceed the 8-hour Time-Weighted Average for that substance in any 8-hour shift of a 40-hour work week.

(c) Other substances — Excursion Limits. Excursions in exposure levels may be more than three times the PEL-TWA number for no more than a total of 30 minutes during a workday, and must never be more than five times the PEL-TWA, provided that the overall 8-hour PEL-TWA is not exceeded.

(d) Skin designation. To prevent or reduce skin absorption, you must prevent or reduce an employee's skin exposure to substances listed in Oregon Table Z-1 with an "X" in the Skin designation column following the substance name. Prevent or reduce exposure to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices.

(e) Oregon Table Z-1 in Division 4/Z, OAR 437-004-9000, has a complete list of regulated substances. If your operation exposes an employee to a substance listed in Oregon Table Z-1, and that substance includes a reference to another rule, that rule may apply to your circumstances.

(2) Oregon Table Z-2. An employee's exposure to any substance listed in Oregon Table Z-2 must not exceed the following exposure limits:

(a) 8-hour time-weighted averages. An employee's exposure to any substance in Oregon Table Z-2, in any 8 hour work shift of a 40-hour work week, must not exceed the 8-hour time-weighted average limit for that substance in Oregon Table Z-2.

(b) Acceptable ceiling concentrations. An employee's exposure to a substance in Oregon Table Z-2 must not exceed the acceptable ceiling concentration for that substance during an 8-hour shift except:

(i) Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. An employee's exposure to a substance in Oregon Table Z-2 must never exceed the acceptable maximum peak above the acceptable ceiling concentration and must not exceed the maximum duration of exposure at that level for the substance during an 8-hour shift.

(c) Example. During an 8-hour work shift, an employee's exposure to benzene is limited to an 8-hour time-weighted average (TWA) of 10 ppm. The acceptable ceiling concentration of benzene during the 8-hour work shift is a maximum of 25 ppm, unless that exposure is no more than 50 ppm and for not longer than 10 minutes during an 8-hour work shift. Such exposures must be compensated by lower exposure levels (concentrations below the TWA number – 10 ppm) during that shift so that the overall 8 hour time-weighted average is a maximum of 10 ppm. Example Table.

(d) Skin designation. To prevent or reduce skin absorption, you must prevent or reduce an employee's skin exposure to substances listed in Oregon Table Z-2 with an "X" in the Skin designation column following the substance name. Prevent or reduce exposure to the extent necessary in the circumstances through the use of gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls, or work practices.

(3) Oregon Table Z-3. An employee's exposure to any substance in Oregon Table Z-3, in any 8-hour work shift of a 40-hour work week, must not exceed the 8-hour time-weighted average limit given for that substance.

(4) Computation formulae. The computation formulae that apply to exposures to one or more substances, with 8-hour time-weighted averages included in OAR 437, Division 4/Z, Chemicals/Toxins, in order to determine whether an employee is exposed is over the regulatory limit are as follow:

(a) For a single air contaminant:

(i) Compute the cumulative exposure for an 8-hour work shift as follows:

$$E = (CaTa + CbTb + \dots CnTn) \div 8$$

Where:

E is the equivalent exposure to that substance for the shift.

C is the concentration during any period T where the concentration remains constant.

T is the duration in hours of the exposure at the concentration C.

The value of E must not exceed the 8-hour time-weighted average specified for that substance in Subdivision 4/Z.

(ii) To illustrate the formula in (4)(a)(i) above, assume that Substance A (from Oregon Table Z-1) has an 8 hour time-weighted average limit of 100 ppm. Assume that an employee is subject to the following exposure:

Two hours exposure at 150 ppm

Two hours exposure at 75 ppm

Four hours exposure at 50 ppm

Substituting this information in the formula, we have:

$$[(Ca \times Ta) + (Cb \times Tb) + \dots (Cn \times Tn)] \div 8 = E = TWA$$

$$[(2 \times 150) + (2 \times 75) + (4 \times 50)] \div 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, the 8-hour time-weighted average limit, the exposure is acceptable.

(b) For a mixture of air contaminants:

(i) In case of a mixture of air contaminants, compute the equivalent exposure as follows:

$$Em = (C1 \div L1) + (C2 \div L2) + \dots (Cn \div Ln)$$

Where:

Em is the equivalent exposure for the mixture.

Cn is the concentration of a particular contaminant.

Ln is the exposure limit for that substance in Subdivision 4/Z.

The value of Em must not exceed "unity" (1).

(ii) To illustrate the formula in (4)(b)(i) above, consider the following exposures:

Table.

Substituting in the formula, we have:

$$Em = (C1 \div L1) + (C2 \div L2) + \dots (Cn \div Ln)$$

$$Em = (500 \div 1000) + (45 \div 200) + (40 \div 200)$$

$$Em = 0.500 + 0.225 + 0.200$$

$$Em = 0.925$$

Since Em (0.925) is less than unity (1), the exposure combination is within acceptable limits.

(5) Engineering or administrative controls. To achieve compliance with the exposure limits in paragraphs (1) through (4) of this section, first determine and implement, when feasible, engineering or administrative controls. When such controls are not feasible, mandate the use of protective equipment or any other protective measures to keep exposure within the limits in this section. Any equipment or technical measures used for this purpose must be approved for each particular use by a competent Industrial Hygienist or other technically qualified person. Whenever using respirators, comply with Division 4/I, OAR 437-004-1040, Respiratory Protection. Tables Z-1, Z-2, Z-3, and notes.

[ED. NOTE: Tables and Notes referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2001, f. & cert. ef. 2-5-01; OSHA 9-2001, f. & cert. ef. 9-14-01; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

## **437-004-9010**

### **Fumigated Areas.**

(1) Scope: Covers pesticides which when applied, forms a gas to control pests.

(2) Definitions:

(a) Types of fumigants include aluminum phosphide, methyl bromide, chloropicrin, 1,3-D (Telone), dazomet, metam sodium and iodomethane.

(b) Types of fumigations include soil, space (warehouse), vertical storage, flat storage, tarpaulin, spot (includes grain handling equipment, empty tanks and empty silos), chamber, vehicle and rodent burrows.

(3) All work with fumigants must follow the instructions and precautions in the manufacturer's application manual and on the product label and MSDS.

(4) All entry points into fumigated interior areas must have signs that identify the area as fumigated and prohibit entry.

(5) Leave the signs posted according to the instructions of the manufacturer of the fumigating chemical or until the hazard resulting from the fumigation is gone, whichever is the longer time.

(6) After fumigation, there must be a way to aerate the fumigated area without contaminating other areas where there are employees.

(7) If the fumigation process requires the worker to be in the fumigated area, there must be at least one other person present to assist during an emergency. That person must have the same training and access to the same personal protective equipment as the first worker.

(8) Fumigation chambers or areas must not allow the toxic fumigants to escape or otherwise enter other areas where they can be hazardous to other workers.

(9) If the fumigant concentration can exceed 10 percent of the lower explosive limit (LEL), all electrical equipment, fittings, and connections must be vapor proof.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 9-2006, f. & cert. ef. 9-22-06



### 437-004-9050

#### Asbestos

Definitions: Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that have been chemically treated or altered. Asbestos-containing material (ACM) means any material containing more than 1% asbestos. Presumed asbestos containing material (PACM) means thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to Division 2/Z, 1910.1001(j)(8).

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to asbestos.

(2) Work that exposes employees to asbestos must comply with Division 2/Z, 1910.1001, Asbestos; except that construction activities exposing employees to asbestos must comply with Division 3/Z, 1926.1101, Asbestos.

**NOTE:** Construction activities are building, altering and repairing, and include painting.

(3) The employer must periodically examine all asbestos-containing material in the workplace to ensure that there is no deterioration or damage that could cause employee exposure.

(4) If you find damage or deterioration, the material must be repaired, encapsulated, or removed consistent with the requirements in Division 3/Z, 1926.1101, Asbestos.

**NOTES:** Tasks or work activities that could expose employees to asbestos include the following:

Housekeeping or maintenance activities on workplace surfaces or systems with asbestos-containing materials (examples include flooring, ceiling tiles, roofing, siding, boilers, heaters, insulation, and fireproofing); Inspection, disassembly, repair and assembly of automotive or farm vehicle brakes and clutches; Demolition or salvage of structures where asbestos-containing materials are present; New construction, alteration, or renovation of structures, substrates, or portions thereof with asbestos-containing materials; and, Routine or emergency cleanup of asbestos-containing materials. Employers who have pipe systems that are insulated with asbestos-containing materials in their workplaces, must also comply with Division 4/Z, OAR 437-004-9850, Pipe Labelling.

[ED. NOTE: Examples referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### 437-004-9090

#### 13 Carcinogens

Definitions: The 13 carcinogens are:

4-Nitrobiphenyl, CAS 92-93-3;  
alpha-Naphthylamine, CAS 134-32-7;  
Methyl chloromethyl ether, CAS 107-30-2;  
3,3-Dichlorobenzidine (and its salts), CAS 91-94-1;  
bis-Chloromethyl ether, CAS 542-88-1;  
beta-Naphthylamine, CAS 91-59-8;  
Benzidine, CAS 92-87-5;  
4-Aminodiphenyl, CAS 92-67-1;  
Ethyleneimine, CAS 151-56-4;  
beta-Propiolactone, CAS 57-57-8;  
2-Acetylaminofluorene, CAS 53-96-3;  
4-Dimethylaminoazo-benzene, CAS 60-11-7; and  
N-Nitrosodimethylamine, CAS 62-75-9.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to any of the 13 carcinogens.

(2) Work that exposes employees to any of the 13 carcinogens must comply with Division 2/Z, 1910.1003, 13 Carcinogens.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### 437-004-9600

#### Lead

Definition: Lead means elemental, metallic lead (chemical formula Pb), all inorganic lead compounds, and organic lead soaps. All other organic lead compounds are excluded.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to lead.

(2) Work that exposes employees to lead must comply with Division 2/Z, 1910.1025, Lead; except that construction activities exposing employees to lead must comply with Division 3/D, 1926.62, Lead.

**NOTES:** Construction activities are building, altering and repairing and include painting.

Tasks or work activities that could expose employees to lead include:

Demolition or salvage of structures where lead-containing materials are present;

New construction, alteration, or renovation of structures, substrates, or portions thereof with lead-containing materials;

Routine or emergency cleanup of lead-containing materials;

Using lead-containing paints or pigments;

Cutting, brazing, burning, heating, grinding or welding surfaces with lead-containing paints or pigments; and

Soldering with lead-containing solder.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### 437-004-9620

#### Cadmium

Definition: Cadmium means the element cadmium (Cd); and all cadmium compounds.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to cadmium.

(2) Work that exposes employees to cadmium must comply with Division 2/Z 1910.1027, Cadmium; except that construction activities exposing employees to cadmium must comply with Division 3/Z, 1926.1127, Cadmium.

**NOTE:** Construction activities are building, altering, and repairing and include painting.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### 437-004-9626

#### Chromium (VI)

Definitions: Chromium (VI) (hexavalent chromium or Cr(VI)) means chromium with a valence of positive six, in any form and in any compound.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to hexavalent chromium.

(2) Work that exposes employees to hexavalent chromium must comply with Division 2/Z 1910.1026, Chromium (VI); except that construction activities exposing employees to hexavalent chromium must comply with Division 3/Z, 1926.1126, Chromium (VI).

**NOTE:** Construction activities are building, altering and repairing and include painting.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### 437-004-9640

#### Benzene

Definition: Benzene (Chemical formula C<sub>6</sub>H<sub>6</sub>, CAS 71-43-2) means liquefied or gaseous benzene and includes benzene in liquid mixtures and benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene in solid materials.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to benzene.

(2) Tasks or activities within the scope of the Division 2, Benzene rule must comply with Division 2/Z, 1910.1028, Benzene.

(3) Tasks or activities that are not within the scope of the Division 2, Benzene rule must comply with the permissible exposure limits listed in Division 4/Z, OAR 437-004-9000, Table Z-2.

**NOTES:** An example of a task or activity that is within the scope of the Division 2, Benzene rule is an employee dispensing gasoline or motor fuels containing benzene for more than 4 hours per day in an indoor location.

Examples of task or activities that are NOT within the scope of the Division 2, Benzene rule include: The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing

benzene after final discharge from bulk wholesale storage facilities. The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers while sealed in a way to contain benzene vapors or liquid.  
Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

#### 437-004-9650

##### Bloodborne Pathogens

**Definitions:** Blood means human blood, human blood components and products made from human blood. Bloodborne Pathogens means pathogenic micro-organisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface. Occupational exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties. Other Potentially Infectious Materials means: Human body fluids with visible contamination of blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in an occupational exposure to bloodborne pathogens.

(2) Work that exposes employees to bloodborne pathogens must comply with Division 2/Z, 1910.1030, Bloodborne Pathogens.

**NOTE:** Examples of tasks or work activities with a potential for occupational exposures to bloodborne pathogens in agricultural workplaces include: Employees performing janitorial duties that include cleaning up human blood or OPIM; Employees who are required, as part of their job duties, to administer first aid to others that could include contact with another person's blood or OPIM.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

#### 437-004-9710

##### Acrylonitrile

**Definitions:** Acrylonitrile or "AN" (Chemical formula  $\text{CH}_2=\text{CHCN}$ , CAS 107-13-1) means acrylonitrile monomer and includes Liquid AN. Liquid AN means acrylonitrile monomer in liquid form, and liquid or semi-liquid polymer intermediates, including slurries, suspensions, emulsions, and solutions, made during the polymerization of AN.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to acrylonitrile.

(2) Work that exposes employees to acrylonitrile must comply with Division 2/Z, 1910.1045, Acrylonitrile.

**NOTE:** The Division 2 Acrylonitrile rule does not apply to exposures which result solely from the processing, use, and handling of the following materials:

ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers; Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable – under the expected conditions of processing, use, and handling which will cause the greatest possible release – of releasing AN in airborne concentrations in excess of 1 ppm as an 8-hour time-weighted average, or Solid materials made from and/or containing AN which will not be heated above 170 degrees F. during handling, use, or processing.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

#### 437-004-9720

##### Thiram

(1) Scope and application.

(a) These rules apply where worker exposure to thiram may occur during manufacture, storage, packaging, tree application, treated seedling handling, or use of thiram or thiram treated seedlings.

(b) These rules apply to the transportation of thiram or thiram treated trees except to the extent that the U. S. Department of Transportation may regulate the hazards covered by these rules.

(2) Definitions.

(a) Clean — The absence of dirt or materials that may be harmful to a worker's health.

(b) Large seedlings — Seedlings long enough or wide enough that during normal planting avoiding mouth of face contact with the thiram treated plant is difficult.

(3) General requirements.

(a) Permissible exposure limits.

(A) Do not expose workers to thiram at atmospheric concentrations more than 0.15 mg/m<sup>3</sup> over any 8-hour period; and

(B) Do not expose workers to thiram at atmospheric concentrations more than 0.30 mg/m<sup>3</sup> averaged over any period not longer than 15 minutes.

(C) Workers must not work more than 5 days in any 7-day period with or around thiram or thiram treated seedlings.

(D) Paragraph (3)(a)(C) above is not applicable if there is a specific thiram control program, beyond these rules and approved by the Administrator.

(b) Washing and worker hygiene.

(A) Workers must wash their hands before eating or smoking and when done working.

(B) At fixed work sites or planting units, provide warm (at least 85 degrees F, 29.4 degrees C) wash water and single use hand wiping materials for washing.

(C) Where warm water is not available within, or the means to access within, a 15 minutes travel time, provide clean water, soap and single-use towels.

(D) Advise every planter or nursery worker to bathe or shower daily.

(E) Wash or vacuum and wipe down the inside of crummies or other worker carrying vehicles at least weekly during thiram use.

(c) Personal protective measures.

(A) Workers must wear clothing that reduces skin contact with thiram on the legs, arms and torso.

(B) For those workers with thiram skin irritations, protect exposed areas with a suitable barrier cream.

(C) Workers may wear only impervious gloves.

(D) Workers' hands must be clean of thiram before placing them into gloves.

(E) Provide nursery applicators with approved respirators, disposable coveralls or rubber slickers or other impervious clothing, rubberized boots, head covers and rubberized gloves. They must use the respirators according to 4/I, OAR 437-004-1041, Respiratory Protection.

(F) Other than applicators, nursery workers who may suffer thiram exposure must have and use disposable coveralls or rubber slickers or other impervious clothing, impervious footwear and gloves, and head covers unless they use showers that comply with 4/J, OAR 437-004-1105, Sanitation.

(G) Provide eye protection that complies with 4/I, OAR 437-004-1035. Workers exposed to thiram such as during spraying, plug bundling, belt line grading and plugging or other operations must wear this eye protection.

(d) Respiratory protection.

(A) When worker exposure is more than the Permissible Exposure Limit (PEL), provide them with applicable, certified respiratory protection approved by NIOSH.

(B) Use and maintain respirators according to 4/I, OAR 437-004-1041, Respiratory Protection.

(C) Workers must wear respirators when planting large seedlings to avoid mouth and face contact with the thiram treated plant unless they use equally effective measures or planting practices.

(e) Food handling.

(A) Do not store or consume food, snacks, beverages, smoking materials, or any similar items in the packing area of the nursery.

(B) Crummies or other worker carrying vehicles must have a clean area for carrying lunches.

(C) The clean area of the vehicle must be above from the floor and not used to carry other than food or other consumable items.

(D) Do not carry lunches, food or other consumable items in tree planting bags.

(E) Minimize or eliminate worker exposure to thiram spray, including downwind driftings.

(F) Workers must stand upwind when burning bags that contained thiram or thiram treated seedlings.

(f) Thiram use and handling.

(A) Nurseries must develop a quality control program approved by the Administrator to ensure that they apply only the minimum amount of thiram necessary to achieve the desired anti-browsing results to the tree seedlings.

(B) Thiram treated seedlings must set between the time of spraying and packing.

(C) Keep seedlings moist during packing and when possible during planting.

(D) Vacuum or wash floors daily where thiram is used, do not sweep them.

(E) Remove silica chips covering seedling plugs at the nursery.

(g) Labeling.

(A) Rules enforced by the Oregon Department of Agriculture, or the U.S. Environmental Protection Agency (EPA), about the labeling of thiram treated seedlings, apply.

(B) If the Oregon Department of Agriculture, or EPA, has no thiram labeling rules, each container, bundle or wrapping of thiram treated seedlings must have a clearly legible and visible tag or label, of waterproof material and printing, on which is the following in English and Spanish:

**CAUTION**

These seedlings are treated with an animal repellent containing Thiram (tetra- methyl thiuram disulfide) that may flake off during handling. Consumption of alcoholic beverages or use of alcohol-base creams or lotions during a time span from 12 hours before to 7 days after exposure to Thiram may result in nausea, headache, vomiting, fatigue, or flushness. Exposure to Thiram may also cause irritation of the eyes, nose, throat, or skin. Thiram may interfere with or render ineffective medications taken by epileptics or heart patients with blood-clotting difficulties. Animal studies at very high concentrations (more than 250 mg/kg) suggest that Thiram may cause birth defects.

**SAFETY PRECAUTIONS**

1. Keep treated seedlings moist.

2. Wear clothing to reduce skin contact with Thiram to the legs, arms and torso.

3. A fiber or cloth face mask (respirator) may be worn at the planter's discretion, except that when planting large seedlings, you must wear a respirator to avoid mouth and face contact with thiram treated plants, unless you use equally effective measures

4. Wash exposed skin areas thoroughly after handling treated seedlings and before smoking, drinking, eating or going to the bathroom.

5. If Thiram flakes contact eyes, immediately flush eyes freely with water.

6. Bathe daily and change work clothes at least every other day.

**PRECAUCION**

Estas plantas han sido tratadas con un repelente contra animales que tiene la substancia Thiram (tetramethyl thiuram disulfide) que puede desaparecer en manoseo. La consuncion de bebidas alcoholicas o el uso de cremas o lociones con base de alcohol dentro de 12 horas antes de ser expuesto o hasta 7 dias despues de ser expuesto a Thiram puede resultar en sintomas de nausea, dolor de cabeza, vomito, faiga o rubor. Contacto con Thiram puede causar irritacion de los ojos, nariz, garganta o piel.

Thiram puede interferir o desvalidar en completa las medicinas de los epilepticos o personas con condiciones de la corazon con dificultades de coagulacion de la sangre. Estudios con animals en concentraciones muy altas (mas que 250 mg/ kg) indican que Thiram puede causar desformaciones fetales. Sin que cuando se sembra plantas de semillas grandes macaras estaran requerido a evitar contacto con la boca y la cara con plantas tratado con Thiram excepto cuando otros metodos igualmente efecaz estarah usados.

**MEDIAS DE PRECAUCION**

1. Guardar mojados las plantas siempre.

2. El trabajador necesita usar ropa para reducir el contacto de Thiram con las piernas, brazos, y el torso.

3. Una mascara de fibre o garra (mascara) se puede usar a la discrecion del plantador.

4. Lavese bien los parten expuestos cuando trate los semillos antes de fumar, tomar, comer e ir al bano.

5. Se acaso el Thiram cae en sus ojos, inmediatamente lavese los ojos libremente con agua.

6. Banese todos los dias y cambiese de ropa de trabajo por lo menos cada otro dia.

(C) Other containers or thiram handling areas must have signs and labels that comply with 4/J, OAR 437-004-1150 and 1180.

(h) Training.

(A) Where exposures to thiram may occur, train each worker about the hazards of thiram and precautions for its safe use and handling.

(B) The training must be approved by the Administrator.

(C) The training must include:

(i) The health hazard(s) of chronic exposure to thiram including the potential for birth defects, alcohol intolerance, and drug interaction.

(ii) The specific nature of work that could result in exposure to thiram and the necessary protective steps;

(iii) The purpose for, proper use, and limitations of protective devices including respirators and clothing;

(iv) The acute toxicity and skin irritation effects of thiram, and the necessary protective steps;

(v) The need for and requirements of excellent personal hygiene;

(vi) A review of the thiram rules at the worker's first training and indoctrination, and annually thereafter.

(D) Give each worker a copy of these thiram rules.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 9-2006, f. & cert. ef. 9-22-06

**437-004-9740**

**Ethylene Oxide**

Definition: Ethylene oxide or "EtO" means the organic compound with chemical formula C<sub>2</sub>H<sub>4</sub>O, and CAS 75-21-8.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to ethylene oxide.

(2) Work that exposes employees to ethylene oxide must comply with Division 2/Z, 1910.1047, Ethylene Oxide.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-9760**

**Formaldehyde**

Definition: Formaldehyde means the substance with chemical formula HCHO and CAS 50 00-0.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to formaldehyde.

(2) Work that exposes employees to formaldehyde must comply with Division 2/Z, 1910.1048, Formaldehyde.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

**437-004-9780**

**Methylenedianiline**

Definition:

Methylenedianiline or "MDA" means the chemical substance 4,4'-Diaminodiphenylmethane (CAS 101-77-9), in the form of a vapor, liquid, or solid, including the salts of MDA.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in potential exposure to Methylenedianiline.

(2) Work that exposes employees to MDA must comply with Division 2/Z, 1910.1050, Methylenedianiline, except that construction activities exposing employees to MDA must comply with Division 3/D, 1926.60, Methylenedianiline.



**NOTE:** Construction activities are building, altering and repairing and include painting.  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### **437-004-9800**

#### **Hazard Communication Standard for Agricultural Employers**

**NOTES:** The Division 4, Hazard Communication Standard for Agricultural Employers (OAR 437-004-9800), focuses on those parts of the General Industry Hazard Communication Standard (Division 2/Z, 1910.1200) that describe the employer's responsibility to establish a workplace program and to communicate information to workers about the hazards of the chemicals used in their workplace. The Division 4 standard does not include the parts of the Division 2, Hazard Communication Standard that apply only to producers, distributors, and importers of chemicals because these are not typical activities for agricultural employers. As stated in 437-004-9800(2) Scope and application, any agricultural employer who produces, imports, or distributes chemical products must follow the more detailed rules that apply to those general industry activities in Division 2/Z, 1910.1200. The requirements of this Division 4, Hazard Communication Standard, are intended to be consistent with the Hazard Communication Standard for general industry as aligned with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS.)

(1) Purpose. The purpose of this Division 4 Hazard Communication Standard (HCS) is to ensure that agricultural employers provide appropriate information to their employees about the hazardous chemicals to which they can be exposed at their workplaces. The responsibility of chemical manufacturers, importers, and distributors to provide this information is described in Division 2/Z, 1910.1200. The HCS for agricultural employers describes how this information is to be provided: through a comprehensive hazard communication program, including container labels and other forms of warning, safety data sheets and employee training.

(2) Scope and application.

(a) This standard applies to agricultural employers when a hazardous chemical is known to be present in the workplace in a way that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(b) This standard also applies to agricultural employers engaged in crop- or product-related quality control- or quality assurance-type laboratory work.

**NOTE:** See Division 4/Z, 437-004-9860, Hazardous Chemicals in Laboratories, for rules that apply to other types of laboratory activities.

(c) Division 2/Z, 1910.1200, the Hazard Communication Standard for General Industry, including all mandatory appendices, applies to any agricultural employer who is a producer, importer, or distributor of hazardous chemicals, as those activities are defined in this standard.

(d) The following types of hazardous substances are exempted from the requirements of this standard, under the stated conditions or circumstances:

(A) Any hazardous waste defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(B) Any hazardous substance as such term is defined by the Comprehensive Environmental Response, Compensation and Liability ACT (CERCLA) (42 U.S.C. 9601 et seq.), when the hazardous substance is the focus of remedial or removal action being conducted under CERCLA (such as a "Superfund" site) in accordance with Environmental Protection Agency regulations;

(C) Tobacco or tobacco products;

(D) Wood or wood products, including lumber if it will not be processed, where the manufacturer or importer has established that the only hazard posed to employees is the potential for combustibility;

**NOTE:** Wood and wood products that are treated with a hazardous chemical covered by this standard (such as chemically pressure-treated wood); and wood that will later be sawed, cut or sanded, generating dust, is covered by this standard.

(E) Articles as defined in OAR 437-004-9800(11);

(F) Food or alcoholic beverages sold, used, or prepared in a retail establishment (such as a grocery store, restaurant, or drinking place), and foods intended for personal consumption by employees while at work;

(G) Any drug, defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.), when it is in solid, final form for direct administration to the patient (e.g., tablets or pills); drugs packaged by the chemical manufacturer for sale to consumers in a retail establishment (e.g., over-the-counter drugs); and drugs intended for personal consumption by employees while at work (e.g., first aid supplies);

(H) Cosmetics which are packaged for sale to consumers or intended for personal consumption by employees while in the workplace;

(I) Any consumer product or hazardous substance, defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, where the employer can show that it is used in the workplace for the purpose intended by the chemical manufacturer or importer of the product, and the use results in a duration and frequency of exposure not more than the range of exposures that could reasonably be experienced by consumers;

(J) Nuisance particulates where the chemical manufacturer or importer has established that they do not pose any physical or health hazard covered under this standard;

**NOTE:** Nuisance particulate is synonymous with "particulate not otherwise regulated" (PNOR.) PNOR includes all inert or nuisance dusts, whether mineral, inorganic, or organic, that are not specifically listed in Division 4/Z, OAR 437-004-9000, Oregon Rules for Air Contaminants.

(K) Ionizing and non-ionizing radiation; and,

(L) Biological hazards.

**NOTES:** In addition to these exempted hazardous substances, the general industry Hazard Communication Standard [at 1910.1200(b)(5)] lists additional types of hazardous chemicals whose manufacturers are not covered by the Hazard Communication labeling requirements, because the products are already regulated by other labeling regulations. (For example, labeling of consumer products is regulated by the Consumer Product Safety Commission; and labeling of pesticide products is regulated by the Environmental Protection Agency.) Nonetheless, employers must ensure that hazardous chemicals are properly identified in their workplaces, as described in 437-004-9800(5).

(3) Reserved.

(4) Written hazard communication program.

(a) Employers must develop, implement, and maintain an effective written hazard communication program that is specific to their workplace. It must include the following:

(A) A list of all the hazardous chemicals in the workplace using a product identifier that allows cross-referencing to both the product label and a Safety Data Sheet. (Lists may be developed for individual work areas, but the program-required list must include all hazardous chemicals present in the workplace to which the written hazard communication program applies.)

(B) A description of their procedures or methods for meeting the requirements of this Hazard Communication Standard for Agricultural Employers including paragraphs (5) Labels and other forms of warning, (6) Safety data sheets, and (7) Employee information and training.

(C) A description of the methods for informing their employees about the hazards of nonroutine tasks and the hazards associated with chemicals contained in any unlabeled pipes in their work areas.

(b) At multi-employer workplaces, employers who use or store hazardous chemicals in a way that may expose other employer's workers must also ensure that their hazard communication program includes their methods for:

(A) Making safety data sheets available to the workers of other employers;

(B) Informing other employer(s) of any precautionary measures needed for the other employer to protect their employees during normal operating conditions and foreseeable emergencies;

(C) Informing other employer(s) about the labeling system and other forms of warning in use. This includes how the employer will notify other employer(s) about areas where pesticides will be or are being applied and areas under a Restricted Entry Interval.

(c) Upon request, the employer must make their written hazard communication program available to employees, the employee's designated representatives, and the Administrator.

**NOTE:** Where employees work at more than one workplace, the written hazard communication program may be kept at the primary workplace as long as the information is made available for routine reference during the employee's regular shift and is readily available in an emergency.

(5) Labels and other forms of warning.

**NOTE:** Chemical producers, importers, and distributors have responsibilities for labeling products that are shipped and for providing those labels to end-users.

(a) Workplace labeling. The employer must ensure that the primary (shipped) labels are legible, in English, and prominently displayed on the container in the work area. Employers with employees who communicate in languages other than English may include information in the other languages, as long as it is also in English.

(b) Except as provided in (5)(d), (5)(e), and (5)(f), the employer must ensure that each container of hazardous chemicals is labeled, tagged or marked with either:

(A) The same elements required on the shipped label:

(i) Product identifier,

(ii) Signal word,

(iii) Hazard statement(s),

(iv) Pictogram(s),

(v) Precautionary statement(s), and

(vi) Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party; OR

(B) The product identifier (that allows cross-referencing with the product's safety data sheet), and

(i) Words, pictures, symbols, or a combination that provide at least general information about the hazards of the chemical;

(ii) This alternative in conjunction with the other information readily available to employees under the employer's hazard communication program, must provide employees with specific information about the hazards of the chemical and appropriate protective measures.

(c) If an employer becomes aware of new information from an up-dated, product label about the hazards of a chemical, or ways to protect against the hazards, affected employees must be trained on this new information before the chemical is used again in the workplace.

(d) The employer may use signs, placards, or other written materials instead of labels on individual, stationary process containers. This alternative method must identify the specific container, meet the requirements in (5)(a) and (b) and be readily accessible to the employees in their work area.

(e) Labels are not required on portable, secondary containers of hazardous chemicals that are for immediate use.

(f) Pesticide application equipment (such as spray tanks and backpack-type sprayers) do not require labeling if the pesticide handlers have access to the pesticide product label during handling activities.

(6) Safety data sheets.

(a) Employers must have a safety data sheet (SDS) for each hazardous chemical that is used or present in the workplace in a way that may expose employees under normal conditions of use or in a foreseeable emergency. This includes residual pesticides encountered by workers doing field hand-labor operations.

(b) SDSs must be readily accessible to all employees on all shifts. Where employees work at more than one workplace, the SDSs may be kept at the primary workplace.

(c) SDSs may be kept electronically if they are readily accessible to employees during their work shifts and available at all times, especially during an emergency such as a power failure.

(d) SDSs must be in English. Employers with employees who communicate in other languages may maintain copies of SDSs in other languages as well.

(e) Where complex mixtures of chemical products have similar hazards and contents (for example, the chemical ingredients are the same, but the specific composition varies from mixture to mixture), the employer may use one SDS to apply to all of these essentially similar mixtures. The product identifier of each mixture, as

identified on the product label, must be cross-referenced to the SDS used.

(f) If an employer becomes aware of new information from an up-dated SDS about the hazards of a chemical or about ways to protect employees from the hazards, affected employees must be trained on this new information before the chemical is used again in the workplace.

(g) Safety data sheets as employee exposure records. In accordance with Division 4/A, OAR 437-004-0005, Access to Employee Medical and Exposure Records, employers must retain either the SDS or some record of the identity of the substance or agent, where it was used, and when it was used; and, make this record available upon request to employees, employee's designated representatives, and to the Administrator.

**NOTE:** OAR 437-004-0005 refers employers to Division 2/Z 1910.1020.

For more information about this requirement, see 1910.1020(d)(1)(ii)(B).

(7) Employee information and training.

(a) Give employees effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and when a new physical or health hazard is introduced into their work area. Information and training may cover categories of hazards (examples include flammable liquids and pesticides) or specific chemicals.

(A) Chemical-specific information must always be available through labels and safety data sheets. Agricultural employees who mix, load, or apply pesticides; or otherwise handle hazardous chemicals must receive the full information and training required by this standard.

(B) If employees only handle chemicals in sealed, unopened containers, give them training to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(b) Inform employees of:

(A) The requirements of this training paragraph;

(B) Any operations in their work area where hazardous chemicals are present; and,

(C) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and safety data sheets.

(c) Employee training must include at least:

(A) Methods and observations to detect the presence or release of a hazardous chemical in the work area (such as monitoring done by the employer, alarm systems, or characteristic odors);

(B) The physical and health hazards of the chemicals in the work area;

(C) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment; and,

(D) The details of the hazard communication program as it relates to the employee's work activities, including an explanation of any alternative labeling or warning systems, possible exposures from non-routine tasks, and how employees can get and use the right hazard information.

(d) Agricultural employers must give all of their employees a copy of, or provide them with training that covers the information in the Oregon OSHA publication #1951 "Safe Practices When Working Around Hazardous Agricultural Chemicals."

(e) For employees doing only field hand-labor operations where their only potential exposure is to residual pesticides, employers may meet the training and information requirements of this rule by:

(A) Giving each employee a copy of or providing training that covers the information in the Oregon OSHA publication #1951, "Safe Practices When Working Around Hazardous Agricultural Chemicals"; and

(B) Providing information about the location and availability of, and ensuring that employees have access to safety data sheets.

(8) Trade secrets. There are special standards about the relationship of this standard to trade secrets. If those circumstances apply, follow Division 2/Z, 1900.1200(i) and its Appendix E.

**NOTE:** Division 2/Z 1910.1200(i) provides guidance for emergency medical personnel who need to obtain more detailed safety and health information about products with Trade Secret-protected ingredients. Appendix E to Division 2/Z, 1910.1200, Definition of Trade Secret, sets out the criteria to be used in evaluating trade secret claims.

(9) Subpoenas, citations, penalties.

(a) The Oregon Occupational Safety and Health Division has the authority under ORS Chapter 654 to issue a subpoena or any protective orders.

(b) Agency actions under ORS Chapter 654 and this Hazard Communication Standard for Agricultural Employers are enforceable by the issuance of additional citations and penalties pursuant to 654.071(4), 654.086(1)(d), or 654.086(3). The Oregon Occupational Safety and Health Division may refer the matter to the Circuit Court in the county in which the proceedings are pending for enforcement of the subpoena.

(10) Phase-in dates for new rule requirements.

(a) By February 1, 2015, agricultural employers must train their employees about the new label elements (product identifier, signal word, hazard statements, pictograms, and precautionary statements); and, about the new, standardized, 16-section, safety data sheet (SDS) format. After this phase-in date has passed, this information must be included in the initial employee training in accordance with paragraph (7).

**NOTES:** Chemical producers have until June 1, 2015 to be in compliance with all the modified provisions of the Division 2/Z Hazard Communication Standard (1910.1200) including those concerning classification, labeling, and safety data sheets.

(b) By June 1, 2016, employers must, as necessary, based on any new hazards identified by chemical manufacturers on updated labels and SDSs:

(A) Update their workplace hazard communication program, as required by paragraph (4); and

(B) Update any alternative workplace labeling used under paragraph (5); and

(C) Provide additional employee training in accordance with paragraph (7).

(11) Definitions.

(a) Agricultural employer — See definition in Division 4/B, OAR 437-004-0100. Also, see “Employer” below.

(b) Article — A manufactured item other than a fluid or particle:

(A) Formed to a specific shape or design during manufacture; and

(B) With end use function(s) dependent in whole or in part on its shape or design during end use; and

(C) That under normal conditions of use does not release more than minute or trace amounts of a hazardous chemical and does not pose a physical hazard or health risk to employees.

(c) Administrator — The Administrator of the Oregon Occupational Safety and Health Division, or their designee.

(d) Biological hazard (or biohazard) — An infectious or other biological agent (bacteria, virus, fungus, etc.) presenting a risk of death, injury or illness to employees. (Biohazards are excluded from the requirements of the HCS.)

(e) Chemical — Any element, chemical compound or mixture of elements or compounds. Chemicals may be in solid, liquid, or gaseous form.

(f) Chemical name — The scientific designation of a chemical according to the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name that clearly identifies the chemical for the purpose of conducting a hazard classification.

(g) Classification — The process of identifying the relevant data about the hazards of a chemical; reviewing that data to determine the hazards or effects associated with the chemical; and deciding whether the chemical meets the criteria and definitions in this standard. Classification for health and physical hazards includes the determination of the degree of hazard, where appropriate, by comparing the data with the criteria for the health and physical hazard categories.

(h) Container — Any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a haz-

ardous chemical. Pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

(i) Crop- or product-related quality control — or quality assurance-type laboratory work — The sampling or testing of crops or agricultural products to discover defects, with the goal of improving or stabilizing production standards. This type of laboratory work at agricultural workplaces is covered by the requirements of the HCS.

**NOTE:** See Division 4/Z, 437-004-9860, Hazardous Chemicals in Laboratories, for rules that apply to other types of laboratory work.

(j) Designated representative — Any individual or organization to whom an employee gives written authorization to exercise such employee’s rights. A recognized or certified collective bargaining agent is automatically a designated representative without regard to written employee authorization.

(k) Distributor — Any business, other than a chemical manufacturer or importer, that supplies hazardous chemicals to other distributors or to employers.

(l) Employee — For the purpose of this rule, any worker who may be exposed to hazardous chemicals under normal conditions of use or in a foreseeable emergency. (Also, see definition of “Worker” in Division 4/B, OAR 437-004-0100.)

(m) Employer — For the purposes of this rule, any person, corporation, association, or other legal entity, including a contractor or subcontractor, engaged in a business where employees may be exposed to chemicals. (Also, see definition of “Agricultural employer” in Division 4/B, OAR 437-004-0100.)

(n) Exposure or exposed — An occurrence when an employee is subjected, in the course of employment, to a chemical that is a physical, health, or other listed hazard, including accidental or reasonably anticipated exposure. “Subjected” in terms of health hazards includes any route of entry into the body, including inhalation, ingestion, percutaneous, and skin contact or absorption.

(o) Field hand-labor operations — Agricultural work done by hand or with hand tools, including the cultivation, weeding, planting, and harvesting of crops (including mushrooms) and the packing of produce into containers, whether done on the ground, on a moving machine, or in a temporary packing shed in the field.

(p) Flammable liquids — See definition in Division 4/B, OAR 437-004-0100.

(q) Foreseeable emergency — Any potential event that could result in an uncontrolled release of a hazardous chemical into the workplace. Examples include equipment failure, rupture of containers, or failure of control equipment.

(r) GHS — Globally Harmonized System — The United Nations’ system of classification and labeling of chemicals; an international approach to hazard communication that provides specific criteria for classification of chemical hazards and a standardized approach to label elements and safety data sheets. In 2012, OSHA revised the Hazard Communication Standard (29 CFR 1910.1200) to be consistent with the GHS.

(s) Hand-labor operations — See, Field hand-labor operations.

(t) Handler (or Pesticide Handler) — includes any person, who is employed for any type of compensation by an agricultural establishment and who:

(A) Mixes, loads, transfers, or applies pesticides;

(B) Disposes of pesticides or pesticide containers;

(C) Handles opened containers of pesticides;

(D) Acts as a flagger for equipment or aircraft applying pesticides;

(E) Cleans, adjusts, handles, or repairs the parts of mixing, loading, or application equipment that may contain pesticide residues;

(F) Assists with the application of pesticides; or

(G) Performs other activities included within the definition of Handler by the Environmental Protection Agency.

**NOTE:** For more information, see the pesticide Worker Protection Standard in Division 4/W, §170. The term “handler” does not include an employee who only handles sealed, unopened pesticide containers or empty pesticide containers.

(u) Hazard category — The divisions within a hazard class that compare the degree or severity of the hazard. For example, the chemical hazard classifications “oral acute toxicity” and “flammable liq-



uid” both include four hazard categories based on specific criteria. Categories within a hazard class should not be compared with the categories of different hazard classes.

(v) Hazard class — Describes the nature and effect of a physical or health hazard, such as “flammable solid”, “carcinogen”, and “oral acute toxicity”. (Also, see “Classification”).

(w) Hazard not otherwise classified (HNOC) — An adverse physical or health effect identified through evaluation of scientific evidence during the manufacturer’s classification process that does not meet the specified criteria for the physical and health hazard classes addressed in Division 2/Z, 1910.1200. This does not extend coverage to adverse physical and health effects for which there is a hazard class addressed in 1910.1200, but the effect either falls below the cut-off value/concentration limit of the hazard class or is under a GHS hazard category that has not been adopted by OSHA. (One example is Category 5 oral acute toxicity.)

(x) Hazard statement — A statement assigned to a hazard class and category that describes the nature of the hazards of a chemical, including, where appropriate, the degree of hazard.

(y) Hazardous chemical — Any chemical that is classified as a physical hazard or a health hazard, a simple asphyxiant, combustible dust, pyrophoric gas, or hazard not otherwise classified.

**NOTE:** Division 2/Z, 1910.1200, Appendices A and B describe the criteria producers must use for determining whether or not a chemical is a health or physical hazard for purposes of this standard.

(z) Hazard warning — The words, pictures, symbols, or combination on a label (or other appropriate form of warning) that communicate the specific physical and health hazards of the chemical(s) in the container. (See the definitions for “physical hazard” and “health hazard” to determine the hazards which must be covered by the manufacturer.)

(aa) HCS — The Hazard Communication Standard.

(bb) Health hazard — A chemical that is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard.

**NOTE:** The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 1910.1200 — Health Hazard Criteria.

(cc) Identity — See Product Identifier.

(dd) Immediate use — For the purpose of this rule, describes when a hazardous chemical will be used only within the work shift in which it is transferred, be under the control of and used only by the person who transfers it from a labeled container. Under these specific conditions, a portable, secondary container is exempted from the requirement for a workplace label. (See 437-004-9800(5)(e).)

(ee) Importer — The first business with employees within the Customs Territory of the United States that receives hazardous chemicals made in other countries for the purpose of supplying them to distributors or employers within the United States.

(ff) Label — An appropriate group of written, printed or graphic information elements concerning a hazardous chemical that is affixed to, printed on, or attached to the immediate container of a hazardous chemical, or to the outside packaging.

(gg) Label elements — The specified product identifier, pictogram(s), hazard statement(s), signal word, and precautionary statement(s) that correlate to each chemical product’s hazard class and category. Also, labels must identify and provide contact information for the product’s manufacturer or other responsible party.

(hh) Manufacturer — See Producer.

(ii) Material Safety Data Sheet (MSDS) — See, “Safety Data Sheet (SDS)”.

(jj) Mixture — A combination or a solution composed of two or more substances in which they do not react.

(kk) Nonroutine task — A work activity that occurs infrequently or that varies from what is considered a regular, standard, or normal task.

(ll) Pesticide handler — See Handler.

(mm) Pesticide, residual — See Residual pesticide.

(nn) Physical hazard — A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas.

**NOTE:** Physical Hazard Criteria is available in Appendix B to Division 2/Z, 1910.1200.

(oo) Pictogram — A composition that includes a red bordered square set on its point, enclosing a black symbol on a white background that is intended to convey specific information about the hazard of a chemical. Eight pictograms are designated under this standard for application to specific hazard categories.

(pp) Precautionary statement — A phrase that describes recommended measures that should be taken to prevent or minimize adverse effects resulting from exposure to, or improper storage or handling of a hazardous chemical.

(qq) Producer — For the purposes of this rule, an employer with a workplace where chemicals are manufactured, processed, extracted, generated, formulated, or repackaged for use or for distribution.

**NOTE:** If you mix or blend chemical products for use in your own workplace, and the resulting mixture has no new chemical ingredients or new hazardous characteristics, you can use the SDSs for the component ingredients and you are not considered to be a “producer.” (An example is mixing granular fertilizers together for application on your own property.) However, if the combined chemicals react to create a new ingredient or the combination creates a new hazard, you become a “producer” and you must follow the more detailed rule requirements in the Division 2/Z, 1910.1200, Hazard Communication Standard.

(rr) Product identifier — The unique name or number used on the label and in the SDS that provides a means by which the user can identify the hazardous chemical. (Examples include the chemical name, Chemical Abstracts Service (CAS) Registry Number, or other precise designation of the substance.) The product identifier must allow cross-referencing of the product’s label with the product’s SDS, and the list of hazardous chemicals in the employer’s written hazard communication program.

(ss) Pyrophoric gas — A chemical in a gaseous state that will ignite spontaneously in air at a temperature of 130 degrees F (54.4 degrees C) or below.

(tt) Residual pesticide — Pesticide residue that remains on crops, soil, equipment or other work surfaces, after a pesticide application is completed and any label-required restricted entry interval (REI) has expired. For the purpose of providing hazard information, a Safety Data Sheet must be available for any pesticide that has been used at the workplace within the previous 30 days.

(uu) Responsible party — As used on a Label or Safety Data Sheet, someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(vv) Restricted entry interval (REI) — The time period that immediately follows a pesticide application (as specified on the product label) during which only trained and protected employees may enter into the treated area. (The treated area is the physical location where a pesticide is being or has been applied.)

(ww) Safety data sheet (SDS) — Written or printed information about a hazardous chemical that is prepared (generally by the manufacturer) in accordance with paragraph (g) of and Appendix D to Division 2/Z, 1910.1200.

(xx) Signal word — A word used to alert the reader of the product label to a potential hazard. The signal words used in this section are “DANGER” and “WARNING” “DANGER” is used for the more severe hazards, while “WARNING” is used for the less severe. These words are chosen by the manufacturer based on the classification and categorization of the chemical’s hazards.

**NOTE:** The EPA has jurisdiction over manufacturers of pesticides and currently has its own system of signal words used on pesticide labels.

(yy) Simple asphyxiant — A substance or mixture that displaces oxygen in the ambient atmosphere, and can thus cause oxygen deprivation in those who are exposed, leading to unconsciousness and death.

(zz) Specific chemical identity — See “Product identifier”.

(aaa) Substance — Chemical elements and their compounds in the natural state or obtained by any production process, including any

additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

(bbb) Trade secret — A confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

**NOTE:** Division 2/Z 1910.1200(i) provides guidance for emergency medical personnel who need to obtain more detailed safety and health information about products with Trade Secret-protected ingredients. Appendix E to Division 2/Z, 1910.1200 — Definition of Trade Secret, sets out the criteria to be used in evaluating trade secret claims.

(ccc) Use — To handle, apply, transfer, or generate as a by-product, any hazardous chemical covered by the requirements of this rule.

(ddd) Work area — A room or defined space in a workplace where hazardous chemicals are used, and where there are employees.

(eee) Workplace — An establishment, job site, or project, at one geographical location with one or more work areas.

[ED. NOTE: Appendices referenced are available from the agency.]

[Publications: Publications referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 3-2014, f. & cert. ef. 8-8-14

### **437-004-9830**

#### **Retention of Department of Transportation (DOT) Markings, Placards and Labels**

(1) If you receive any container or vehicle containing hazardous material, marked to comply with U.S. Department of Transportation Hazardous Materials Regulations (49 CFR Parts 171 through 180), you must keep those markings in place and legible until the container is empty enough of product, residue or vapors to eliminate all hazards.

(2) Markings, placards and labels must be readily visible.

(3) For non-bulk packages that will not be reshipped, you are in compliance with this rule if a label or other acceptable marking is affixed to the container and includes the information required by the Hazard Communication Standard.

(4) For this rule, "hazardous material" and other terms not defined here have the same definitions as in the U.S. DOT Hazardous Materials Regulations (49 CFR Parts 171 through 180).

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

### **437-004-9850**

#### **Pipe Labelling**

(1) Scope and application. This rule applies to all pipes and piping systems that contain hazardous substances, transport substances in a hazardous state, or that use asbestos as insulation material. This rule does not apply to buried pipe.

(2) Definitions:

(a) Asbestos: includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that have been chemically treated or altered.

(b) Hazardous substances: any substance that is a physical or health hazard.

(c) Health hazard: A chemical that is classified as posing one of the following hazardous effects: acute toxicity (any route of exposure); skin corrosion or irritation; serious eye damage or eye irritation; respiratory or skin sensitization; germ cell mutagenicity; carcinogenicity; reproductive toxicity; specific target organ toxicity (single or repeated exposure); or aspiration hazard. The criteria for determining whether a chemical is classified as a health hazard are detailed in Appendix A to 1910.1200 - Health Hazard Criteria, in Division 2/Z.

(d) Physical hazard: A chemical that is classified as posing one of the following hazardous effects: explosive; flammable (gases, aerosols, liquids, or solids); oxidizer (liquid, solid or gas); self-reactive; pyrophoric (liquid or solid); self-heating; organic peroxide; corrosive to metal; gas under pressure; or in contact with water emits flammable gas. The criteria for determining whether a chemical is classified as a physical hazard are detailed in Appendix B to 1910.1200 — Physical Hazard Criteria, in Division 2/Z.

(e) Piping system: includes single or multiple pipes of any kind in addition to valves and pipe coverings.

(3) Labeling.

(a) Label pipes that contain hazardous substances or transport substances in a hazardous state according to (A), (B), (C) and (D) below or otherwise identify them according to (3)(b) below:

(A) Positive identification of the hazardous contents of pipe must be by lettered labels. The label must give the name of the contents in full or abbreviated form.

(B) The label must identify the contents with enough detail to identify the hazard.

(C) Label wording must be brief, informative and simple.

(D) Use stenciling, tape, adhesives, markers or effective alternative means for labels.

**NOTE:** Substances "transported in a hazardous state" typically refer to the hazards of pressure and temperature. Examples include compressed air, hot water or steam, and cryogenic liquids or gases.

(b) The employer may use an alternative warning method, instead of affixing labels to individual pipes, if that method identifies the pipe(s) to which the warning applies and conveys the hazard information required by this rule. Examples include signs, placards, process sheets, or schematics posted on walls in the work area; or other such written materials. These alternative written materials must be readily accessible to the employees in their work areas during each shift.

**NOTE:** See OAR 437-004-9800(5) Labels and other forms of warning for other related requirements.

(c) Label pipes or piping systems that use asbestos insulation material to include the following statements:

(A) DANGER CONTAINS ASBESTOS FIBERS

MAY CAUSE CANCER DO NOT BREATHE DUST AVOID CREATING DUST

(B) Or, otherwise identify them according to (3)(b), above.

**NOTE:** See OAR 437-004-9800, Hazard Communication for Agricultural Employers and OAR 437-004-9050, Asbestos, for additional requirements.

(4) Location of labeling.

(a) Place the labeling near valves or flanges; adjacent to changes in direction or branches; where pipes pass through walls, floors or ceilings; and where confusion about the contents of the piping system may occur.

(b) Labeling must be applied, at a minimum, at the beginning and end of continuous pipe runs.

(c) For asbestos insulation, labeling on unobstructed continuous pipe runs must be at least every 75 feet.

(5) Visibility.

(a) Where pipes are located above or below the normal line of vision, put the lettering below or above the horizontal centerline of the pipe, to facilitate visibility.

(b) If pipes are inaccessible, or at a distance that makes clear identification of the letters on a label difficult, use alternatives to labeling that meet all other requirements of this rule.

[ED. NOTE: Illustrations referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13; OSHA 3-2014, f. & cert. ef. 8-8-14

### **437-004-9860**

#### **Hazardous Chemicals in Laboratories**

Definitions: Carcinogens are chemicals that have been determined to cause cancer by the following sources:

(1) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(2) International Agency for Research on Cancer (IARC) Monographs (latest edition);

(3) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration: or

(4) National Institute for Occupational Safety and Health (NIOSH), The Registry of Toxic Effects of Chemical Substances (latest edition.) Crop- or product-related quality control or quality assurance-type laboratory work means the testing of crops or agricultural products to uncover defects, with the goal of improving or stabilizing production standards. Laboratory use of hazardous chemicals means handling or use of such chemicals in which all of the following conditions are met:

- (a) Chemical manipulations are carried out on a "laboratory scale;"
- (b) Multiple chemical procedures or chemicals are used;
- (c) The procedures involved are not part of a production process, nor in any way simulate a production process; and
- (d) Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Laboratory scale means work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. Laboratory scale does not include those workplaces whose function is to produce commercial quantities of materials.

(5) If employees are engaged only in crop- or product-related quality control or quality assurance-type laboratory work, as defined in this rule, any work with hazardous chemicals must comply with the requirements in OAR 437-004-9800, Hazard Communication.

(6) If employees use carcinogens in laboratory research or crop- or product-related quality control or quality assurance-type laboratory work, then Division 2/Z, OAR 437-002-0391, Additional Oregon Rules for Carcinogens in Laboratories, also applies.

(7) If employees are engaged in the laboratory use of hazardous chemicals, as defined in this rule, then Division 2/Z, 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, applies to these activities.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 4-1998, f. 8-28-98, cert. ef. 10-1-98; OSHA 4-2012, f. 9-19-12, cert. ef. 1-1-13

## **DIVISION 5**

### **MARITIME ACTIVITIES**

#### **437-005-0001**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1915, in the Federal Register:

- (1) Subdivision A
  - (a) 29 CFR 1915.1. Purpose and authority, published 4/20/82, Federal Register (FR) vol. 47, p. 16984.
  - (b) 29 CFR 1915.2. Scope and application, published 4/20/82, FR vol. 47, p. 16984.
  - (c) 29 CFR 1915.3. Responsibility, published 4/20/82, FR vol. 47, p. 16984.
  - (d) 29 CFR 1915.4. Definitions, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (e) 29 CFR 1915.5. Incorporation by reference, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
  - (f) 29 CFR 1915.6. Commercial diving operations, published 4/20/82, FR vol. 47, p. 16984.
  - (g) 29 CFR 1915.7. Competent person, published 7/25/94, FR vol. 59, p. 37856.
  - (h) 29 CFR 1915.9. Compliance duties owed to each employee, published 12/12/08, FR vol. 73, no. 240, p. 75568-75589.
- (2) Subdivision B
  - (a) 29 CFR 1915.11. Scope, application and definitions applicable to this Subpart, published 7/25/94, FR vol. 59, p. 37857.
  - (b) 29 CFR 1915.12. Precautions before entering confined and enclosed spaces and other dangerous atmospheres, published 3/16/95, FR vol. 60, no. 51, p. 14218.

- (c) 29 CFR 1915.13. Cleaning and other cold work, published 7/25/94, FR vol. 59, p. 37859.
  - (d) 29 CFR 1915.14. Hot work, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (e) 29 CFR 1915.15. Maintenance of safe conditions, published 6/22/12, FR vol. 77, no. 121, p. 37587.
  - (f) 29 CFR 1915.16. Warning signs and labels, published 7/25/94, FR vol. 59, p. 37861.
- Appendix A to Subpart B published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
- Appendix B to Subpart B published 7/25/94, FR vol. 59, p. 37816.
- (3) Subdivision C
    - (a) 29 CFR 1915.31. Scope & application of subdivision, published 4/20/82, FR vol. 47, p. 16984.
    - (b) 29 CFR 1915.32. Toxic cleaning solvents, published 5/24/96, FR vol. 61, no. 102, p. 26351.
    - (c) 29 CFR 1915.33. Chemical paint & preservative remover, published 5/24/96, FR vol. 61, no. 102, p. 26351.
    - (d) 29 CFR 1915.34. Mechanical paint removers, published 5/24/96, FR vol. 61, no. 102, p. 26351.
    - (e) 29 CFR 1915.35. Painting, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (f) 29 CFR 1915.36. Flammable liquids, published 4/20/82, FR vol. 47, p. 16984.
  - (4) Subdivision D
    - (a) 29 CFR 1915.51. Ventilation & protection in welding, cutting and heating, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (b) 29 CFR 1915.52. Fire prevention. REMOVED 9/15/04, FR vol. 69, p. 55667.
    - (c) 29 CFR 1915.53. Welding, cutting and heating of hollow metal containers & structure not covered by 1915.12, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (d) 29 CFR 1915.55. Gas welding & cutting, published 4/20/82, FR vol. 47, p. 16984.
    - (e) 29 CFR 1915.56. Arc welding and cutting, published 4/20/82, FR vol. 47, p. 16984.
    - (f) 29 CFR 1915.57. Uses of fissionable material in ship repairing and shipbuilding, published 4/20/82, FR vol. 47, p. 16984.
  - (5) Subdivision E
    - (a) 29 CFR 1915.71. Scaffolds or staging, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (b) 29 CFR 1915.72. Ladders, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (c) 29 CFR 1915.73. Guarding of deck openings and edges, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (d) 29 CFR 1915.74. Access to vessels, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (e) 29 CFR 1915.75. Access to and guarding of dry docks and marine railways, published 7/3/02, FR vol. 67, no. 128, p. 44541.
    - (f) 29 CFR 1915.76. Access to cargo spaces and confined spaces, published 4/20/82, FR vol. 47, p. 16984.
    - (g) 29 CFR 1915.77. Working surfaces, published amended 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (6) Subdivision F
    - (a) 29 CFR 1915.80. Scope, application, definitions and effective dates, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (b) 29 CFR 1915.81. Housekeeping, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (c) 29 CFR 1915.82. Lighting, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (d) 29 CFR 1915.83. Utilities, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (e) 29 CFR 1915.84. Working alone, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (f) 29 CFR 1915.85. Vessel radar and communication systems, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (g) 29 CFR 1915.86. Lifeboats, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
    - (h) 29 CFR 1915.87. Medical services and first aid, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.



- (i) 29 CFR 1915.88 Sanitation, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (j) 29 CFR 1915.89 Control of hazardous energy (lockout/tagout), published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (k) 29 CFR 1915.90 Safety color code for marking physical hazards, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (l) 29 CFR 1915.91. Accident prevention signs and tags, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (m) 29 CFR 1915.92. Retention of DOT markings, placards, and labels, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (n) 29 CFR 1915.93. Motor vehicle safety equipment, operation, and maintenance, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (o) 29 CFR 1915.94. Servicing of multi-piece and single-piece rim wheels, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (7) Subdivision G
  - (a) 29 CFR 1915.111. Inspection, published 4/20/ 82, FR vol. 47, p. 16984.
  - (b) 29 CFR 1915.112. Ropes, chains and slings, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
  - (c) 29 CFR 1915.113. Shackles and hooks, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
  - (d) 29 CFR 1915.114. Chain falls and pull lifts, published 4/20/82, FR vol. 47, p. 16984.
  - (e) 29 CFR 1915.115. Hoisting and hauling equipment, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (f) 29 CFR 1915.116. Use of gear, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (g) 29 CFR 1915.117. Qualifications of operators, published 4/20/82, FR vol. 47, p. 16984.
  - (h) 29 CFR 1915.118. Tables, published 7/3/02, FR vol. 67, no. 128, p. 44541.
- (8) Subdivision H
  - (a) 29 CFR 1915.131. General precautions, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (b) 29 CFR 1915.132. Portable electric tools, published 4/20/82, FR vol. 47, p. 16984.
  - (c) 29 CFR 1915.133. Hand tools, published 4/20/ 82, FR vol. 47, p. 16984.
  - (d) 29 CFR 1915.134. Abrasive wheels, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (e) 29 CFR 1915.135. Powder actuated fastening tools, published 5/24/96, FR vol. 61, no. 102, p. 26351.
  - (f) 29 CFR 1915.136. Internal combustion engines other than ship's equipment, published 4/20/82, FR vol. 47, p. 16984.
- (9) Subdivision I
  - (a) 29 CFR 1915.151. Scope, application and definitions, published 5/24/96, FR vol. 61, no. 102, p. 26352.
  - (b) 29 CFR 1915.152. General requirements, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
  - (c) 29 CFR 1915.153. Eye and face protection, published 9/9/09, FR vol. 74, no. 173, pp. 46350-46361.
  - (d) 29 CFR 1915.154. Respiratory protection, published 5/24/96, FR vol. 61, no. 102, p. 26354.
  - (e) 29 CFR 1915.155. Head protection, published 6/22/12, FR vol. 77, no. 121, p. 37587.
  - (f) 29 CFR 1915.156. Foot protection, published 9/9/09, FR vol. 74, no. 173, pp. 46350-46361.
  - (g) 29 CFR 1915.157. Hand and body protection, published 5/24/96, FR vol. 61, no. 102, p. 26354.
  - (h) 29 CFR 1915.158. Lifesaving equipment, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (i) 29 CFR 1915.159. Personal fall arrest systems (PFAS), published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (j) 29 CFR 1915.160. Positioning device systems, published 7/3/02, FR vol. 67, no. 128, p. 44541.
- Appendix A to Subpart I, published 7/3/02, FR vol. 67, no. 128, p. 44541.
- Appendix B to Subpart I, published 7/3/02, FR vol. 67, no. 128, p. 44541.
- (10) Subdivision J
  - (a) 29 CFR 1915.161. Scope and application of subdivision, published 4/20/ 82, FR vol. 47, p. 16984.
  - (b) 29 CFR 1915.162. Ship's boilers, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
  - (c) 29 CFR 1915.163. Ship's piping systems, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
  - (d) 29 CFR 1915.164. Ship's propulsion machinery, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
  - (e) 29 CFR 1915.165. Ship's decking machinery, published 7/3/02, FR vol. 67, no. 128, p. 44541.
- (11) Subdivision K
  - (a) 29 CFR 1915.171. Scope and application of subdivision, published 4/20/ 82, FR vol. 47, p. 16984.
  - (b) 29 CFR 1915.172. Portable air receiver and other unfired pressure vessels, published 7/3/02, FR vol. 67, no. 128, p. 44541.
  - (c) 29 CFR 1915.173. Drums and containers, published 4/20/82, FR vol. 47, p. 16984.
- (12) Subdivision L
  - (a) 29 CFR 1915.181. Electrical circuits and distribution boards, published 5/2/11, Federal Register vol. 76, no. 84, p. 24576.
- (13) Subdivisions M O (Reserved)
- (14) Subdivision P
  - (a) 29 CFR 1915.501. General provisions, published 9/15/04, FR vol. 69, p. 55667.
  - (b) 29 CFR 1915.502. Fire safety plan, published 9/15/04, FR vol. 69, p. 55667.
  - (c) 29 CFR 1915.503. Precautions for hot work, published 9/15/04, FR vol. 69, p. 55667.
  - (d) 29 CFR 1915.504. Fire watches, published 9/15/04, FR vol. 69, p. 55667.
  - (e) 29 CFR 1915.505. Fire response, published 10/17/06, FR vol. 71, no. 200, p. 60843.
  - (f) 29 CFR 1915.506. Hazards of fixed extinguishing systems on board vessels and vessel sections, published 9/15/04, FR vol. 69, p. 55667.
  - (g) 29 CFR 1915.507. Land-side fire protection systems, published 10/17/06, FR vol. 71, no. 200, p. 60843.
  - (h) 29 CFR 1915.508. Training, published 9/15/04, FR vol. 69, p. 55667.
  - (i) 29 CFR 1915.509. Definitions applicable to this subpart, published 9/15/04, FR vol. 69, p. 55667.
- Appendix A to Subpart P, published 9/15/04, FR vol. 69, p. 55667.
- (15) Subdivision Q-Y (Reserved)
- (16) Subdivision Z
  - (a) 29 CFR 1915.1000. Air Contaminants, published 3/25/16, FR vol. 81, no. 58, p. 26386; 5/18/16, FR vol. 81, no. 96, p. 31167.
  - (b) 29 CFR 1915.1001. Asbestos, published 2/8/13, FR vol. 78, no. 27, p. 9311.
- Appendix A to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix B to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix C to 1915.1001, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
- Appendix D to 1915.1001, published 8/10/94, FR vol. 59, p. 40964.
- Appendix E to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix F to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix G to 1915.1001, published 8/10/94, FR vol. 59, p. 40964.
- Appendix H to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix I to 1915.1001, published 8/10/94, FR vol. 59, p. 40964.
- Appendix J to 1915.1001, published 8/10/94, FR vol. 59, p. 40964.
- Appendix K to 1915.1001, published 6/29/95, FR vol. 60, p. 33972.
- Appendix L to 1915.1001, published 8/23/96, FR vol. 61, p. 43454.
- (c) 29 CFR 1915.1002. Coal tar pitch volatiles; interpretation of term, published 6/20/96, FR vol. 61, p. 31427.
- (d) 29 CFR 1915.1003. 13 Carcinogens (4 Nitrophenyl, etc.), published 6/20/96, FR vol. 61, p. 31427.
- (e) 29 CFR 1915.1004. alpha Naphthylamine, published 6/20/96, FR vol. 61, p. 31427.
- (f) 29 CFR 1915.1005. (Reserved)
- (g) 29 CFR 1915.1006. Methyl chloromethyl ether, published 6/20/96, FR vol. 61, p. 31427.
- (h) 29 CFR 1915.1007. 3,3'-Dichlorobenzidene (and its salts), published 6/20/96, FR vol. 61, p. 31427.

(i) 29 CFR 1915.1008. bis Chloromethyl ether, published 6/20/96, FR vol. 61, p. 31427.  
 (j) 29 CFR 1915.1009. beta Naphthylamine, published 6/20/96, FR vol. 61, p. 31427.  
 (k) 29 CFR 1915.1010. Benzidine, published 6/20/96, FR vol. 61, p. 31427.  
 (l) 29 CFR 1915.1011. 4 Aminodiphenyl, published 6/20/96, FR vol. 61, p. 31427.  
 (m) 29 CFR 1915.1012. Ethyleneimine, published 6/20/96, FR vol. 61, p. 31427.  
 (n) 29 CFR 1915.1013. beta Propiolactone, published 6/20/96, FR vol. 61, p. 31427.  
 (o) 29 CFR 1915.1014. 2 Acetylaminofluorene, published 6/20/96, FR vol. 61, p. 31427.  
 (p) 29 CFR 1915.1015. 4 Dimethylaminoazobenzene, published 6/20/96, FR vol. 61, p. 31427.  
 (q) 29 CFR 1915.1016. N Nitrosodimethylamine, published 6/20/96, FR vol. 61, p. 31427.  
 (r) 29 CFR 1915.1017. Vinyl chloride, published 6/20/96, FR vol. 61, p. 31427.  
 (s) 29 CFR 1915.1018. Inorganic arsenic, published 6/20/96, FR vol. 61, p. 31427.  
 (t) 29 CFR 1915.1020 Access to employee exposure and medical records, published 6/20/96, FR vol. 61, p. 31427.  
 (u) 29 CFR 1915.1025. Lead, published 6/20/96, FR vol. 61, p. 31427.  
 (v) 29 CFR 1915.1026 Chromium (VI), published 3/26/12, FR vol. 77, no. 58, p. 17574.  
 (w) 29 CFR 1915.1027. Cadmium, published 6/20/96, FR vol. 61, p. 31427.  
 (x) 29 CFR 1915.1028. Benzene, published 6/20/96, FR vol. 61, p. 31427.  
 (y) 29 CFR 1915.1030. Bloodborne pathogens, published 6/20/96, FR vol. 61, p. 31427.  
 (z) 29 CFR 1915.1044. 1,2 dibromo 3 chloropropane, published 6/20/96, FR vol. 61, p. 31427.  
 (aa) 29 CFR 1915.1045. Acrylonitrile, published 6/20/96, FR vol. 61, p. 31427.  
 (bb) 29 CFR 1915.1047. Ethylene oxide, published 6/20/96, FR vol. 61, p. 31427.  
 (cc) 29 CFR 1915.1048. Formaldehyde, published 6/20/96, FR vol. 61, p. 31427.  
 (dd) 29 CFR 1915.1050. Methylenedianiline, published 6/20/96, FR vol. 61, p. 31427.  
 (ee) 29 CFR 1915.1052 Methylene Chloride, published 1/10/97, Federal Register, vol. 62, no. 7, p. 1619.  
 (ff) 29 CFR 1915.1053 Respirable Crystalline Silica, published 3/25/16, Federal Register, vol. 81, no. 58, p. 16286.  
 (gg) 29 CFR 1915.1120 Access to employee exposure and medical records has been redesignated to §1915.1020.  
 (Note: 29 CFR 1915.99, Hazard Communication was redesignated as 1915.1200 on 7/1/93, FR vol. 58, no. 125, p. 35514.)  
 (hh) 29 CFR 1915.1200. Hazard communication, published 6/20/96, FR vol. 61, p. 31427.  
 (ii) 29 CFR 1915.1450. Occupational exposure to hazardous chemicals in laboratories, published 6/20/96, FR vol. 61, p. 31427.  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 10-1992, f. 9-24-92, cert. ef. 11-1-92; OSHA 1-1993, f. & cert. ef. 1-22-93; OSHA 19-1993, f. & cert. ef. 12-29-93; OSHA 4-1994 f. & cert. ef. 8-4-94; OSHA 1-1995, f. & cert. ef. 1-19-95; OSHA 2-1995, f. & cert. ef. 1-25-95; OSHA 4-1995, f. & cert. ef. 3-29-95; OSHA 5-1995, f. & cert. ef. 4-6-95; OSHA 8-1995, f. & cert. ef. 8-25-95; OSHA 5-1996, f. & cert. ef. 11-29-96; OSHA 6-1996, f. & cert. ef. 11-29-96; OSHA 3-1997, f. & cert. ef. 3-28-97; OSHA 4-1997, f. & cert. ef. 4-2-97; OSHA 6-1997, f. & cert. ef. 5-2-97; OSHA 7-1998, f. & cert. ef. 12-18-98; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 4-2001, f. & cert. ef. 2-5-01; OSHA 4-2003, f. & cert. ef. 5-6-03; OSHA 8-2004, f. & cert. ef. 12-30-04; OSHA 1-2005, f. & cert. ef. 4-12-05; OSHA 4-2006, f. & cert. ef. 7-24-06; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 10-2006, f. & cert. ef. 11-30-06; OSHA 1-2007, f. 1-9-07 cert. ef. 1-16-07; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 3-2010, f. 6-10-10, cert. ef. 6-15-10; OSHA 3-2011, f. & cert. ef. 11-1-11; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 1-2012, f. & cert. ef. 4-10-12; OSHA 5-2012, f. & cert. ef. 9-25-12; OSHA 7-2012, f. & cert. ef. 12-14-12;

OSHA 4-2013, f. & cert. ef. 7-19-13; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16; OSHA 5-2016, f. 9-23-16, cert. ef. 7-1-18

#### **437-005-0002**

##### **Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1917, in the Federal Register:

- (1) Subdivision A
  - (a) 29 CFR 1917.1 Scope and applicability, published 2/28/06, FR vol. 71, no. 39, p. 10100.
  - (b) 29 CFR 1917.2 Definitions, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
  - (c) 29 CFR 1917.3 Incorporation by reference, published 3/25/16, FR vol. 81, no. 58, p. 16085.
  - (d) 29 CFR 1917.5 Compliance duties owed to each employee, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589
- (2) Subdivision B
  - (a) 29 CFR 1917.11 Housekeeping, published 7/25/97, FR vol. 62, no. 143, p. 40196.
  - (b) 29 CFR 1917.12 Slippery conditions, published 7/5/83, FR vol. 48, p. 30909.
  - (c) 29 CFR 1917.13 Slings, published 7/25/97, FR vol. 62, no. 143, p. 40197.
  - (d) 29 CFR 1917.14 Stacking of cargo and pallets, published 7/5/83, FR vol. 48, p. 30909.
  - (e) 29 CFR 1917.15 Coopering, published 7/5/83, FR vol. 48, p. 30909.
  - (f) 29 CFR 1917.16 Line handling, published 7/5/83, FR vol. 48, p. 30909.
  - (g) 29 CFR 1917.17 Railroad facilities, published 7/25/97, FR vol. 62, no. 143, p. 40197.
  - (h) 29 CFR 1917.18 Log handling, published 7/5/83, FR vol. 48, p. 30909.
  - (i) 29 CFR 1917.19 Movement of barges and rail cars, published 7/5/83, FR vol. 48, p. 30909.
  - (j) 29 CFR 1917.20 Interference with communications, published 7/25/97, FR vol. 62, no. 143, p. 40197.
  - (k) 29 CFR 1917.21 Open fires, published 7/5/83, FR vol. 48, p. 30909.
  - (l) 29 CFR 1917.22 Hazardous cargo (see 1917.2(p)), published 7/5/83, FR vol. 48, p. 30909.
  - (m) 29 CFR 1917.23 Hazardous atmospheres and substances (see 1917.2(p)), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (n) 29 CFR 1917.24 Carbon monoxide, published 7/25/97, FR vol. 62, no. 143, p. 40197.
  - (o) 29 CFR 1917.25 Fumigants, pesticides, insecticides and hazardous preservatives (see 1917.2(p)), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (p) 29 CFR 1917.26 First aid and lifesaving facilities, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (q) 29 CFR 1917.27 Personnel, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (r) 29 CFR 1917.28 Hazard communication (see also §1917.1(a)(2)(vi)), published 7/25/97, FR vol. 62, no. 143, p. 40198.
  - (s) 29 CFR 1917.29 Retention of DOT markings, placards and labels, published 7/19/94, Federal Register, vol. 59, no. 137, p. 36700.
  - (t) 29 CFR 1917.30 Emergency action plans, published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (3) Subdivision C
  - (a) 29 CFR 1917.41 House falls, published 7/5/83, FR vol. 48, p. 30909.
  - (b) 29 CFR 1917.42 Miscellaneous auxiliary gear, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (c) 29 CFR 1917.43 Powered industrial trucks, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (d) 29 CFR 1917.44 General rules applicable to vehicles, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (e) 29 CFR 1917.45 Cranes and derricks (see also §1917.50), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(f) 29 CFR 1917.46 Load indicating devices, published 7/25/97, FR vol. 62, no. 143, p. 40199.

(g) 29 CFR 1917.47 Winches, published 7/5/83, FR vol. 48, p. 30909.

(h) 29 CFR 1917.48 Conveyors, published 7/25/97, FR vol. 62, no. 143, p. 40200.

(i) 29 CFR 1917.49 Spouts, chutes, hoppers, bins, and associated equipment, published 7/5/83, FR vol. 48, p. 30909.

(j) 29 CFR 1917.50 Certification of marine terminal material handling devices (see also Mandatory Appendix IV, Part 1918 of this chapter), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(k) 29 CFR 1917.51 Hand tools, published 7/5/83, FR vol. 48, p. 30909.

(4) Subdivision D

(a) 29 CFR 1917.70 General, published 7/5/83, FR vol. 48, p. 30909.

(b) 29 CFR 1917.71 Terminals handling intermodal container or roll on roll off operations, published 4/21/14, FR vol. 79, no. 76, p. 22018.

(c) 29 CFR 1917.72 (Reserved)

(d) 29 CFR 1917.73 Terminal facilities handling menhaden and similar species of fish (see also §1917.2, definition of hazardous cargo, materials, substance, or atmosphere), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(5) Subdivision E

(a) 29 CFR 1917.91 Eye and face protection, published 3/25/16, FR vol. 81, no. 58, p. 16085.

(b) 29 CFR 1917.92 Respiratory protection, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(c) 29 CFR 1917.93 Head protection, published 6/22/12, FR vol. 77, no. 121, p. 37587.

(d) 29 CFR 1917.94 Foot protection, published 9/9/09, FR vol. 74, no. 173, pp. 46350-46361.

(e) 29 CFR 1917.95 Other protective measures, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(f) 29 CFR 1917.96 Payment for protective equipment, published 11/15/07, FR vol. 72, no. 220, p. 64342.

(6) Subdivision F

(a) 29 CFR 1917.111 Maintenance and load limits, published 7/5/83, FR vol. 48, p. 30909.

(b) 29 CFR 1917.112 Guarding of edges, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(c) 29 CFR 1917.113 Clearance heights, published 7/5/83, FR vol. 48, p. 30909.

(d) 29 CFR 1917.114 Cargo doors, published 7/5/83, FR vol. 48, p. 30909.

(e) 29 CFR 1917.115 Platforms and skids, published 7/5/83, FR vol. 48, p. 30909.

(f) 29 CFR 1917.116 Elevators and escalators, published 7/13/84, FR vol. 49, p. 28551.

(g) 29 CFR 1917.117 Manlifts, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(h) 29 CFR 1917.118 Fixed ladders, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(i) 29 CFR 1917.119 Portable ladders, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(j) 29 CFR 1917.120 Fixed stairways, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(k) 29 CFR 1917.121 Spiral stairways, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(l) 29 CFR 1917.122 Employee exits, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(m) 29 CFR 1917.123 Illumination, published 7/25/97, FR vol. 62, no. 143, p. 40201.

(n) 29 CFR 1917.124 Dockboards (car and bridge plates), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(o) 29 CFR 1917.125 Guarding temporary hazards, published 7/5/83, FR vol. 48, p. 30909.

(p) 29 CFR 1917.126 River banks, published 7/25/97, FR vol. 62, no. 143, p. 40201.

(q) 29 CFR 1917.127 Sanitation, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.

(r) 29 CFR 1917.128 Signs and marking, published 7/5/83, FR vol. 48, p. 30909.

(7) Subdivision G

(a) 29 CFR 1917.151 Machine guarding, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(b) 29 CFR 1917.152 Welding, cutting and heating (hot work) (see also §1917.2, definition of hazardous cargo, materials, substance, or atmosphere), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(c) 29 CFR 1917.153 Spray painting (see also §1917.2, definition of hazardous cargo, materials, substance, or atmosphere), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(d) 29 CFR 1917.154 Compressed air, published 7/5/83, FR vol. 48, p. 30909.

(e) 29 CFR 1917.155 Air receivers, published 7/5/83, FR vol. 48, p. 30909.

(f) 29 CFR 1917.156 Fuel handling and storage, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(g) 29 CFR 1917.157 Battery charging and changing, published 7/5/83, FR vol. 48, p. 30909; 7/25/97, FR vol. 62, no. 143, p. 40202.

(h) 29 CFR 1917.158 Prohibited operations, published 7/5/83, FR vol. 48, p. 30909.

These standards are available at the Department of Consumer and Business Services, Oregon Occupational Safety and Health Division, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 10-1992, f. 9-24-92, cert. ef. 11-1-92; OSHA 4-1994 f. & cert. ef. 8-4-94; OSHA 1-1995, f. & cert. ef. 1-19-95; OSHA 5-1995, f. & cert. ef. 4-6-95; OSHA 9-1997, f. & cert. ef. 12-31-97; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 9-2000, f. & cert. ef. 10-10-00; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 6-2009, f. & cert. ef. 6-5-09; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 4-2014, f. & cert. ef. 10-17-14; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

**437-005-0003****Adoption by Reference**

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 29 CFR 1918, in the Federal Register:

(1) Subdivision A

(a) 29 CFR 1918.1 Scope and application, published 2/28/06, FR vol. 71, no. 39, p. 10100.

(b) 29 CFR 1918.2 Definitions, published 6/8/11, Federal Register, vol. 76, no. 110, 33590.

(c) 29 CFR 1918.3 Incorporation by reference, published 3/25/16, FR vol. 81, no. 58, p. 16085.

(d) 29 CFR 1918.5 Compliance duties owed to each employee, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.

(2) Subdivision B

(a) 29 CFR 1918.11 Gear certification (see also §§1918.2 and 1918.51), published 7/25/97, FR vol. 62, no. 143, p. 40202.

(3) Subdivision C

(a) 29 CFR 1918.21 General requirements, published 7/25/97, FR vol. 62, no. 143, p. 40202.

(b) 29 CFR 1918.22 Gangways, published 7/25/97, FR vol. 62, no. 143, p. 40202.

(c) 29 CFR 1918.23 Jacob's ladders, published 7/25/97, FR vol. 62, no. 143, p. 40202.

(d) 29 CFR 1918.24 Fixed and portable ladders, published 6/30/00, FR vol. 65, no. 127, p. 40938.

(e) 29 CFR 1918.25 Bridge plates and ramps (see also §1918.86), published 6/30/00, FR vol. 65, no. 127, p. 40938.

(f) 29 CFR 1918.26 Access to barges and river towboats, published 7/25/97, FR vol. 62, no. 143, p. 40202.

(4) Subdivision D

(a) 29 CFR 1918.31 Hatch coverings, published 7/25/97, FR vol. 62, no. 143, p. 40202.



- (b) 29 CFR 1918.32 Stowed cargo and temporary landing surfaces, published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (c) 29 CFR 1918.33 Deck loads, published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (d) 29 CFR 1918.34 Other decks, published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (e) 29 CFR 1918.35 Open hatches, published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (f) 29 CFR 1918.36 Weather deck rails, published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (g) 29 CFR 1918.37 Barges, published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (5) Subdivision E
  - (a) 29 CFR 1918.41 Coaming clearances, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (b) 29 CFR 1918.42 Hatch beam and pontoon bridles, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (c) 29 CFR 1918.43 Handling hatch beams and covers, published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (6) Subdivision F
  - (a) 29 CFR 1918.51 General requirements (see also §1918.11 and Appendix III of this part), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (b) 29 CFR 1918.52 Specific requirements, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (c) 29 CFR 1918.53 Cargo winches, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (d) 29 CFR 1918.54 Rigging gear, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (e) 29 CFR 1918.55 Cranes (see also §1918.11), published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (7) Subdivision G
  - (a) 29 CFR 1918.61 General (see also Appendix IV of this part), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (b) 29 CFR 1918.62 Miscellaneous auxiliary gear, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (c) 29 CFR 1918.63 Chutes, gravity conveyors and rollers, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (d) 29 CFR 1918.64 Powered conveyors, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (e) 29 CFR 1918.65 Mechanically powered vehicles used aboard vessels, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (f) 29 CFR 1918.66 Cranes and derricks other than vessel's gear, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (g) 29 CFR 1918.67 Notifying ship's officers before using certain equipment, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (h) 29 CFR 1918.68 Grounding, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (i) 29 CFR 1918.69 Tools, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (j) 29 CFR 1918.70 - 1918.80 (Reserved)
- (8) Subdivision H
  - (a) 29 CFR 1918.81 Slings, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (b) 29 CFR 1918.82 Building drafts, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (c) 29 CFR 1918.83 Stowed cargo, tiering and breaking down, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (d) 29 CFR 1918.84 Bulging cargo, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (e) 29 CFR 1918.85 Containerized cargo operations, published 12/10/08, FR vol. 73, no. 238, pp. 75246-75290.
  - (f) 29 CFR 1918.86 Roll-on roll-off (Ro-Ro) operations (see also §1918.25), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (g) 29 CFR 1918.87 Ship's cargo elevators, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (h) 29 CFR 1918.88 Log operations, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (i) 29 CFR 1918.89 Handling hazardous cargo (see also §§1918.2 and 1918.99), published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (9) Subdivision I
  - (a) 29 CFR 1918.90 Hazard communication (see also §1918.1(b)(4)), published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (b) 29 CFR 1918.91 Housekeeping, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (c) 29 CFR 1918.92 Illumination, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (d) 29 CFR 1918.93 Hazardous atmospheres and substances (see also §1918.2(j)), published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (e) 29 CFR 1918.94 Ventilation and atmospheric conditions (see also §1918.2), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (f) 29 CFR 1918.95 Sanitation, published 6/8/11, Federal Register, vol. 76, no. 110, p. 33590.
  - (g) 29 CFR 1918.96 Maintenance and repair work in the vicinity of longshoring operations, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (h) 29 CFR 1918.97 First aid and lifesaving facilities (see also Appendix V of this part), published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (i) 29 CFR 1918.98 Qualifications of machinery operators and supervisory training, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (j) 29 CFR 1918.99 Retention of DOT markings, placards and labels, published 7/25/97, FR vol. 62, no. 143, p. 40202.
  - (k) 29 CFR 1918.100 Emergency action plans, published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (10) Subdivision J
  - (a) 29 CFR 1918.101 Eye and face protection, published 3/25/16, FR vol. 81, no. 58, p. 16085.
  - (b) 29 CFR 1918.102 Respiratory protection, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (c) 29 CFR 1918.103 Head protection, published 6/22/12, FR vol. 77, no. 121, p. 37587.
  - (d) 29 CFR 1918.104 Foot protection, published 9/9/09, FR vol. 74, no. 173, pp. 46350-46361.
  - (e) 29 CFR 1918.105 Other protective measures, published 6/30/00, FR vol. 65, no. 127, p. 40938.
  - (f) 29 CFR 1918.106 Payment for protective equipment, published 11/15/07, FR vol. 72, no. 220, p. 64342.
- (11) Appendix I – Cargo Gear Register and Certificates (Non-Mandatory), published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (12) Appendix II – Tables for Selected Miscellaneous Auxiliary Gear (Mandatory), published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (13) Appendix III – The Mechanics of Conventional Cargo Gear (Non-Mandatory), published 7/25/97, FR vol. 62, no. 143, p. 40202.
- (14) Appendix IV – Special Cargo Gear (Mandatory), published 6/30/00, FR vol. 65, no. 127, p. 40938.
- (15) Appendix V – Basic Elements of a First Aid Training Program (Non-Mandatory), published 7/25/97, FR vol. 62, no. 143, p. 40202.

These standards are available at the Department of Consumer and Business Services, Oregon Occupational Safety and Health Division, and the United States Government Printing Office.  
 Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 10-1992, f. 9-24-92, cert. ef. 11-1-92; OSHA 4-1994 f. & cert. ef. 8-4-94; OSHA 1-1995, f. & cert. ef. 1-19-95; OSHA 5-1995, f. & cert. ef. 4-6-95; OSHA 9-1997, f. & cert. ef. 12-31-97; OSHA 6-1999, f. & cert. ef. 5-26-99; OSHA 9-2000, f. & cert. ef. 10-10-00; OSHA 6-2006, f. & cert. ef. 8-30-06; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2008, f. 5-1-08, cert. ef. 5-15-08; OSHA 5-2009, f. & cert. ef. 5-29-09; OSHA 6-2009, f. & cert. ef. 6-5-09; OSHA 2-2010, f. & cert. ef. 2-25-10; OSHA 4-2011, f. & cert. ef. 12-8-11; OSHA 7-2012, f. & cert. ef. 12-14-12; OSHA 3-2016, f. & cert. ef. 8-19-16; OSHA 4-2016, f. & cert. ef. 9-7-16

## DIVISION 7

## FOREST ACTIVITIES

**437-007-0001****Authority of Rules**

These rules are promulgated under the Director's authority contained in ORS 654.025(2) and 656.726(4).

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0002****Purpose of Rules**

The purpose of the rules contained in this division is to prescribe minimum safety and health requirements for all employees employed in forest activities work.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0003****Scope of Rules**

The rules in this division apply to all public and private employers who engage in forest activities as listed in OAR 437-007-0004.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0004****Applicability of Rules**

(1) The rules in division 7 establish occupational safety and health practices for all forest activity operations including but not limited to:

- (a) Chemical application;
- (b) Chipping;
- (c) Clearing and slash disposal;
- (d) Forest road construction, maintenance and decommissioning;
- (e) Log dumps, ponds, plantsite log yards and independent sort yards;

- (f) Log hauling;
- (g) Marking;
- (h) Prescribed fire;
- (i) Pulpwood and non-pulpwood logging;
- (j) Reforestation/vegetation management;
- (k) Stream restoration;
- (l) Timber cutting and thinning operations;
- (m) Timber cruising;
- (n) Tree climbing activities;
- (o) Wildland fire suppression.

(2) Any situation or condition not specifically addressed will be subject to other applicable provisions of the OARs, chapter 437, Oregon Occupational Safety and Health Standards.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

**437-007-0010****Worker Protection Standard**

Oregon OSHA administers and enforces the Worker Protection Standard (40 CFR 170) as adopted in OAR 437-004-6000 in Division 4/W. All parts apply without regard to the scope of Division 4 in addition to, and not instead of, any other part of Division 7, Forest Activities. Should any of the parts of these two standards conflict, comply with the part offering the most protection to workers.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08; OSHA 9-2009 f. & cert. ef. 9-21-09

**437-007-0025****Definitions**

The following definitions apply to terms used in this Division:

(1) A-frame — A structure made of two independent columns fastened together at the top and separated by a reasonable width at the bottom to stabilize the unit from tipping sideways.

(2) Alternative communication system — A system by voice, hand or media other than horn or whistle which provides a safe and reliable method of communication between crew members.

(3) Anchor Point (tree climbing) — A secure point capable of providing life support.

(4) Approved container — A metal or polyethylene (plastic) container that can be used to carry flammable liquids in quantities up to 5 gallons. These containers must be accepted as satisfactory to contain flammable liquids by a nationally recognized testing lab, such as Underwriters Lab (UL) or Factory Mutual (FM).

(5) Aramid — The generic name for a high-strength, flame-resistant synthetic fabric used in the shirts and jeans of firefighters. Nomex, a brand name for aramid fabric, is the term commonly used by firefighters.

(6) Arch — Any device attached to the back of a mobile vehicle and used for raising one end of logs to facilitate movement.

(7) Ascenders (Jumars, Gibbs) — Any climbing device used to ascend a fixed vertical rope. The term ascenders usually refers to mechanical devices.

(8) Authorized person — See "Designated Person."

(9) Backcut (falling cut) — The cut opposite of the face cut.

(10) Ballistic nylon — A nylon fabric of high tensile properties designed to provide protection from lacerations.

(11) Base of tree — That portion of a tree that is not more than 12 inches above highest ground level.

(12) Belay (snubbing) — A method of protecting a climber in case of fall. A safety rope tied to a climber is paid out or taken in as the climber moves by a second person (the belayer) or by the climber in a self-belay (using the 4-inch tie-in). By controlling the safety rope, the belayer can stop the climber from falling.

(13) Below The Four-Inch Bole Diameter — Any point on the bole of the tree where the diameter is greater than 4 inches.

(14) Bight of the line — A hazardous zone created by one or more lines under tension, or a point on a line where a rigging chain is attached.

(15) Binder — A hinged lever assembly for connecting the ends of a wrapper to tighten the load restraining devices (log trucks, flatbeds, lowboys, etc.).

(16) Brow log — A log placed parallel to any roadway at a landing or dump to protect carriers while loading or unloading.

(17) Buck — To cut a fallen tree into logs.

(18) Butt — The bottom cut or the first log of a fallen tree.

(19) Cable yarding — The movement of trees or logs from the area where they have been fallen to a landing by attaching them to a cable system that is supported by a metal tower (wood spar) and/or intermediate support or tail trees.

(20) Carabiner (Biners, Locking Carabiners) — An oblong metal ring with a spring loaded gate on one side used for various purposes in climbing, such as attaching equipment to the climber or securing the climber to a rappel system.

(21) Chest Harness — Straps placed around the chest and shoulders only to secure the proper positioning for a chest attachment point.

(22) Chock — A block, often wedge-shaped, which is used to prevent movement; for example, a log from rolling, a wheel from turning.

(23) Choker — Length of wire rope, chain or synthetic material with attachments for encircling a log to be yarded.

(24) Climber — A person qualified to climb a tree; the person climbing.

(25) Climbers Belt (Lineman's Belt, Body Belt, Safety Belt) — A wide padded belt having two large metal D-ring attachment points on the sides. A climbing belt does not have an attached chest harness or attached leg straps.

(26) Climbing Harness — A type of harness that provides both pelvic and upper body support and can be adjusted to fit individual climbers. Climbing harnesses may be a one-piece design (full body harness) or any two-piece design that meets industry recognized stan-

dards. Climbing harnesses normally have separate leg loops. Tree climbing harnesses will usually have all of the above plus two large D-ring attachment points on the sides.

(27) Climbing Helmet — Designed specifically for climbing, this helmet has a three-point chinstrap and is designed to remain in place during a fall. It is rated for the helmet's ability to protect against side and top impacts.

(28) Climbing Line — A 5400 pound minimum breaking strength rope used in tree climbing for ascending into a tree, descending from a tree, and/or working aloft in a tree.

(29) Climbing Spurs (Climbers, Tree Climbers, Gaffs, Pole Gaffs, Spurs, Tree Spurs, Lineman's Climbers, Spikes) — L-shaped metal shanks that attach to the foot and lower leg and are used to ascend or descend a tree bole by means of a sharp spike (gaff) that penetrates the tree bark and sticks into the wood of the tree.

(30) Competent person — A qualified person who has been authorized by the employer or employer representative to:

(a) Identify existing and predictable hazards in the surroundings or working conditions which are hazardous or dangerous to employees; and

(b) Eliminate the hazard or take corrective action.

(31) Confine a fire — To restrict the fire within determined boundaries established either prior to the fire or during the fire.

(32) Contain a fire — To take suppression action, as needed, which can reasonably be expected to check the fire's spread under prevailing conditions.

(33) Control a fire — To complete control line around a fire, and spot fires therefrom and any interior islands to be saved; burn out any unburned area adjacent to the fire side of the control lines; and cool down all hot-spots that are immediate threats to the control line, until the lines can reasonably be expected to hold under foreseeable conditions.

(34) Cut-up-tree/snag — A tree/snag, left standing, with the falling cuts started or completed.

(35) Cutter — One whose primary job is to manually fall, buck or limb trees.

(36) Danger tree — A standing tree, alive or dead, that presents a hazard to personnel due to deterioration or physical damage to the root system, trunk (stem), or limbs, and the degree and direction of lean.

(37) DBH — Diameter at breast height.

(38) Deadman — Buried log or other object used as an anchor.

(39) Deck — A stack of trees or logs.

(40) Descenders — Any rappelling device used to descend a vertically fixed rope.

(41) Designated person — An individual who has been assigned by the employer or the employer representative to perform a specific duty or duties.

(42) Direct supervision — Supervision by a competent person who watches over and directs the work of others who are within sight and unassisted natural voice contact.

**NOTE:** Direct supervision may be achieved by radio contact when an untrained runner is enroute to or from an operational area where there may be exposure to wildland fire hazards, provided there is a competent person at both the pick-up and drop-off points.

(43) Domino falling — The partial cutting of several trees which are left standing and then pushed over with a pusher (driver) tree. This definition of domino falling does not include the falling of:

(a) A single danger tree by falling another single tree into it.

(b) Two or more trees at the same time because their limbs are interlocked.

(44) Double tree intermediate support system — A system for supporting a loaded skyline in a support jack suspended on a single piece of wire rope that is supported by two trees in a manner that provides for sharing the load between the two trees. (See Figure 7-15.)

(45) Dutchman (as used in falling) — A method used to pull a tree against its lean by leaving a section of the undercut on one corner of the face.

(46) Dutchman (as used in yarding) — A block used to change direction of line lead (sideblocking).

(47) Dress a knot — To orient the rope parts of a knot so they are properly aligned, straightened, or bundled. This is often necessary for proper operation of the knot or to reduce rope stress.

(48) Dynamic Rope — A rope that has an elongation of 40 to 60 percent at the breaking strength and typically a 2 to 8 percent elongation at a working load of 200 pounds.

(49) Emergency care — Care provided by a person who is first aid and CPR trained.

(50) Emergency medical service — Care provided by a medically trained person such as in a hospital, clinic, ambulance or rescue vehicle.

(51) Emergency scene — The site where the suppression or control of a fire or an emergency exists.

(52) Equipment — See "Vehicle and Machine."

(53) Equipment protection designations — The listing of specific guarding requirements for specific logging machines.

(54) Escape route — A planned and understood route fire-fighters take to move to a safety zone or other low-risk area.

(55) Experienced person — A person who has sufficient training, experience and skill in a given process to be knowledgeable of all aspects of that process.

(56) Extreme weather conditions — Includes, but not limited to:

(a) Strong winds (applies to timbered areas only) — Wind velocity that reaches sufficient force to blow limbs from standing trees, cause windfalls, or prevent cutters from falling trees in the desired direction;

(b) Impaired vision — Conditions such as falling snow, sleet, mist, fog, rain, dust, or darkness which substantially impairs visibility to the extent that employees cannot clearly see signals, moving vehicles, equipment and lines, falling trees or other hazards;

(c) Hazardous snow or ice conditions — Snow or ice conditions which prevent escape from hazards such as falling trees, moving logs, vehicles, or similar hazards; or

(d) Lightning.

(57) Fairlead — Sheaves, rolls or a combination thereof arranged for receiving a line coming from any direction to minimize the line from burning and aid proper line spooling onto a drum.

(58) Fall — To cut down trees.

(59) Faller — A person who falls (cuts down) trees.

(60) Fire camp — A geographical site(s) equipped and staffed to provide sleeping, food, water and sanitary services to fire personnel.

(61) Fire fighting equipment — All portable and fixed fire suppression and control equipment.

(62) Fire season — That period during the year when the State Forester declares fire season in any part of the state, as required by ORS 477.505.

(63) Fire shelter — A personal protection item carried by fire-fighters which when deployed unfolds to form a pup-tent shelter of heat reflective materials.

(64) Firefighter — Any employee whose primary duty is fire suppression and control of fires on or around wildland areas.

(65) Flame resistance — The property of material, or combinations of component materials, to retard ignition and restrict the spread of flame.

(66) FOPS (Falling Object Protective Structure) — Structural members arranged in such a way to reasonably protect operators from falling objects such as trees, rocks, etc.

(67) Four-Inch Tie-In — A self-belay (snubbing) system usually consisting of a rope, webbing, and carabiners. It is used as a safety line to secure the climber to the tree below the 4-inch bole diameter and at 3-foot intervals along the bole when climbing above the 4-inch bole diameter.

(68) Frequent review or inspection — A review or inspection that is conducted at intervals which are necessary (conducted on daily to monthly intervals) to gain a desired assessment of conditions, practices, policies or procedures.

(69) Grounded (Cutting) — Placement of a tree on the ground.

(70) Grounded (Electrical) — A method to dissipate static or electrical charges.



(71) Grounded (Machines) — The placement of a machine component on the ground or device where it is firmly supported.

(72) Guarded — Covered, shielded, fenced, enclosed, or otherwise protected by means of suitable enclosures, covers, casings, shields, troughs, railings, screens, mats, or platforms, or by location to prevent injury.

(73) Guyline — A standing line used to support or stabilize a spar, tail tree, intermediate support tree, machinery or equipment.

(74) Health care provider — A health care practitioner operating within the scope of their license, certificate, registration, or legally authorized practice.

(75) High lead — A system of logging where the mainline is threaded through the mainline block which is located near the top of the spar or metal tower to obtain a lift of the logs being yarded and is returned to the vicinity of the logs by a haulback line.

(76) High visibility colors — Bright or fluorescent white, lime green, orange, yellow, red, or aqua colors that stand out from the surrounding background color so as to make them easily seen.

(77) In the clear — A position within the work area where the probability of hazardous contact with vehicles, machines, falling trees, moving logs, rootwads, chunks, material, rigging, and equipment is minimized by distance from the hazards and/or use of physical barriers, such as stumps, trees, terrain, or other objects providing protection.

(78) Initial attack — The control efforts taken by all resources which arrive at the fire during the first burning period (first 24 hours).

(79) Kicker (as used in cutting) — A piece of the face, or an equivalent object, placed in one side of a face cut to pull the tree from its lean as it falls.

(80) Landing — Any designated place where logs are laid after being yarded and are awaiting subsequent handling, loading and hauling.

(81) Landing chute — The head of the skid trail or yarding road where the logs are temporarily placed and are awaiting subsequent handling, loading, and hauling.

(82) Lanyard (Climbing rope, Safety Lanyard, Adjustable Lanyard, Prusik Lanyard, Flip Line) — A short piece of 5400 pound minimum breaking strength rope or webbing that secures the climber to the tree.

(83) Lay (cutting) — The desired direction of fall for a tree.

(84) Lay (wire rope) — A unit of measure to describe the straight-line distance in which a strand of wire rope makes one complete spiral around the core of a rope. The way wires have been laid to form strands and the way strands have been laid around the core (i.e., regular, lang lay, etc.).

(85) Life support line (rope) — Any 5400 pound minimum breaking strength line, such as but not limited to, a climbing rope, flip strap or lanyard used to support or secure a climber in a tree.

(86) Limbing — To cut branches off trees.

(87) Lodged tree (hung tree) — A tree leaning against another tree or object which prevents it from falling to the ground.

(88) Log — A segment sawed or split from a fallen tree, such as, but not limited to, a section, bolt, or tree length.

(89) Log dump — An area in which logs are removed from a truck or rail car. May be either dry land or water, parbuckled over a brow log or removed by machine.

(90) Logging — All operations relating to the falling of trees, cutting the fallen trees into suitable lengths, yarding, limbing, debarking, grading, loading, hauling, unloading, storing in decks or ponds until processed from timber to wood products.

(91) Machine — Equipment used or intended for use in forest activities operations such as but not limited to building or maintaining roads; felling trees; processing trees or fiber; yarding, moving or handling logs, trees, chunks and other material; stream restoration; forest operations for wildlife enhancement or other management objectives; and wildland fire suppression.

(92) Mainline (yarding) — The line that moves the turn of logs toward the yarder in any given system.

(93) Mechanized falling — Falling of standing timber by a self-propelled mobile-wheeled or tracked machine equipped with a shear or other powered cutting device.

(94) Metal tower — A vertical or leaning metal tube or boom used for yarding logs by various methods of cable logging.

(95) NRTL (Nationally Recognized Testing Laboratory) — An organization which is recognized by OSHA in accordance with OAR 437, Division 2/A, §1910.7, Appendix A, OSHA Recognition Process for Nationally Recognized Testing Laboratories.

(96) OPS (Operator Protective Structure) — Structures or enclosures whose primary purpose is to minimize the possibility of operator injury from hazards, such as whipping saplings, branches, jill-poking and snapping winch lines with the least adverse effect on operator visibility, comfort, and protection from other hazards. Specific standards and tests exist and are referenced in many national and state codes.

(97) Pass line — A small line threaded through a block at or near the top of a wood tree or metal tower to assist the high climber.

(98) Periodic review or inspection — A review or inspection that is conducted at predetermined intervals (conducted on 1 to 12 months intervals).

(99) Personal protective equipment — Clothing or equipment worn to protect the head, body, feet and extremities from chemical or physical hazards.

(100) Potential failure zone — An area that could be impacted by the failure of any part of a standing tree anchor, tail or intermediate support tree as the result of forces or loads imposed on the tree by guylines, running lines or skylines. The boundaries of the zone encompass the area into which the tree, or parts of the tree, could fall, slide or roll and all trees, logs, lines and material impacted by the tree failure.

(101) Prescribed Fire — Any fire burning under predetermined conditions to meet specific objectives related to fuels reduction or habitat improvement.

(102) Qualified first aid person — Has evidence to show valid first aid and CPR training within the last 2 years.

(103) Qualified person — A person who has:

(a) A recognized degree, certification, professional standing, knowledge, training or experience.

(b) Successfully demonstrated the ability to perform the work, solve or resolve problems relating to the work, subject matter, or project.

(104) Qualified Tree Climber — An individual having the physical capabilities, training, work experience and job assignment authorized by the employer to climb tree.

(105) Rated capacity — The load identified by the manufacturer that a system, vehicle, machine or piece of equipment can lift or move.

(106) Rappel Rope (Main Line, Prusik Rope, Descent Rope) — A 5400 pound minimum breaking strength rope used to rappel or descend from a tree.

(107) Reach — Usually a rectangular steel tube which slides in the trailer tunnel and is used as a connection between a log truck and the trailer.

(108) Reforestation — All forest management operations relating to the planting and nurturing of trees. The nurturing of trees includes: fertilization, pre-commercial thinning, mulching, pruning, animal control measures, application of chemicals, and stand inventories.

(109) ROPS (Roll-Over Protective Structure) — Framing and support for machinery that reduces the possibility of a seat belted operator from being crushed should the machine roll over. Specific standards and tests exist and are referenced in many national and state codes.

(110) Root wad — The root ball and dirt that is pulled from the ground when a tree or stump is uprooted.

(111) Rub rails — Guarding on the exposed sides of elevated bridges, ramps or runways to prevent wheeled equipment from going over the edge.

(112) Rub tree — A tree used to guide a turn around a certain area.

(113) Runner — A person who delivers supplies, materials or relays information.

(114) Running line — Any moving line in a cable yarding system.

(115) Saddle (Sit Harness) — A type of work harness specifically designed to support the climber for long periods in a sitting position. A saddle differs from a safety harness by not having a chest component and may have either two separate leg loops or a single wide strap that encircles the climber below the buttocks.

(116) Safety factor — The ratio of breaking strength to safe working strength or load.

(117) Safety Line (Safety Rope, Belay Rope) — A 5400 pound minimum breaking strength rope that is either attached to a climber and used for belaying by a ground person or is attached to an anchor point and adjusted by the climber (such as with the 4-inch tie-in).

(118) Safety pin (shackle) — A threaded shackle pin secured by a nut that is secured with a cotter key, latchpin or molly.

(119) Safety Strap (Sling) — A length of rope or webbing used as a protection point in a belayed ascent by either the ground person or the climber in a self-belay (as in the 4-inch tie-in). These straps are placed around the tree bole and secured by either a knot or carabiner, then secured to the belay rope with a carabiner.

(120) Safety swede — A device that is designed for the specific purpose of making a positive connection to binders that are being closed (tightened) or opened.

(121) Safety Zone (fire) — A designated area of sufficient size and suitable location that is expected to protect fire personnel from known hazards without using fire shelters, such as but not limited to an already burned area, previously constructed safety area, a meadow that won't burn, manmade or natural rocky area that is large enough and sufficiently devoid of fuels to take refuge without being burned.

(122) Secured — When the climber is safeguarded from unintended movement utilizing a climbing system that is attached to the climber and connected to the tree. Examples of being secured include, but are not limited to: (1) when tied in (2) when using a lanyard (3) when on belay (4) when ascending a climbing line using the footlock technique while utilizing a Prusik loop or ascenders.

(123) Serviceable condition — That quality of a tool, machine, vehicle, equipment, or other device to operate as it was intended to operate by the manufacturer.

(124) Short log (chunks) — Any log or fiber less than 27 feet long.

(125) Single jack — One cutter, in an area or portion of standing timber, who falls and bucks.

(126) Single tree intermediate support system — A system for supporting a loaded skyline in a support jack suspended from a single tree. The tree may be an upright single-rooted tree or a leaning tree severed or partially severed from the stump.

(127) Siwash (intentional) — The use of a natural physical object, such as a tree or stump, that changes the direction of a line rather than with a block.

(128) Siwash (unintentional) — When a line is incorrectly routed through standing timber or other objects or, as often occurs in side-hill yarding, the turn of logs pulls the bight of the line downhill and it hangs up on a stump, root wad or other object, changing the lead and creating a hazardous area.

(129) Skidder — A self-propelled machine, of the wheel or crawler design, or an animal used to move logs or trees to a landing.

(130) Skidding — The movement of logs or fiber on the surface of the ground toward the place where they can be further processed or loaded.

(131) Skyline — The line which is hung between two or more supports on which a carriage or block travels.

(132) Slackline — A system of logging where a carriage travels on a skyline that can be raised or lowered. The carriage is pulled to the landing by the mainline (skidding line) and is returned to the vicinity of the logs by the haulback line or gravity.

(133) Slash burning — The use of prescribed fire as a method of forest management.

(134) Slope (grade) — The increase or decrease in altitude over a horizontal distance expressed as a percentage. For example, change

of altitude of 20 feet (6 m) over a horizontal distance of 100 feet (30 m) is expressed as a 20 percent slope.

(135) Snag — Any standing dead tree or portion thereof.

(136) Snap Catch (Rope Snap, Snap Link, Snap Hook) — A metal device with a ring on one end that usually attaches permanently to a rope or cable. The other end has a spring-loaded, locking gate. As opposed to a carabiner, the gate on a snap link does not lock into the body of the snap link and does not offer any additional strength when closed.

(137) Snubbing — Retarding or controlling the movement of logs or machines by attachment to another vehicle or stationary object.

(138) Spring pole — A tree, segment of a tree, limb, or sapling which is under stress or tension due to the pressure or weight of another object.

(139) Square lead — A horizontal angle of up to 90 degrees formed by the projected lines of the mainline from the drum of the logging machine through the block or fairlead and the yarding road.

(140) Stability (machine or vehicle) — The capacity of a machine or vehicle to return to equilibrium or to its original position after having been displaced.

(141) Steel-Core Lanyard (Climbing rope, Flip Rope, Spur Rope, Cable-Core Lanyard) — A manila or synthetic rope with a steel cable core in which a snap hook or eye has been spliced at one end. This rope is used as a lanyard when spur climbing and when cutting, trimming, or pruning in a tree.

(142) Strip — A stand of timber or area of fallen and bucked timber in a predetermined location on which employees work in a planned pattern.

(143) Supervisory personnel — Agent of the employer (such as a manager, superintendent, foreperson, hooktender, rigging slinger, or person in charge of all or part of the place of employment) who directs the work activities of one or more employees.

(144) Swede connection — A line configuration consisting of wrapping two choker lines in the same direction around a tree or log and connecting the line nubbins to opposite line bells.

(145) Swing cut — A back cut in which the holding wood on one side is cut through.

(146) Swing radius (machines) — Is that distance equal to actual working radius of machines capable of upper structure rotation plus the length of the attachments, logs, and materials being handled.

(147) Tail hold — An anchor used for making fast any line or block other than a guyline.

(148) Tail tree — The tree at the opposite end from the landing area on which rigging is hung.

(149) Tight line — When a force is exerted on both main line and haulback at the same time.

(150) Timber cutting — The falling and/or bucking of trees by hand or mechanical means.

(151) Topping — Cutting off the top section of a standing tree prior to rigging the tree for a spar or tail tree.

(152) TOPS (Tip-Over Protective Structure) — Framing and support for machinery that reduces the possibility of a seat belted operator from being injured should the machine tip over on its side. Specific standards and tests exist and are referenced in many national and state codes.

(153) Tractor — A self-propelled machine of wheel or crawler design used to exert a push or pull force through mounted equipment to move objects or material.

(154) Tree Bole (Bole, Tree Stem, Tree Trunk) — The main vertical part of a tree.

(155) Tree Climber Trainee — An individual who is receiving training and on-the-job instruction from a qualified tree climber.

(156) Tree Climbing Work — Any task performed in or on a tree where access is accomplished by means of unsecured climbing, friction knots or mechanical ascenders, bole gripping systems, permanently or temporarily mounted steps, stacked sectional ladders, vehicle or machine hoisting, or climbing spurs.

(157) Tree jack (shoe) (other than for directional falling use) — A grooved saddle of wood, soft metal or rollers contained within two

steel side plates attached to a tree with a strap as a guide for a skyline, sail guy or similar static line.

(158) Tree plates — Steel bars sometimes shaped as elongated “J”s which are fastened to a tree to hold the guylines and prevent the rigging from cutting into the tree when tightened. The hook of the “J” is also used to prevent the mainline block strap from sliding.

(159) Turn — Any log or group of logs or other material usually attached by chokers, grapples or other means and moved from a point of rest to the landing or landing chute area.

(160) Undercut (face) — A notch cut in a tree to guide the direction of the tree fall and help prevent splitting or kickback.

(161) V-lead — A horizontal angle of less than 90 degrees formed by the projected lines of the mainline from the drum of the logging machine through the block or fairlead and the yarding road.

(162) Vehicle — A car, bus, truck, trailer or semi-trailer owned, leased or rented by the employer that is used for transportation of employees or movement of material. Any carrier that is not manually propelled.

(163) Watcher/Firewatch — A person who visually observes the area on which operation activity occurred for the out-break of fire.

(164) Wildland Fire — Any non-structure fire, other than prescribed fire, that occurs in the wildland.

(165) Wildlands fire fighting — All activities, operations, and equipment of employers and employees involved in the suppression or control of fires on wildlands. Does not include interior structural fire suppression or control.

(166) Wildlife tree — A live, partially dead, or snag tree in the forest riparian zone, or in a cutting unit that is left for wildlife habitat. May also be a danger tree.

(167) Winching — The winding of cable or rope onto a spool or drum.

(168) Within the stakes — When the log center is below the top of the stakes.

(169) Work area — Any area frequented by employees in the performance of assigned or related duties.

(170) Wrapper (tie down) — A chain, cable, steel banding, synthetic rope or fiber webbing assembly used to contain a load of logs.

(171) Yarder — A machine with a series of drums used to yard logs.

(172) Yarding — Movement of logs or trees from the place they were felled to an area where they can be further processed.

[ED. NOTE: Figures and Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05; OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

#### **437-007-0100**

##### **Safety and Health Program**

Every employer must implement a written safety and health program that establishes management commitment, supervisory responsibilities, accident investigation, employee involvement, hazard identification, training, and annual evaluation of the program.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0105**

##### **Management Commitment**

The employer must:

(1) State the purpose of the safety and health program.

(2) Identify the safety and health personnel and resources that will be used to implement the program.

(3) Establish a labor and management policy that provides for ongoing evaluation of employees' safety performance.

(4) Establish a disciplinary policy to address unsafe work practices.

(5) Assign the responsibility, authority and accountability for worker safety and health to all employees who supervise or direct work activity.

(6) Authorize a competent person(s) for each jobsite who has the authority to:

(a) Supervise all personnel at the site.

(b) Enforce the company's safety and health program.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0110**

##### **Supervisory Responsibilities**

The employer or their authorized representative must:

(1) Supervise all employees at the site and enforce the company's safety and health program.

(2) Verify that all current and new employees:

(a) Can safely perform assigned work tasks.

(b) Have received adequate job safety instruction and training.

(3) Periodically review the safety performance of each employee.

(4) Provide job safety and health instruction, training or disciplinary action to an employee when the employee is working in an unsafe manner.

**NOTE:** This training can be limited to the specific information needed to correct the unsafe work practice(s).

(5) Closely supervise each employee who is receiving job safety and health instruction and training.

(6) Require all employees to demonstrate the ability to safely perform their work task before permitting them to work independently.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0125**

##### **Accident Investigation**

The employer or their authorized representative must:

(1) Investigate every employee fatal and recordable injury/illness to determine the cause(s).

(2) Discuss “near misses” with employees.

(3) Identify the measures to prevent recurrence of the “near misses,” fatal and recordable injury/illness.

(4) Inform all employees of the preventive measures resulting from investigations.

(5) Take steps to prevent recurrence of similar “near misses,” fatal and recordable injury/illness.

(6) Keep written results of the fatal and recordable injury/illness investigations and corrective measures for 3 years.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0130**

##### **Employee Involvement**

The employer or their authorized representative must:

(1) Encourage employees to participate in site planning and the pre-work safety meeting to discuss site conditions and known hazards.

(2) Require employees to report safety and health hazards.

(3) Require qualified employees to take corrective action and eliminate hazards.

(4) Conduct monthly safety meetings with all employees.

(a) Keep written minutes and attendance records for 3 years.

(b) Make written minutes and attendance records available to all employees.

**NOTE 1:** Meetings may be with individuals, separate crews, or larger groups.

**NOTE 2:** Upon written application, OR-OSHA may approve an innovative method to comply with the requirements for monthly safety meetings.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-0135**

##### **Hazard Identification and Control**

The employer or their authorized representative must:

(1) Implement a procedure for monthly safety inspections of all worksites, vehicles, machines, equipment, and work practices.

(2) Identify who will complete monthly safety inspections.



(3) Implement procedures that will be used to report and correct hazardous conditions.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0140**

##### **Training**

The employer or their authorized representative must:

(1) Provide job safety and health instruction and training to current and new employees, including supervisors, that is adequate for the work task. They must receive training before:

(a) Starting their initial work assignment; or  
(b) Being assigned new work tasks, tools, equipment, machines, or vehicles.

(2) Evaluate each employee who has previously received job safety and health instruction and training.

**NOTE:** An employee does not need to be retrained if their prior instruction and training are adequate.

(3) Provide job safety and health instruction and training that includes the:

(a) Safe performance of assigned work tasks.  
(b) Procedures, practices and requirements of the employer's work site.

(c) Recognition of safety and health hazards associated with each employee's specific work tasks, including measures and work practices to prevent or control those hazards.

(d) Safe use, operation and maintenance of tools, equipment, machines and vehicles each employee uses or operates, including following the manufacturer's operating and maintenance instructions, warnings and precautions.

(e) Requirements of this standard and hazards of the industry.

(4) Require each employee receiving job safety and health instruction and training to:

(a) Work under the close supervision of a qualified person.  
(b) Demonstrate to the employer or his authorized representative the ability to safely perform the work assignment before they are permitted to work independently.

(5) Assure that a qualified person(s) presents the job safety and health instruction and training.

(6) Assure that job safety and health instruction and training is:

(a) Presented in a language and manner that the employee(s) is able to understand.

(b) Appropriate in content for the skill level of the employee(s) being trained.

(7) Keep a current written record of job safety and health instruction and training for each employee that contains the following:

(a) Who was instructed or trained.  
(b) The date(s) of the instruction or training.  
(c) A description of the training.  
(d) The name of the trainer.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0145**

##### **Annual Program Evaluation**

(1) Each employer must review and evaluate their safety and health program annually.

(2) The program evaluation must include the methods and procedures used to identify and revise program deficiencies.

(3) Written findings of the annual evaluation must be maintained for 3 years from the date of issue.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0200**

##### **Site Planning and Implementation**

(1) Before the start of any forest activities of more than one day duration, the employer must:

(a) Conduct an onsite safety survey.  
(b) Hold a pre-work safety meeting with employees to discuss:

(A) The emergency medical evacuation plan.

(B) Site conditions and known hazards.

(c) Document the pre-work safety meeting.

**NOTE:** The pre-work safety meeting can be used to meet the monthly safety meeting requirement 437-007-0130(d).

(2) Before work starts, a competent person must evaluate any danger tree(s) or snag(s) within reach of a work area to determine if it poses a hazard to personnel. If the tree(s) or snag(s) poses a hazard, it must be felled or the work arranged to minimize danger to workers.

(3) Workers must be placed and their activities arranged so they are in the clear and the actions of one worker will not create a hazard for any other worker(s).

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0205**

##### **Hazard Identification**

(1) The employer must ensure that identified hazards are marked with hazard identification ribbon. The hazard identification ribbon must be bright orange, at least 1 1/2 inches wide, and marked in black with "skull and crossbones" and/or the word "Danger."

(2) The employer must notify employees of existing marked hazards in their work area.

(3) The employer must instruct all employees in the recognition and use of hazard identification ribbon.

(4) Hazard identification ribbon must be available for employee use and carried by all cutters.

(5) Hazard identification ribbon must not be used for any other purpose than identifying hazards and must be removed when the hazard is abated.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0210**

##### **Checking System**

(1) The employer must implement a checking system to account for all employees at the end of each work shift. Employees must be knowledgeable about the checking system.

(2) The employer must implement a system to check the well-being of those workers whose jobs may be single employee assignments, as provided for in OAR 437-007-0215(3). The system must include:

(a) The time interval between checks and the procedures to be followed if the employee cannot be contacted, including provisions for emergency medical care and treatment.

(b) A specific person must be assigned for:

(A) Contacting the lone employee.

(B) Verifying when contacts were made.

(c) The time intervals for checking the single employee's well-being must be understood and agreed to by all parties. Intervals should reflect the hazardous nature of the work and the methods available for checking.

(d) The system for checking an employee's well-being must be reviewed at least annually, or more frequently if there is a change in work arrangements/assignments which could adversely affect an employee's well-being, or a report that the system is not working effectively.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0215**

##### **Working Alone**

(1) The employer must not assign workers to a task or location so isolated as to be without visual, audible, or radio contact with another person who can summon or provide aid in an emergency.

(2) Unless otherwise specified in division 7, in any operations where fire suppression, prescribed fire, tree climbing, power chain saw operation, yarding, loading or a combination of these duties is carried on, there must be a minimum crew of two employees who

must work as a team and must be in visual or natural unassisted voice communication with one another.

(3) Workers are not prohibited from working alone when performing certain jobs which by their nature may be single employee assignments, such as: mechanics, watchers, the operation of motor vehicles, self-loading log trucks, mechanized logging machines, feller bunchers, forwarders, processors, harvesters or excavator-based machines, provided the employer complies with the requirements of 437-007-0210(2), Checking System; 437-007-0775, Protective Structures for Operators; and 437-007-0220, Medical Services and First Aid.

(4) Mechanics or other employees must not be assigned to work on machines by themselves when there is a probability of a fall from elevated work locations or machines. When the work is of such nature that heavy parts require moving, or there is a probability that anything heavy could fall on the person, there must be another person in the area who can render immediate assistance or emergency care.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-0220**

#### **Medical Services and First Aid**

(1) The employer must develop and implement an emergency medical plan to ensure emergency medical service to employees with major illnesses and injuries.

(2) All employees must be knowledgeable concerning the emergency care and emergency medical treatment plan.

(3) All personnel employed in forest activities must be trained in first aid and CPR as follows:

(a) In a language they understand.

(b) At least every 2 years or as required by a nationally recognized first aid training provider.

(c) All supervisors and all cutters must be first aid and CPR trained prior to their initial assignment.

(d) All new employees, other than supervisors and cutters, that are not first aid and CPR trained prior to their initial assignment must receive a first aid and CPR briefing.

(e) All new employees must receive first aid and CPR training within 6 months of being hired.

(f) For the initial start-up of a side or operation where new employees are assigned, at least one out of every five crew members must be first aid and CPR trained before work starts.

**NOTE 1:** Log truck drivers and watchers are not required to receive first aid and CPR training if they are not involved with falling, yarding or processing logs.

**NOTE 2:** See the Oregon OSHA Division 2, Subdivision 2/Z, Toxic and Hazardous Substances, §1910.1030, Bloodborne Pathogens, if an employee comes into contact with blood or other potentially infectious material as the result of providing first aid.

(4) Each worksite must have at least one serviceable and operable two-way radio, phone or radio/phone combination available to reach ambulance service. Citizens' band radios are permitted only as a secondary means of communication.

**NOTE:** This rule does not apply to road graders, log and dump trucks, crew buses and similar mobile equipment that service locations where a communication unit is already available (e.g., yarders, loaders).

(5) Each operating site or crew in a communication "dead" area must have a mobile communication unit or advance plans to relay emergency calls through another site operating in the vicinity.

(6) At worksites of more than one day duration, the employer must have available near the worksite communication device(s):

(a) Written land directions to the worksite.

(b) The worksite location by Township, Range and Section.

(7) When air evacuation is available to any worksite of more than one day duration, the employer must have available, near the worksite communication device(s), the:

(a) Name and phone number of the air evacuation service.

(b) Worksite location by latitude and longitude or township, range and section as required by the air service.

(8) The employer must assure that transportation is always available to:

(a) A point where an ambulance can be met; or

(b) The nearest suitable medical facility.

(9) Vehicles used for the transportation of personnel must carry a first aid kit:

(a) Suitable for the number of passengers customarily transported.

(b) Suitable for the types of injuries that could occur.

(c) Located where they are readily available to the driver or crew.

(10) First aid kits must be provided at each worksite.

(11) Worksite first aid kits must contain the following minimum supplies at all times:

(a) Eight gauze pads individually wrapped (at least 4 inches by 4 inches in size);

(b) Two large gauze pads that are or can be folded to an approximate size of 8 inches by 10 inches or the equivalent;

(c) One box adhesive bandages;

(d) One package gauze roller bandage at least 2 inches wide or the equivalent;

(e) Two triangular bandages;

(f) Wound-cleaning agent, such as sealed, moistened towelettes, or soap and water;

(g) Scissors;

(h) One stretcher or equivalent weatherproof litter at any three or more person worksite, and at all logging sites;

(i) Two blankets, one of which must provide the strength and insulation equivalent to a wool blanket;

(j) Latex gloves;

(k) Mouth barrier;

(l) Tweezers;

(m) Adhesive tape;

(n) Two elastic wraps; and

(o) Splint material.

**NOTE:** The quantities of each item are minimum amounts. Bulk pack or unit pack supplies are acceptable. First aid supplies from other states may be acceptable if such supplies are the reasonable equivalent of those required by this rule.

(12) The employer also may have the number and content of first aid kits reviewed and approved annually by a health care provider.

(13) First aid supplies must be regularly inspected and replenished as needed.

(14) First aid supplies must be stored in containers adequate to protect the contents from damage, deterioration or contamination.

(a) The containers must be clearly marked "First Aid."

(b) The container must not be locked, but may be sealed.

(c) Soap and water, stretcher, or basket and blankets may be stored separately, but must be near or with the first aid supplies.

(15) All employees must be informed of the location of first aid supplies.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

### **437-007-0225**

#### **Working Near Unstable Objects and Danger Trees**

(1) Each day in the course of forest activities, a general inspection must be conducted of the areas to be worked that day to identify trees, logs, rootwads, rocks, chunks or other objects that may roll, slide or fall towards personnel. If any object is likely to move during work activity, it must be removed, stabilized, or the work activities modified so that the unstable objects are no longer a hazard.

**NOTE:** Consideration must be given to rain, snow, other weather conditions, or working below felled and bucked timber that may increase the likelihood that objects may roll, slide or fall.

(2) On a daily basis, a competent person must evaluate any danger tree(s) or snag(s) within reach of a work area to determine if it poses a hazard to personnel. If the tree(s) or snag(s) poses a hazard it must be felled or the work arranged to minimize danger to workers.

(3) Personnel must be alert at all time for logs, trees, rootwads, rocks or other objects that could roll or slide towards them or others as a result of any work activity.

(4) Trees must not be fell or bucked within a unit of standing timber prior to any cutting operation if such falling or bucking creates a hazardous condition for subsequent cutters or cutting operations.

(5) During road building and maintenance operations, right-of-way log decks, rootwads, slash and rocks must be placed on stable locations so that personnel are not exposed to the hazards of working near unstable objects.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0230**

##### **Power Line Safeguards**

(1) Forest activities operations near overhead electric lines must be done in accordance with the requirements of OAR 437, Division 2/S, Electrical, §1910.333(c)(3), Selection and Use of Work Practices.

(2) When any machinery is being moved or operated in the vicinity of an overhead power line, a minimum clearance of 15 feet must be maintained between the overhead power lines and all elements of the machine, including logs, trees, or other material being handled by the machine.

**NOTE:** Any overhead power line must be considered to be an energized line until the person owning the line or the electrical utility authorities indicate that it is not energized.

(3) While falling trees, the minimum distance required by this section applies when a tree could fall within 15 feet of an overhead power line.

(4) The minimum distance required when cable yarding must not be reduced by line whip or breakage.

(5) A person must be designated to observe clearance and give timely warning for all operations where it is difficult for the operator to maintain the required distance by visual means.

(6) If work activities could encroach upon the minimum clearance required by this section, the employer or person responsible for the work to be done must promptly notify the power company in accordance with ORS 757.805, Oregon's Overhead Line Safety Act. The responsible party and the power company must complete mutually satisfactory safety measures as required before proceeding with any work which would impair the aforesaid clearance.

(7) If contact is made with a power line by a tree, rigging, machinery, or the structure supporting the overhead powerline is damaged by forest activities, the power company must be notified immediately and all employees must remain clear of the area until power company personnel advise that conditions are safe.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-0235**

##### **Working Conditions**

Working Conditions. A competent person must determine if work activities can be safely conducted during inclement weather conditions or darkness. When weather conditions or darkness pose a hazard to workers, the activity must be discontinued until the work is arranged to mitigate the hazard.

**NOTE:** This rule does not prohibit logging or wildland fire suppression activities at night, but it requires an assessment of conditions so work can be done safely.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-0240**

##### **Night Logging**

(1) Where work is conducted during the hours of darkness, the work area must be provided with illumination which will allow employees to safely perform their duties. The sources of illumination must be located and directed so as to create a minimum of shadows and glare.

(2) Where it is not practical to provide illumination for the work area, other means, such as local sources of illumination or headlamps, must be used by all personnel.

(3) If using a portable tailhold, lights must be directed on the equipment to permit the employee to visually ascertain that the tailhold equipment remains stabilized.

(4) Personnel working at night must wear reflective stripes at least 1-inch wide visible from all directions on upper body cover or hard hats.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0245**

##### **Field Sanitation For Reforestation Activities**

(1) Toilet and hand washing facilities must be provided by the employer when it is feasible for employees to use them.

(2) Where it is not feasible to use toilet and hand washing facilities, the employer must provide, at no cost to employees, suitable substitutes such as sanitary kits.

**NOTE:** Sanitary kits would include moist towelettes and hand towels for hand washing.

(3) The employer must provide, at no cost to employees, potable water and the means to carry it.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0300**

##### **General Requirements**

(1) Personal protective equipment, including any personal protective equipment provided by an employee, must be maintained in a safe and effective condition, or removed from service or use.

(2) Personal protective equipment must be inspected before initial use during each workshift.

(3) Defective or damaged personal protective equipment must be repaired or replaced before it is put into service.

(4) When the employer is required to provide personal protective equipment, it must be at no cost to the employee, unless a specific exception is noted.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0305**

##### **Head Protection**

(1) Where there is potential for head injury from falling or flying objects, the employer must provide and require the use of head protection (hard hats) that comply with any of the following consensus standards:

(a) ANSI Z89.1-2003, "American National Standard for Industrial Head Protection;"

(b) ANSI Z89.1-1997, "American National Standard for Industrial Head Protection;" or

(c) ANSI Z89.1-1986, "American National Standard for Personnel Protection — Protective Headwear for Industrial Workers — Requirements."

**NOTE:** The Oregon OSHA Resource Center has copies for public review at 350 Winter Street NE, Salem OR 97309-0405.

**EXCEPTION:** Employees working in or under a vehicle cab or canopy are excluded from wearing a hard hat while in, or under, a vehicle.

(2) The employer must replace, at no cost to the employee, head protection (hard hat) that is no longer serviceable because of reasonable wear and tear.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2010, f. & cert. ef. 2-25-10

#### **437-007-0310**

##### **High-Visibility Color**

All employees exposed to the potential hazard of moving lines, falling timber, logs, vehicles, machines and other moving equipment or materials must wear upper body cover and/or hard hats of a high-visibility color, that contrasts with the background color(s).



Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0315****Eye and Face Protection**

Where chips, sawdust or flying particles present a hazard, the employer must provide and require personnel to wear eye and face protection meeting the requirement of Division 2/I.

**NOTE:** Logger-type mesh screen may be used for chain saw operators.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0320****Hand Protection**

The employer must provide and require employees to use hand protection:

(1) Such as cotton gloves or other suitable hand protection whenever employees handle lines, rough material or when the nature of the work requires protection for the hands.

(2) When the employees' hands are exposed to hazards such as those from skin absorption of harmful substances, chemical and thermal burns.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0325****Leg Protection**

The employer must provide and require each employee who operates a chain saw to wear flexible ballistic nylon pads, chaps or other equivalent protection in a manner that protects their legs from the top of the thigh to the top of the boot from contact with the moving saw chain.

**EXCEPTION:** This does not apply to an employee working aloft in trees when supported by climbing spurs and climbing belt.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0330****Foot Protection**

(1) All personnel must wear foot protection, such as heavy-duty boots, that:

(a) Are waterproof or water-repellant where wet conditions exist.

(b) Cover and support the ankle.

**NOTE:** The employer is not required to provide logging boots for employees. The cost of logging boots may be borne by employees. The employer must assure, however, that logging boots, as well as all PPE provided by the employer, are worn by employees and are in serviceable condition and meet the requirements of Subdivision 7/D.

(2) Personnel who operate chain saws must wear cut resistant foot protection that will protect against contact with running saw chains.

(3) Personnel whose duties require them to walk on trees, logs or boomsticks, must wear sharp caulked boots, or the equivalent.

(4) When conditions such as ice, snow, mud, rocky terrain, etc., render caulks ineffective, heavy duty slip-resistant type work boots that provide ankle support must be worn.

(5) When nonslip-type shoes or boots afford a greater degree of employee protection than caulk shoes, such as at scaling stations, log sorting yards, etc., then this type footwear may be worn in lieu of caulk shoes providing firm ankle support and secure footing are maintained.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0335****Hearing Protection**

(1) Personnel must be protected from the effects of noise exposures in accordance with OAR chapter 437, division 2/G, Occupational Health and Environmental Control.

(2) Personnel must wear hearing protection unless monitored under typical work conditions and found to be exposed to a noise level of less than an 8-hour time-weighted average (TWA) of 85 db when:

(a) Operating chain saws, other noise producing equipment, or machines.

(b) Working on landings.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0340****Personal Floatation Devices**

When working on or over water, personnel must be provided with and must wear approved buoyant protective equipment as required by Division 2/I, OAR 437-002-0139.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0345****Respiratory Protection**

(1) When employees are exposed to air contaminants that exceed applicable permissible exposure limits (PEL) as required by Division 2/Z, OAR 437-002-0382, Oregon Rules for Air Contaminants, the employer must provide and enforce the use of respiratory protective equipment as required in Division 2/I, §1910.134.

(2) Employees must be provided protection from dust when exposed to total dust levels of 10 milligrams per cubic meter of air per 8-hour time-weighted average (TWA).

(3) If respirators are used for protection from dust, created by the operation of machines, the employer must follow the requirements of Division 2/I, §1910.134, or the requirements of 437-007-0350.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0350****Respiratory Protection When Machines Are Operated**

(1) When the operation of machines expose any employee to dusty conditions and an air-purifying respirator or filtering facepiece is used for personal protection, the respirator must have a N-95 filter rating unless employees are monitored under typical work conditions and found to be exposed to total dust levels less than 10 milligrams per cubic meter of air per 8-hour time-weighted average (TWA).

(2) When the use of a respirator is required by the standard, the employer must provide respirators, medical evaluations and training, at no cost to the employee.

(3) Before any employee is permitted to use an air-purifying respirator, they must complete a medical evaluation performed by a physician or other licensed health care professional.

**NOTE 1:** This evaluation can be performed by using:

- (a) A medical questionnaire, or
- (b) An initial medical examination that obtains the same information as the medical questionnaire.
- (c) A medical evaluation is not required if the employee is voluntarily using an approved respirator.

**NOTE 2:** Use Appendix 7-G, Respiratory Medical Evaluation Questionnaire (Mandatory).

(4) The employer must train employees:

(a) About the respiratory hazards to which they are potentially exposed during routine work.

(b) In the proper use of respirators, including putting on and removing them, any limitations on their use, maintenance and storage.

(5) Respirators must be clean and maintained in good working order.

(6) Respirators must be stored in a dry and sanitary place.

(7) Respiratory protection must be:

(a) NIOSH-certified.

(b) Used in compliance with the conditions of its certification.

(8) When wearing air purifying respirators for personal protection:

(a) Facial hair must not come between the sealing surface on the facepiece and the face.

(b) Facial hair must not interfere with valve function.

(c) Conditions must not interfere with the face-to-facepiece seal or valve function (facial characteristic, glasses, etc.).

(9) A qualitative fit test (QLFT) must be performed before employees use a tight fitting air purifying respirator.

**NOTE:** This is a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.

(10) Employees using a tight fitting air-purifying respirator must perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on.

(11) Employees must use either the positive and negative pressure check method, or follow the respirator manufacturer's recommended user seal check method.

(12) Positive pressure checks must be performed by closing off the exhalation valve and exhale gently into the facepiece.

**NOTE 1:** The face fit is considered to be satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal.

**NOTE 2:** For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

(13) Negative pressure checks must be performed by closing off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), and then inhaling gently so that the facepiece collapses slightly.

**NOTE 1:** If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

**NOTE 2:** The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0400**

##### **Hand and Portable Power-Driven Tools**

(1) The employer is responsible for the safe condition of hand and portable power tools used in forest activities regardless of tool ownership.

(2) All safety devices and controls must be in place and function properly.

(3) The employer must require personnel to:

(a) Inspect each tool before use to assure its safe condition.

(b) Report any unsafe tool condition to the employer.

(c) Remove or repair tools if the condition affects the safe operation.

(4) If a slick or slippery axe or hammer handle cannot be firmly gripped, the tool must not be used.

(5) Tools must be:

(a) Appropriate for their use.

(b) Used in a safe manner.

(6) Wooden handles must be sound, straight-grained and tight-fitting.

(7) Heads of shock or impact-driven and driving tools must be dressed or ground to remove any mushrooming.

(8) When the heads of shock or impact-driven tools show a tendency to chip, they must be removed from service.

(9) Cutting edges of tools must be sharp and properly shaped.

(10) When tools are not being used, they must be stored in a location where they will not create a hazard.

(11) Racks, boxes, holsters, barriers or equivalent means must be provided and used so the passengers and/or driver will not be endangered by tools, equipment or materials being transported, loaded or removed.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0405**

##### **Chain Saws**

(1) Chain saws must be inspected before use.

(2) Chain saws must not be used if they have cracked or loose handle bars or defective vital parts.

(3) Chain saws must be operated and adjusted in accordance with the manufacturer's instructions.

(4) Chain saws must not be fueled with the engine running.

(5) Chain saws must be fueled at least 10 feet (3 m) from open flames or other source of ignition.

(6) Chain saws must not be started within 10 feet (3 m) of the fueling area.

(7) Chain saws must have an operable chain brake, if originally designed and equipped with a chain brake.

(8) Chain brakes and other manufacturer's safety features must be operational at all times.

(9) Chain saws must be equipped with an automatic throttle control which will return the engine to idling speed upon release of the throttle.

**NOTE:** "Idling" is when the chain is not moving while the engine is running.

(10) Each chain saw must meet all applicable requirements of American National Standard, ANSI B175.1-1991, Safety Requirements for Gasoline-Powered Chain Saws, except where exempt by these rules.

(11) Chain saws must be started on the ground if they are not otherwise firmly supported.

**NOTE:** This does not apply to personnel working aloft in trees when supported by climbing spurs and climbing belt.

(12) Chain brakes must be engaged when feasible, while chain saws are being started, unless the manufacturer recommends otherwise.

(13) Chain saw operators must be certain of footing before starting to cut.

(14) Chain saws must be held with the thumbs and fingers of both hands encircling the handles during operation unless the employer demonstrates that a greater hazard is posed by keeping both hands on the chain saw in that particular situation.

(15) Personnel must not use a chain saw:

(a) To cut directly overhead in a manner that would cause limbs, chunks of bark or pieces of wood to fall on the operator.

(b) At a distance that would require them to relinquish a safe grip on the saw.

(c) In a position or at a distance that could cause them to:

(A) Become off balance, or

(B) Have insecure footing.

(16) Chain saws must be carried in a manner that will not create a hazard for the operator.

(17) Where terrain or brush creates a hazardous condition, the chain saw engine must be shut off while the operator is walking.

(18) The chain saw must be shut down or the chain brake must be engaged whenever a saw is carried farther than 50 feet.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0410**

##### **Fire Extinguishers**

(1) Portable fire extinguisher use, training and maintenance must be in accordance with OAR chapter 437, division 2, subdivision L, Fire Protection.

(2) Fire extinguishers or protection systems must be of a type approved by a nationally recognized testing laboratory (NRTL) (see OAR 437, division 2/A, §1910.7, for definition of NRTL).

(3) There must be an approved fire extinguisher with a minimum rating of 1A:10BC (or equivalent) on each vehicle and machine, or the area where the vehicles and machines are operated.

(4) After July 1, 2007, fire extinguishers provided on each vehicle and machine must be 2A:10BC or provide equivalent protection.

(5) Fire extinguishers must be fully charged and maintained in operable condition.

(6) Portable extinguishers must be visually inspected monthly.

(7) Portable extinguishers must have an annual maintenance check.

**NOTE:** Stored pressure extinguishers do not require an internal examination.

(8) The annual maintenance check date must be recorded and this record must be retained for one year.

(9) Each motor vehicle used for transporting explosive materials must be equipped with fire extinguishers as follows:

(a) Vehicle less than 14,000 pounds must have at least two extinguishers having a combined capacity of 4A:20BC.

(b) Vehicle 14,000 pounds or greater and tractor/semi-trailer units must have at least two extinguishers having a combined capacity of 4A:70BC.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0415**

##### **Explosives and Blasting Agents**

(1) The storage, transportation, handling, and use of explosives and blasting agents must be in accordance with OAR chapter 437, division 3, subdivision U, Blasting and The Use of Explosives.

(2) Explosives and blasting agents must be handled only by qualified, designated personnel.

(3) Explosives and blasting agents must not be transported in:

(a) The driver's compartment.

(b) Any passenger-occupied area of a machine or vehicle.

(4) Explosives must not be hauled on any vehicle while it is engaged in transporting workers.

**EXCEPTION:** This rule does not prohibit the driver and one qualified person from riding in a vehicle in which explosives are being hauled.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0500**

##### **Roads**

(1) Haul roads must be of sufficient width and evenness for safe operation of vehicles and machines.

(2) Haul roads and bridges must be constructed and maintained to accommodate the safe movement of vehicles and machines.

(3) Vehicles and machines must not be moved on any access roadway or grade that will not accommodate the safe movement of vehicles and machines.

(4) When haul road grades exceed 20 percent slope:

(a) The vehicle or machine must be approved by the manufacturer for operation on the steeper grades.

(b) Additional precautions must be taken, such as assisting or snubbing the vehicle or machine down the slope.

(5) Deep holes, large rocks, logs, or other dangerous surface defects on roads must be corrected before starting logging operations.

(6) On those portions of roads under the direct control of the employer:

(a) All danger trees that can fall or slide onto roadways must be felled.

(b) Loose rocks, stumps and other materials which present a hazard must be secured or cleared from banks.

(7) Root wads, logs, and other unstable debris must not be placed against standing timber in a manner that creates a hazard for timber falling, logging operations or other forest activities.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0505**

##### **Bridges**

(1) All bridge structures and surfaces must be:

(a) Adequate to support the maximum imposed loads.

(b) Maintained in good repair.

(2) All bridges must have rub rails constructed of wood, concrete or equivalent materials that:

(a) Have a minimum height of 9 inches (6-inch by 6-inch timbers set on 4-inch by 6-inch blocks).

(b) Are secured to the bridge deck.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0510**

##### **Flagging**

(1) Warning signs and a flagger(s) must be placed in advance of active operations, or other equivalent protection must be used on roads to control traffic where hazardous conditions are created from forest activities, such as, but not limited to:

(a) Skylines and running lines or rigging across road grades, excluding tightened guywires.

(b) The movement of logs, chunks or debris across or suspended over road grades.

(c) Timber cutting operations.

(d) Helicopter logging operations.

**NOTE:** Where there is no through traffic, such as on a dead end road or where the property owner's permission or proper authority is granted to close a section of road, warning signs and barricades may be used instead of flagger(s).

(2) Flaggers must wear vests of a high-visibility color and use a minimum 18-inch x 18-inch "STOP/SLOW" paddle to control traffic.

(3) Warning signs and flagging activities along state and county roads must comply with the requirements of the Millennium Edition of the (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), December 2000.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0515**

##### **Signs**

(1) Warning signs must be prominently displayed a minimum of 300 feet in advance of forest activities which create hazardous conditions for road traffic.

(2) Warning signs must be removed or covered when forest activity operations are interrupted for an extended period.

(3) Warning signs must be worded to describe the hazard, type of operation or action to be taken.

**NOTE:** Samples of operation specific sign wording:

Lines Across Road

Contact Operator On Channel

Stop Do Not Proceed Without Contacting

Timber Falling Ahead

Blasting

Logging Operations Ahead

Heavy Truck Traffic

CB Channel

(4) Warning signs must:

(a) Be a minimum dimension of 24-inch x 24-inch diamond.

(b) Have an orange background.

(c) Have 4-inch black letters.

(5) When stop signs are used they must:

(a) Be eight sided.

(b) Have a minimum height and width of 24 inches.

(c) Have a red background with 6-inch white letters for the "STOP" side.

(6) The "STOP/SLOW" paddle must:

(a) Be eight sided.

(b) Have a minimum height and width of 18 inches.

(c) Have a red background with 6-inch white letters for the "STOP" side.

(d) Have an orange background with 6-inch black letters for the "SLOW" side.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0520**

##### **Vehicle General Requirements**

(1) A positive engine shut-off must be provided within reach of the operator when in normal operating position.

(2) Vehicles must be equipped with adequate steps, ladders, handholds, or grab bars to provide safe access and egress.



(3) Steps must be constructed or treated with slip-resistant materials.

(4) Vehicle seats must be securely fastened.

(5) Doors must open easily.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0525****Vehicle Warning Devices**

All vehicles must be equipped with a horn or audible warning device which can be clearly heard above the surrounding noise in the vicinity of the vehicle.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0530****Vehicle Windshields, Windows and Mirrors**

(1) Vehicle windshields must be equipped with powered wipers.

(2) Vehicles must be equipped with operable windshield defogging or defrosting equipment.

(3) Defective or broken glass in a vehicle which impairs the vision of the operator or could cause injury to occupants of a vehicle must be replaced.

(4) Deposits on glass which impair the vision of the operator must be removed.

(5) Windshield and windows installed on vehicles must be safety glass which meets the requirements for safety glazing material used in motor vehicles, as defined in the American National Standards Institute, Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1996, or a material which will furnish equivalent safety.

(6) Vehicles must be equipped with an adjustable sun visor.

(7) Vehicles must be equipped with outside-mounted rear view mirrors on each side when the load or passengers obstruct the use of the rear view mirror located in the cab.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0535****Vehicle Passenger Compartments**

(1) Floors and decks must be suitable for safe footing.

(2) All openings between enclosed passenger compartments and engine or exhaust from which fumes or gases may enter must be effectively sealed.

(3) Enclosed passenger compartments must be reasonably dust-proof and watertight.

(4) Floors and interior surfaces of passenger compartments must be free of protruding nails, screws, splinters or other objects which might cause injury.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0540****Vehicle Brakes**

(1) All vehicles must have brakes which are capable of stopping the vehicle while fully loaded on any grade over which they are to be operated.

(2) All vehicles must have a parking brake that will hold the loaded vehicle on any grade which it is operated.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0545****Vehicle Exhaust Systems**

(1) Vehicles must have an exhaust system that is maintained in good repair.

(2) Vehicles must be equipped with a muffler of the type recommended by the vehicle manufacturer.

(3) Exhaust pipes must be located to direct the exhaust gases away from the operator and any passengers.

(4) Any exhaust pipe which is exposed to contact must be insulated or isolated to protect workers from contact burns.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0550****Vehicle Guards and Controls**

(1) Vehicles with dump bodies must be equipped with a permanently attached, positive means of support that is capable of being secured in position to prevent the accidental lowering of the dump body.

(2) Devices for supporting dump bodies must be used when:

(a) The dump body is raised and left unattended.

(b) Maintenance or inspection work is being done.

(3) Operating levers controlling hoisting or dumping devices on haulage bodies must be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.

(4) Trip handles for tailgates and belly dump trailers must be located so personnel are in the clear when dumping.

(5) All vehicles whose payload is loaded by means of cranes, power shovels, loaders or similar equipment must have a cab shield or canopy adequate to protect the operator from shifting or falling materials.

(6) The backs of vehicle cabs which are exposed to shifting loads must be provided with a substantial bulkhead or similar device.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0555****Vehicle Safety Chains**

Safety chains or cables must:

(1) Have a tensile strength equivalent to the gross weight of the towed vehicle.

(2) Prevent the tow bar from dropping to the ground in the event the tow bar or coupling device fails.

(3) Be attached in a manner that provides sufficient strength to control the towed vehicle in event the tow bar or coupling device fails.

(4) Have no more slack than necessary to permit proper turning.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0560****Vehicle Seat Belts**

(1) All vehicles (except those that were not originally equipped with seat belts) designed or used primarily to transport personnel or material over private or public roads must have seat belts.

(2) For each vehicle equipped with a seat belt(s), the employer must:

(a) Require all personnel to use seat belts when the vehicle is being operated.

(b) Require all personnel to tightly fasten seat belts when the vehicle is being operated.

(c) Maintain each seat belt in a serviceable condition.

(d) Replace each seat belt which has been removed from any vehicle that was equipped with seat belts at the time of manufacture.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0565****Vehicle Inspection, Maintenance and Repair**

(1) Vehicles must be checked at the beginning of each shift to assure that they are in safe operating condition.

**NOTE:** Pay particular attention to components such as tires, steering apparatus, lights and reflectors, brakes, boosters, brake hoses and connections, reaches, bunks, stakes, bunk blocks and couplings.

(2) Any defects found during inspection, which affect the safe operation of the vehicle, must be corrected before the vehicle is placed in service.

(3) Any vehicle which develops defects in parts vital to safe operation during a work shift must be removed from service until necessary repairs are made.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0570**

##### **Vehicle Operation**

(1) Vehicle operators must be knowledgeable of the manufacturer's recommendations for operation, maintenance, safe work practices, and operating procedures.

(2) Vehicles must be started and operated only by trained and authorized personnel.

(3) Vehicles must not be moved until all personnel, other vehicles and machines are in the clear.

(4) Vehicles must not be driven or backed up to anyone standing in between the vehicle and a stationary object.

(5) When vehicle operators do not have a clear view of the surface being traveled, they must be guided by a signal person.

(6) Any operator who has an obstructed view to the rear of a vehicle must sound an audible warning, that can be heard over the surrounding noise, before backing up unless the:

(a) Vehicle is backed up only when an observer signals the driver that it is safe to do so; or

(b) Operator verifies that nobody is behind the vehicle.

(7) When vehicles are parked, the parking brakes must be set before the operator leaves the operator's station.

**NOTE:** When it is not feasible to apply or release parking brakes because of freezing conditions, chocking or blocking of the wheels or using other precautions is permissible.

(8) Vehicles must not be loaded beyond the designed capacity.

(9) Vehicle loads must be stable, well-balanced and secured.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0575**

##### **Transportation of Personnel**

(1) Workers riding in motor vehicles must not stand while the vehicle is in motion.

(2) Flatbed and dump trucks must not be used to transport workers.

(3) Passengers must wait for the vehicle to come to a complete stop before boarding or leaving.

(4) When materials, equipment and tools of any type are transported in the same compartment with workers, the workers and driver must be protected from the hazards of materials, equipment or tools by substantial partitions or the securing of the load.

(5) Transported materials must not prevent doors of vehicle cabs from being opened.

(6) Compartments for workers must be kept in a clean and sanitary condition. Workers should assist in maintaining such conditions.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0580**

##### **Flammable and Combustible Liquids**

(1) Flammable and combustible liquids must be stored in accordance with OAR 437, 2/H, Hazardous Materials, §1910.106, Flammable and Combustible Liquids.

(2) Containers of flammable and combustible liquids must be marked in accordance with OAR 437, 2/Z, §1910.1200, Hazard Communication.

(3) Smoking within 35 feet of vehicles being fueled is prohibited.

(4) Fueling of vehicles within 35 feet of any open fires, flame or other sources of ignition is prohibited.

(5) Vehicle engines, except diesel engines, must be shut off while being fueled.

(6) Refilling tanks using liquefied petroleum gases must:

(a) Only be done out-of-doors.

(b) Not exceed the maximum quantity of fuel recommended by the manufacturer.

(7) Tanks, barrels or containers of gasoline, aviation fuels or diesel must not be hauled on vehicles transporting workers except when:

(a) Carried in a suitable location outside the driver and passenger compartment or placed in a well-ventilated vapor-proof compartment.

(b) Secured to prevent shifting.

(8) When fuels are hauled in containers of 5-gallon capacity or less, the container must be approved by a nationally-recognized testing lab, such as Underwriters Laboratory (UL), or Factory Mutual (FM).

(9) Vehicles must be kept free of accumulated fuel and combustible liquids which may create a fire or other hazard.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0600**

##### **Inspection and General Requirements for Rigging**

(1) A competent person must thoroughly inspect all:

(a) Blocks, butt rigging, shackles and other rigging for damaged, cracked or worn parts, loose nuts and bolts, and the need for lubrication before they are used.

(b) Wire rope (running lines), skylines, chokers, straps and guy-lines before they are used.

(2) Repairs or replacements must be made before the blocks, butt rigging, shackles, other rigging, guylines, or straps are used.

(3) Rigging and loads must not foul or saw against lines, straps, blocks, or other equipment when in use.

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

#### **437-007-0605**

##### **Out-of-Service Requirements for Wire Rope**

(1) Wire rope must be repaired (spliced), re-socketed, or taken out of service when there is:

(a) Evidence of chafing, sawing, crushing, kinking, crystallization, bird-caging, corrosion, heat damage, or other damage that has weakened the rope structure, or

(b) One or more broken wire(s) at the base of a poured nubbin or end fitting, or

(c) Corroded, damaged, or improperly applied end connections, or

(d) 12 1/2 percent of the wires are broken within a distance of one lay.

**EXCEPTION:** Out-of-service requirements do not apply to chokers, grapple opening lines, tag lines, cat and skidder winch lines, and droplines that are not used to move the carriage. However, in accordance with 437-007-0600, a competent person must inspect these cables daily and remove from service any that are unsafe.

Figure 7-1 — Wire Rope Out-of-Service

**EXAMPLE 1:** A 6 x 19 Independent Wire Rope Core (IWRC) wire rope must be removed from service when 14 broken wires are found within the distance of one wire rope lay. [6 strands with 19 wires = 114 x 0.125 (12 1/2%) = 14.25]

**EXAMPLE 2:** A 6 x 25 IWRC wire rope must be removed from service when 19 broken wires are found within the distance of one wire rope lay. [6 strands with 25 wires = 150 x 0.125 (12 1/2%) = 18.75]

(2) Oversized trailer lift straps must be removed from service when the strap no longer has a breaking strength equal to five times the load to be lifted.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

**437-007-0610**

**Line Cutting and Splicing**

- (1) Hard hammers must not be used when splicing or cutting wire rope with a wire axe.
- (2) Eye protection must be used when cutting lines.
- (3) Marlin spikes (needles) must be used when splicing.
- (4) Short splices, eye-to-eye splices, cat's paws, and knots are prohibited except when used to move nonload-bearing lines.
- (5) Knots may be used on single drum tractor winch lines, grapple pickup lines and carriage droplines when the knot is tied on the end of the dropline/pickup line. The knot must be pulled as tight as possible and the ends trimmed in accordance with Table 7-2.
- (6) Eye splices in wire rope 1/2-inch or less in diameter must be tucked at least two times when used as haywire (strawline).
- (7) Eye splices in all regular lay lines and straps must be tucked at least three times.
- (8) Eye splices in lang lay lines must be tucked at least four times.
- (9) When flemish (rolled) eye splices are used on load bearing lines, the strand ends must be secured by:
  - (a) Hand tucking each strand three times; or
  - (b) Applying a compression fitting (pressed eye fittings).
- (10) Log splices must be used for permanently joining regular lay running line.

**EXCEPTION:** When using mechanical slack pulling carriages, jump splices may be used to connect the main and slack pulling lines, and tucked splices may be used to attach drop lines to main lines only if the:

- (1) Crew members are notified of the splices being used.
- (2) Yarder boom sheaves are of the Tommy Moore type.
- (3) Splices are on the yarder side of the carriage.
- (4) Lines are arranged so splices do not go through the carriage.
- (5) Spliced strands are trimmed at 6 inches.
- (6) Splices are inspected at least once daily for signs of excessive wear or failure.
- (7) Defective splices are immediately repaired (spliced) or removed from service.
- (8) Jump splices connecting main and slack pulling lines are between 30 inches and 48 inches long and tucked at least three times.
- (9) Splices attaching drop lines to main lines are tucked at least three times.

(11) Follow Table 7-1 for the length of line strand to unravel to make a long splice in wire rope. The full length of the splice must be twice the length of the unraveled rope.

**Table 7-1** — Length of Wire Rope to Unravel When Long Splicing [Table not included. See ED. NOTE.]

(12) Wire strand ends must be trimmed to the length shown in Table 7-2.

**Table 7-2** — Trimmed Length For Wire Rope Strand Ends [Table not included. See ED. NOTE.]

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0615**

**Pressed Eyes and End Fittings**

- (1) Pressed eyes must not be used for skyline eyes that will be crossed with loaded carriages.
- (2) Quick nubbins must not be used as guyline and skyline end fittings.
- (3) For rigging made up after December 1, 2003, standard sized ferrules must be used when nubbins are poured on wire rope that exceeds the rated breaking strength of 1 1/8-inch diameter extra improved plow steel.
- (4) Poured nubbin ferrules must be stamped with the date they were poured.
- (5) The recommendations of the manufacturer must be followed in attaching sockets and similar end fastenings.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

**437-007-0620**

**Cable Clamps**

(1) The use of cable clips or clamps for joining lines is prohibited, except where used for transferring slack lines from one place to another.

Figure 7-2 — Wire Rope U-Bolt Clip

Figure 7-3 — Wire Rope Fist Grip Clip [Figures not included. See ED. NOTE.]

(2) When U-bolt wire rope clips are used, the following requirements apply:

(a) When used for eye splices, the U-bolt wire rope clip must be attached so that the "U" section is in contact with the dead or short end of the rope;

Figure 7-4 — U-Bolt Clip Installation [Figure not included. See ED. NOTE.]

(b) U-bolt wire rope clips must be spaced at least six rope diameters apart to obtain the maximum holding power. Nuts must be tightened evenly and tightened again after application of the first sustained load. After the rope has been used and is under tension, the clips must be tightened again to take up any looseness caused by the tension reducing the rope diameter;

(c) When high strength wire rope is used, one more U-bolt wire rope clip must be added for each grade above improved plow steel; and

(d) U-bolt wire rope clips must not be used to form eyes on running lines, skylines, or straps.

(3) When U-bolt wire rope clips are used to form eyes, Table 7-3 must be used to determine the number and spacing of clips.

Table 7-3 — Number and Spacing of U-Bolt Wire Rope Clips [Table not included. See ED. NOTE.]

[ED. NOTE: Figures and Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0625**

**Mollies**

(1) Mollies must not be used to connect eyes of load-bearing lines.

(2) Mollies or cold shuts must not be used in butt rigging as a load-bearing connection.

(3) The use of mollies for attaching guylines is prohibited.

(4) Mollies must be rolled in with the lay of the line.

(5) Mollies, latchpins, or cotterkeys must be large enough to retain the shackle pin.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0630**

**Connectors**

(1) Guyline extensions must be connected by:

(a) A shackle using a safety pin connecting spliced and/or pressed eyes; or

(b) Poured nubbins and a double-end hook.

Figure 7-5 — Guyline Connectors — Spliced Eyes

Figure 7-6 — Guyline Connectors — Poured Nubbins [Figures not included. See ED. NOTE.]

(2) Guyline extension connectors must have at least 1 1/2 times the strength of the guyline.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0635**

**Shackles**

(1) Shackle pin diameter must be:

(a) 1/8- inch larger than the indicated shackle size for shackles up to 1 3/4 inches.

(b) 1/4- inch larger than the indicated shackle size for shackles 1 3/4-inch up through 3 inches.

(2) Replacement shackle pins must meet the manufacturer's original specifications for strength and design for the size of shackle being used.



(3) Shackle pins and nuts must be replaced when the threads are worn or stripped.

(4) Worn shackle pins must be replaced when the original diameter is reduced by 15 percent.

(5) The opening size between the jaws of shackles used to hang blocks, jacks, rigging, and join or attach lines, cannot be more than 1-inch greater than the size of the line, swivel, shackle, or similar device to which it is attached.

(6) Safety pins must secure shackles used to hang blocks, jacks, or rigging on trees, anchor guylines and join guyline or deadman strap eyes.

Figure 7-7 — Shackle — Safety Pin [Figure not included. See ED. NOTE.]

(7) When skylines are attached with a shackle using a knockout pin, the pin must be one size larger than the skyline and secured with a molly, latchpin, or cotterkey. (See Figures 7-8 and 7-9.)

(8) Sleeve shackles or choker bells must be used where choked lines are permitted.

Figure 7-8 — Shackle — Sleeve with Knockout Pin

Figure 7-9 — Shackle — Bell with Knockout Pin

Figure 7-10 — Skyline Attachments with Knockout Pins

Figure 7-11 — Shackle — Sleeve with Safety Pin [Figures not included. See ED. NOTE.]

(9) When a line is passed around an anchor without the use of a strap, the shackle pin must be inserted through the line eye and the “U” part of the shackle placed around the bight of the line.

(10) Sleeve shackles must not be used to join two or more eyes together.

(11) A flush pin, straight-sided shackle must be used to connect the eyes of lines if:

(a) The shackle will be crossed by a sheave; or

(b) A sheave will be crossed by the shackle.

Figure 7-12 — Shackle — Flush Pin, Straight Side [Figure not included. See ED. NOTE.]

(12) When shackles are crossed by carriages, the pin must be facing the landing.

(13) Shackles used to join three or more lines must be hung with the:

(a) Pin through the single eye.

(b) “U” part through two or more line eyes.

(14) When attaching a guyline, mainline, or skyline eye to two or more strap eyes, the:

(a) Shackle pin must be placed through the guyline, mainline, or skyline eye.

(b) “U” part of the shackle must be placed through the strap eyes.

(15) After a strap is passed around an anchor and the two eyes are contained in the “U” part of the shackle, the angle created by the strap eyes must not be greater than 90 degrees.

Figure 7-13 — Shackle — Straps within 90 Degrees [Figure not included. See ED. NOTE.]

**NOTE:** If the angle created by the strap eyes is greater than 90 degrees, the strap is too short. The shackle containing the strap eyes should be hung at least half the diameter of the anchor away from the anchor.

(16) Shackles used to connect tipping plate anchor lines to the eye of a guyline, mainline, or skyline must be:

(a) 1/8-inch larger than the largest line.

(b) Rated for a load equal to or greater than the expected working load.

(c) Large enough to accommodate all line eyes.

(17) Shackles attached to tipping plate anchors must have the shackle pins inserted through the anchor pad-eyes.

(18) A shackle must have a rated breaking strength greater than the rated breaking strength of the line that they are used with.

(19) The manufacturer’s rated breaking strength of shackles must be used in determining oversize requirements when the make, size and steel classification of the shackle can be identified.

(20) Shackles listed in Tables 7-4, 7-5 and 7-6 must be made of alloy steel which develops 120,000 PSI ultimate tensile strength or better.

**NOTE:** Shackles sizes are listed for extra improved plow steel wire rope.

(21) The minimum size of shackles required to hang or attach single sheave blocks or jacks are shown in Table 7-4.

Table 7-4 — Bell Shaped and Sleeve Shackles Used to Hang or Attach Single Sheave Blocks or Jacks [Table not included. See ED. NOTE.]

(22) The minimum size of shackles required for joining or attaching lines are shown in Table 7-5.

Table 7-5 — Bell Shaped and Sleeve Shackles Used to Join or Attach Lines [Table not included. See ED. NOTE.]

(23) The minimum size of flush pin straight-sided shackles for joining or attaching skyline extensions are shown in Table 7-6.

Table 7-6 — Flush Pin Straight-Sided Shackles Used for Attaching Skyline Extensions [Table not included. See ED. NOTE.]

[ED. NOTE: Figures and Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0640**

##### **Metal Spar Guyline Safety Straps**

(1) A guyline safety strap or equivalent device must be installed at the top of metal spars to prevent guylines from falling vertically more than 5 feet in case of structural or mechanical failure of the guyline attachment.

(2) Metal spar guyline safety straps or equivalent devices must be equal to the individual strength of any guyline being used.

(3) The ends of metal spar guyline safety straps must be connected to each other, or installed per manufacturers’ instructions.

**NOTE:** Two eyes secured with a shackle or two poured nubbins secured in a connector are acceptable for the connections.

(4) The use of cable clips or clamps for joining the ends of metal spar guyline safety straps is prohibited.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-0645**

##### **Chokers and Straps**

(1) In highlead logging, chokers must be at least one size smaller than the mainline.

(2) Straps must be equivalently sized for the line they support, e.g., Extra Improved Plow Steel (EIPS) line requires EIPS straps or equivalent strength material.

Figure 7-14 — Straps — Line Tension [Figure not included. See ED. NOTE.]

(3) Straps or chokers used at or near the ground to hang or support blocks, jacks, tree shoes, or rigging must be sized in accordance with Table 7-7.

Table 7-7 — Strap Sizes For Rigging At Or Near The Ground [Table not included. See ED. NOTE.]

(4) Straps or chokers used to hang or support blocks, jacks, tree shoes, or rigging in tail and intermediate trees must be sized in accordance with Table 7-8.

Table 7-8 — Strap Sizes For Rigging Hung In Tail and Intermediate Support Trees [Table not included. See ED. NOTE.]

(5) When a two part strap or two chokers are used to hang a block, jack, tree shoe, or rigging both eyes or ends must be under approximately equal tension.

Figure 7-15 — Straps — Line Tension Bridal [Figure not included. See ED. NOTE.]

(6) When two equal length chokers are used to hang a block, jack, tree shoe, or rigging in lieu of one choker to gain extra breaking strength, they must be:

(a) Arranged as a swede-type connection.

(b) Considered as a block hung in two eyes for Table 7-8.

(7) For straps hung in trees where the interior angle or angles create excessive loading on the strap as shown in Figure 7-14 additional precautions must be taken, such as using a larger strap, lightening loads, moving the carriage ahead on the line, and so forth to reduce the load on the strap.

(8) Straps made of synthetic materials must be arranged so the straps cannot ride up or down from their intended position.

(9) Straps made of synthetic materials must be used and replaced in accordance with the manufacturer’s recommendations.

[ED. NOTE: Figures and Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0650**

**Guylines — General Requirements**

- (1) Splicing of guylines is prohibited except to make an eye.
- (2) Guylines used to stabilize logging machines must be at least of the size, strength and number recommended by the machine manufacturer.
- (3) Load-bearing guyline angles must not be greater than 50 degrees measured horizontally or that recommended by the machine manufacturer. If suitable anchors are not available or the terrain is so steep that the guyline angle exceeds 50 degrees or the machine manufacturer's recommendation, additional precautions must be taken, such as rearranging guylines to oppose the load, adding an additional guyline to oppose the load, or narrowing yarding roads.
- (4) Tail and intermediate support tree guylines must be:
  - (a) Arranged and adjusted so they share the load when lines are tensioned.
  - (b) Kept securely tightened during the yarding process.
  - (c) Made of the same strength material as the line hung in the tree or larger size guylines must be used to provide the same relative strength.

**EXAMPLE:** In 437-007-0650(4)(c), a 1-inch swaged skyline requires guylines equivalent in strength to 5/8-inch swaged guylines.

(5) When using tail or intermediate support trees and the line hung in the tree is:

- (a) 5/8-inch or less, guylines must be at least 3/8-inch.
- (b) Greater than 5/8-inch and less than 1-inch, guylines must be at least 1/2-inch.
- (c) 1-inch and larger, guylines must be at least 5/8-inch.
- (6) A skyline must not be considered a guyline.
- (7) Machines and equipment used for yarding that are specifically designed to be self-stabilizing during operation may be used without guyline(s).

**NOTE:** Hydraulic excavator-based log loading machines may yard logs without using guylines.

- (8) Guylines made of synthetic materials, including the end connectors, must have the equivalent strength capacities of wire rope.
- (9) The manufacturer's recommendations for out-of-service requirements of synthetic materials must be followed.
- (10) When guylines are required for towers they must be positioned according to Appendix 7-I, Figure 7-39 through Figure 7-50.
- (11) Tail or intermediate support tree guylines must not be pretensioned beyond the point of tree stability before the load is applied. (See Figure 7-18.)
- (12) Trees and unintentional siwashs must not interfere with the proper alignment, placement, or tightening of guylines.
- (13) Guylines must be hung in a manner to prevent a bight or fouling when they are tightened.

[ED. NOTE: Figures and Appendices are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

**437-007-0655**

**Guylines — Tail Tree Guying**

- (1) Except as provided for in rule (2) and (5) of this section, a minimum of two guylines must be used on tail trees and located within guying zones to oppose the forces as shown in Figure 7-16 (azimuths 130-150 and 210-230 degrees).

**Figure 7-16 — Guylines — Tail Trees**

- (2) When the angle of the lines between the tail tree and a tail hold produces an offset of more than 8 degrees between the lines as they enter and leave the tail tree, then at least three guylines are required.
- (3) If a suitable anchor is not available within a specified guying zone, two guylines may be used in lieu of one guyline for that zone, provided a guyline is placed on both sides of, and as near as possible, to the affected guying zone.
- (4) When additional guylines are needed in a tree, they must be placed to oppose the yarding forces.
- (5) Guylines are not required when at the point of rigging attachment the tail tree does not move more than its diameter in the direction of load as shown in Figure 7-18 and the:

- (a) Tail tree is not within reach of workers.
- (b) Resulting line movement would not pose a hazard to workers if the tail tree failed.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

**437-007-0660**

**Intermediate Support Trees**

- (1) Intermediate support trees must be rigged so:
  - (a) Horizontal carriage clearance at the base of the intermediate support tree(s) is sufficient for the turn of logs to pass the support tree(s).
  - (b) The jackline is a single piece of line that provides strength equal to a line 1/8-inch larger than the tong or skidding line. (Figures 7-17, 7-19 and 7-20.) Extensions may be attached to the anchor end of the jack-line.
- (2) Vertical support trees must be firmly rooted.
- (3) The base of all leaning tree supports must be prevented from moving by:

- (a) Retaining 20 percent of the stump diameter in holding wood; or

- (b) Other suitable rigging arrangements.

- (4) Single tree intermediate supports must be guyed as follows:

- (a) For skylines 1-inch and smaller use the rigging configuration in Figure 7-17:

- (A) No guylines are required when at the point of rigging attachment the tree does not move more than its diameter in the direction of load as shown in Figure 7-18.

- (B) If the tree moves more than one diameter at the point of rigging attachment, then a guyline of the size called for in 437-007-0650(4) must be rigged to oppose the yarding forces.

**Figure 7-18 — Tail and Intermediate Support Tree Stability** [Figure not included. See ED. NOTE.]

- (b) For all skylines larger than 1-inch and for skylines rigged as in Figure 7-17.

- (A) Two guylines are needed of the sizes called for in 437-007-0650(4)(c).

- (B) The guylines must be rigged according to 437-007-0655(4) if the tree is not stable according to Figure 7-18.

- (c) For all leaning tree intermediate supports using the rigging configuration of Figure 7-19, a minimum of three guylines must be used.

- (A) Two guylines of the sizes called for in 437-007-0650(4)(c) must be rigged according to Appendix 7-I, Figure 7-42.

- (B) A snap guyline of at least 3/8-inch diameter must be placed opposite the two load-bearing guylines.

**Figure 7-19 — Intermediate Support Tree — Leaning** [Figure not included. See ED. NOTE.]

- (5) Double tree supports must be rigged (see Figure 7-20) so the:

- (a) Angle of the block to the center of the support line:
  - (A) Is 10 degrees in any direction when skylines 1 1/8-inch and smaller are used; or

- (B) Has deflection in the direction of the jack which does not exceed 10 degrees when skylines larger than 1 1/8-inch are used.

- (b) Loaded support trees do not displace more than 2 feet at the point of rigging attachment.

- (c) Minimum and maximum heights of the jack relative to the height of the block is as shown below for double tree intermediate support systems.

**Figure 7-20 — Intermediate Support — Double Tree** [Figure not included. See ED. NOTE.]

- (6) Double tree supports must be guyed as follows:

- (a) For skyline sizes equivalent to 1 1/8-inch improved plow steel (IPS) and less, no guys are required;

- (b) For skyline sizes equivalent to those larger than 1 1/8-inch IPS as shown in Appendix 7-I, Figure 7-39.

[ED. NOTE: Figures and Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### 437-007-0665

#### Anchoring

(1) A competent person must carefully choose skyline, guyline, and running line anchors for position and strength.

**Figure 7-21** — Stump Tie Back Anchor [Figure not included. See ED. NOTE.]

(2) A competent person must inspect anchors while the operation is in progress. When necessary, anchors must be tied back or changed.

**Figure 7-22** — Stump Twister Anchor [Figure not included. See ED. NOTE.]

(3) Unstable yarder guyline anchors must be immediately corrected.

(4) Stump anchors must be notched to a depth not greater than is necessary to safely secure the line to the stump.

(5) Deadman anchors must have:

(a) Straps or lines equal in strength to the guyline, skyline, or mainline to attach the line to a deadman.

(b) Deadman anchor strap or line connectors visible for inspection.

**Figure 7-23** — Deadman Anchor [Figure not included. See ED. NOTE.]

(6) When a standing tree is used as an anchor:

(a) The line or strap must be attached to the base of the tree.

**Figure 7-24** — Tree Tie Back Anchor [Figure not included. See ED. NOTE.]

(b) The tree must be tied back if it is within reach of any worker, the landing area, or haul road.

**NOTE:** In some cases, the base of a standing tree(s) that is used as an anchor may also need to be tied-back.

(c) Affected personnel must be notified of the standing tree anchor and the potential failure zone.

**NOTE:** See the potential failure zone requirements listed in 437-007-0927(1) through (7)

(7) The use of machines for anchoring guylines, skylines, or corner blocks must be done only under the supervision of a competent person.

**Figure 7-25** — Log Loader Anchor [Figure not included. See ED. NOTE.]

(a) When determining if the machine is a suitable anchor, the competent person must consider:

(A) The size and weight of the machine.

(B) The size of the line to be attached.

(C) The type of logging system to be used.

(D) The condition of the soil and slope of the ground.

(E) The availability of holding aids, such as road embankments or stumps.

(F) The skyline, guyline, or running line angle from the horizontal and vertical.

(G) Any other factors which would affect the stability of the machine anchor.

(b) Line attachment points on the machine must be determined by a qualified person.

(c) Machines that are used as mobile tail anchors and are stabilized with a guyline(s) must be guyed in accordance with OAR 437-007-0650(1), (2) and (3).

**Figure 7-26** — Tailhold Cat Anchor [Figure not included. See ED. NOTE.]

(8) Rock bolt anchors must be installed, grouted, tested and maintained in accordance with the manufacturer's recommendations.

(9) Artificial earth anchors must be installed and used in accordance with their design specifications and manufacturer's recommendations.

(10) When using tipping plate anchors:

(a) Guylines, skylines, or mainlines must not be directly attached to the anchors.

(b) The combined strength of straps or lines attached to multiple anchors must be equal in strength to the guyline, skyline, or mainline.

**Figure 7-27** — Tipping Plate Anchor [Figure not included. See ED. NOTE.]

(c) Shackles used to connect straps to the anchors must be secured with a safety pin.

**NOTE:** This connection will not be visible for inspection.

[ED. NOTE: Figures referenced are available from the agency.]

### 437-007-0670

#### Spiking and Releasing Spiked Guylines or Skylines

(1) Spiked guylines or skylines must be anchored with at least two and one-half wraps around the stump. The first wrap must be secured with at least eight spikes or six staples. The second wrap must be secured with at least three spikes. The last, or top wrap, must be secured with eight spikes or six staples. (See Figure 7-28.)

**Figure 7-28** — Spiked Guylines and Skylines Anchor [Figure not included. See ED. NOTE.]

(2) All the bark must be removed from the stump where the line is wrapped and spiked.

(3) Employees must not stand close to the stump or tree or in the bight of the lines as the guyline or skyline wraps are being tightened.

(4) When removing spiked guylines or spiked skylines from stumps or trees, a reverse safety wrap (Figure 7-29) must be put on and secured before loosening the last wrap, or the skyline or guyline must be held while the spikes are removed from the last wrap, and snubbed until the tension is relieved.

**Figure 7-29** — Spiked Guyline Safety Wrap Anchor [Figure not included. See ED. NOTE.]

(5) A competent person must be in charge of loosening spiked guylines or skylines, using all precautions and giving warning before lines are released. Safety holdbacks must be used when necessary.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### 437-007-0675

#### Selecting, Preparing and Rigging Trees

(1) Tail and intermediate support trees must be carefully chosen by a competent person based on position and strength necessary to support the imposed loads.

(2) Raised trees must be identified and marked as such.

(3) Trees must not be topped during windy weather.

(4) At no time must topping, rigging up, or stripping work be done when visibility is impaired.

**Figure 7-30** — Topping Trees [Figure not included. See ED. NOTE.]

(5) Loose equipment, rigging, or material must either be removed from the tree or securely fastened.

(6) Skylines with breaking strengths greater than 1-inch IPS (or equivalent) must not be hung in trees where the tree diameter at the point of attachment is less than 12 inches unless precautions are taken to prevent the tree from pinching off.

(7) A skyline must not make an angle greater than 50 degrees measured from the horizontal as it leaves the tail tree unless additional precautions are taken to prevent the tree from failing.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### 437-007-0680

#### Blocks and Hanging Blocks.

(1) Load-bearing blocks must:

(a) Not be used for lines other than those for which they are constructed.

(b) Be fitted with line guards and be designed and used in a manner that prevents fouling.

(c) Be kept in proper alignment when in use.

(d) Have bearing and yoke pins of a material that will safely withstand the strains imposed and be securely fastened.

(e) Have sheaves of a size designed for the size of the wire rope used.

**EXCEPTION:** 437-007-0680(b) and (e) do not apply to small rig-up (Tommy Moore) blocks.

(2) Block bearings must be kept well-lubricated.

(3) Sufficient corner or tail blocks to distribute the stress on anchors and attachments must be used on all logging systems.



(4) Tail, side, or corner blocks used in yarding must be hung in both eyes of straps or in the single eye of a strap or choker that meets the requirements OAR 437-007-0645, Tables 7-7 and 7-8.

(5) The yoke pin of haulback blocks must be inserted with the head facing the direction from which the rigging approaches, when the rigging can reach the block.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0690**

##### **Metal Towers**

(1) A competent person must direct the raising and lowering of each metal tower.

(2) All employees not engaged in the actual raising or lowering of metal towers must stay in the clear during these operations.

(3) Metal towers must be level to provide proper line spooling and avoid excessive stress on component parts.

(4) Each metal tower must have an identification plate permanently attached to its base or on the yarder in a position that can be easily read by a person standing on the ground or on the base platform.

(5) All plates must contain the following information:

(a) Name and address of manufacturer and model number; and

(b) The maximum and minimum inclination at which the metal tower is designed to operate.

(6) In addition, all identification plates on metal towers manufactured after July 1, 1980, must contain the following information:

(a) The maximum breaking strength and size of mainline for which the metal tower is designed;

(b) The maximum breaking strength and size of haulback line for which the metal tower is designed;

(c) The number, minimum breaking strength and size of guy-lines or any other lines required; and

(d) If the metal tower is designed for a skyline, slackline, or modified slackline system, the maximum breaking strength and size of skyline, mainline and haulback line that can be used.

(7) All metal towers must be operated within the manufacturer's capacity:

(a) As specified on the identification plate; or

(b) As modified by the manufacturer; or

(c) As designed and specified by a registered professional engineer.

(8) If wire rope dimensionally larger in size or of a greater breaking strength than that specified by the yarder manufacturer is used for skyline, mainline, skidding line and/or haulback line, one of the following methods for limiting the load on the spar must be used:

(a) A tamper-proof tension limiting device that automatically slacks the line loads (pull) on the metal tower to below its maximum identification plate rating.

(b) A line fuse system installed in the skyline or mainline; or

(c) Established operating procedures that limit line loads (pull) on the metal tower to below the maximum identification plate rating for the metal tower.

(9) When a line fuse system is used to limit line loads (pull) on the metal tower:

(a) The line fuse must have a designed breaking strength equal to or less than the maximum line rating of the metal tower as listed on its identification plate.

(b) The line fuse must be certified and stamped as to the breaking strength.

(c) The skyline or mainline must be hung in a single eye of the fuse link.

(d) Notice must be given to crew personnel that line fuses are in use.

(10) When operating procedures are used to limit line loads (pull) on the metal tower:

(a) They must be observable or verifiable.

(b) Any locking or dogging device on the brake or elsewhere must be removed or deactivated.

(c) Personnel must be knowledgeable about the operating procedures that are in use to limit line loads.

(11) Metal towers and their appurtenances must be inspected by a competent person each time the tower is lowered and at any time its safe condition is in doubt.

(12) When damage from overstress or any other source is noted or suspected, the part in question must be inspected by a suitable method and found to be safe or the part repaired by a qualified person or replaced before the tower is again used.

(13) Structural modifications or additions which affect the capacity or safe operation of metal towers must be made only under the direction of the manufacturer or a registered professional engineer. If such modifications or additions are made, the identification plate required in OAR 437-007-0690(4), (5) and (6) must reflect such changes.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

#### **437-007-0700**

##### **General Work Practices**

(1) Machines must be operated a sufficient distance from personnel and other machines to not create a hazard for any person.

(2) An unimpaired horizontal clearance of not less than 3 feet must be maintained between the rotating superstructure of any machine and any adjacent object or surface. If this clearance cannot be maintained, personnel must be warned of the pinch point area. Measures taken to warn personnel of the pinch point area may consist of a warning line constructed of rope or ribbon supported on stanchions, barriers, cones, flags, etc.

(3) Items of personal property, tools or other miscellaneous materials must not be stored on or within 3 feet of any machine if such items would expose personnel to hazards caused by the rotation of the machine's superstructure.

**EXCEPTION:** These items may be stored within 3 feet when in a locked box or otherwise secured and under the exclusive control of the equipment operator.

(4) Personnel must not approach to within 3 feet of a machine when a hazardous area is created by the rotation of the machine's superstructure without:

(a) Informing the operator of their intent.

(b) Receiving acknowledgment from the operator that the operator understands their intention.

(c) Stopping the machine while personnel are in the hazardous area.

(5) No person, other than the operator, may ride on a machine unless seating, seat belts and other protection equivalent to that provided for the operator are provided.

(6) Operators must not permit workers to ride on arches, reaches or turns of logs.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0705**

##### **General Machine Operator Requirements**

(1) Machines must be started and operated only by authorized personnel.

(2) Operators must be instructed about and comply with the manufacturer's recommendations for machine operation, maintenance, safe work practices, and site operating procedures.

(3) Before starting or moving any machine, the operator must determine that personnel are in the clear.

(4) Operators must inspect their machines each day before starting work.

(5) All machine engines must be off during inspection or repair except where necessary for adjustment or checking fluids.

(6) Machines must not be operated with defective steering, braking, other parts or components that are necessary for safe operation.

(7) Defective hydraulic hoses, lines and fittings that affect the safe operation of the machine must be immediately replaced.

(8) All repairs and adjustments necessary for safe operation must be made before any strain or load is placed upon any machine.

(9) Machines must not be operated until all guards are reinstalled, safety devices reactivated, and maintenance equipment removed after adjustments or repairs are made.

(10) Operators must start and operate machines only from the operator's station or from a safe area recommended by the manufacturer.

(11) At the start of each shift, machine operators must test all drum brakes before taking a load.

(12) Machines must be operated within their stability limits.

(13) Loads on forklift-type log handling machines must be transported:

(a) As low as safely possible.

(b) In a manner that minimizes obstructing the operator's view.

(14) The machine operator must apply the parking brake, brake locks or other equivalent means to hold the machine stationary before dismounting.

(15) Blades must be lowered to the ground or other stable surfaces while the operator is out of the normal operating work station.

(16) Grapples, delimber masts, feller buncher attachments, forks and other similar devices must be stable and pose no hazard to others while the operator is out of the normal operating work station.

(17) If a hydraulic or pneumatic storage device can move machine elements, such as, but not limited to, blades, buckets, saws and shears, after the machine is shut down, the pressure or stored energy from the element must be discharged as specified by the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0710**

##### **General Machine Requirements**

(1) Machine seats must be securely attached.

(2) Operating foot controls must be constructed of or covered with a non-slip material suitable for the footwear worn.

(3) Machine decks, drums and other surfaces where workers walk or stand must be constructed of or covered with a non-slip material suitable for the footwear worn.

(4) Catwalks or platforms must be provided on machines where personnel perform routine operation, maintenance or rigging work.

(5) A safe and adequate means of access and egress such as, steps, ladders, handholds and railings must be provided and maintained to all parts of vehicles and machines where employees must go. Machine access must comply with the Society of Automotive Engineers' (SAE)-J185-1988 or ISO 2867:1994, Access Systems for Off-Road Machines.

**NOTE:** See the mandatory requirements in Appendix 7-D for accessing metal towers.

(6) Guards must be provided on machines to protect employees from flying chunks, logs, chips, bark, limbs and other material.

(7) Guards must be in place at all times when machines are in use.

(8) All exposed moving parts, such as shafts, pulleys, belts, conveyers and gears on machinery and equipment must be guarded in accordance with OAR 437, division 2, subdivision O, Machinery and Machine Guarding.

(9) Hydraulic hose, tubing or fittings must be arranged to eliminate abrasive contacts.

(10) Machines must be free of excess flammable and combustible material that may create a fire.

(11) Machine sleds, bases or frames must be strong enough to withstand any imposed stresses.

(12) Machines and their components must be securely anchored or otherwise stabilized to prevent unintended movement during operation.

**EXCEPTION:** This does not apply to tractors or skidders.

(13) A limit switch must be installed on electric-powered log loaders to limit lift arms travel in the event the control switch is not released in time.

(14) When forklift type machines are used to load, unload or handle trailers, a positive means of holding the lifting attachment on the fork must be installed and used.

(15) Guyline drum controls and outrigger controls must be separated and clearly identified to prevent engaging the wrong control.

(16) Boom-type machines must have a boom stop to prevent over-topping of the boom.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0715**

##### **Attaching and Spooling Line (Wire or Synthetic Rope)**

(1) Ends of lines attached to drums on machines must be secured by end attachments that develop the ultimate strength of the line unless three wraps of line are maintained on the drum at all times.

**NOTE:** This does not apply to tractors or skidders.

(2) Winch lines on tractors or skidders must be attached to the drums with a breakaway device.

(3) Wire rope must be wound on drum spools in a manner to prevent excessive wear, kinking, chafing, or fouling.

(4) A guide pulley, tool, stick, iron bar, or other manual or mechanical means must be used when guiding lines onto drums.

Figure 7-31 — Spooling Lines — Least Risky [Figure not included. See ED. NOTE.]

(5) Personnel must never allow line to slide through their gloved hands or place any part of their body in direct contact with the line.

Figure 7-32 — Spooling Lines — Risky [Figure not included. See ED. NOTE.]

(6) When it is necessary for personnel to stand on a drum to spool line or perform machine maintenance, precautions must be taken to prevent unintentional activation of the drum.

(7) Personnel must not stand on a bare drum or lines spooled on a drum when wearing caulk boots unless a non-slip material covers the standing surface.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0720**

##### **Fairleads**

(1) Properly align fairleads at all times.

(2) Fairleads must be of a design that will prevent line damage.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0725**

##### **Securing Machines.**

(1) Before the operator leaves the operator's work station, procedures must be implemented to prevent the release of stored energy, accidental start up, or movement of the machine.

(2) The employer must instruct all authorized employees how to use shut down procedures.

(3) Authorized employees must demonstrate a working knowledge of the specific shut down procedures they are required to use.

(4) Locks, tags and other devices used to control hazardous energy must be durable.

(5) The words "DO NOT START," "DO NOT OPERATE," or other appropriate warning must be displayed on tags used to control energy.

(6) Tags used to control hazardous energy must be placed so they are obvious to anyone attempting to operate the machinery.

(7) Blades must be lowered to the ground or other stable surfaces to secure the blade and machine from movement while maintenance or repair activities are performed.

(8) Grapples, delimber masts, feller buncher attachments, forks and other similar devices must be stable and not pose a hazard to personnel while maintenance or repair activities are performed.

(9) If a hydraulic or pneumatic storage device can move machine elements, such as blades, buckets, saws, shears, etc., after

the machine is shut down for maintenance or repair, the pressure or stored energy that can activate the movable elements must be discharged.

(10) Before locks, tags and other devices that are used to control hazardous energy are removed and machinery or equipment is started, the work area must be inspected to ensure that:

(a) All tools have been removed.

(b) Personnel are in the clear.

(11) Guards must be replaced after necessary adjustments are made.

(12) Follow the requirements of Division 2/J, 1910.147 when it is necessary to control hazardous energy for servicing and maintenance of machines.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 3-2004, f. & cert. ef. 6-7-04

#### **437-007-0730**

##### **Loading Machines**

(1) Grapple arms or other positive means of keeping logs on the forks must be used on forklift type log handling and loading machines.

(2) Log loading machines must be equipped with an audible signaling device of a different tone than other signaling devices in the area.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0735**

##### **Chippers**

(1) Access covers and doors to chippers must remain closed until the drum or disk is at a complete stop.

(2) Infeed and discharge ports on chippers must prevent contact with discs, knives, or blower blades.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0740**

##### **Machine Exhaust Systems**

(1) Machines must have an exhaust system maintained in good working order.

(2) Machines must be equipped with a muffler of the type recommended by the machine manufacturer.

(3) Exhaust pipes must direct the exhaust gases away from the operator.

(4) Exhaust pipes must be insulated or located to protect employees from accidental contact with the pipes and must permit spark arrester clean out.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0745**

##### **Windows and Windshields on Machines**

(1) Windows and windshields must:

(a) Be free of deposits or defects that could endanger the operator or other personnel.

(b) Be safety glass or a type of material that provides equal protection.

(c) Not impair the vision of the operator.

(d) Have an additional metal screen or guard where windows and windshields do not provide adequate operator protection.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0750**

##### **Drum Brakes**

(1) Brakes or dogs must be installed on all machine drums and maintained in effective working condition.

(2) Machine drum brakes must have an independent locking device that will hold the drum when the operator leaves the machine and the machine is not operating.

(3) Machine drum brakes must be protected from direct exposure to the elements or must be of a design or construction which will render them impervious to such exposure.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0755**

##### **Machine Travel Brakes**

(1) Self-propelled machines built on or after July 1, 1985, must have braking systems as follows:

(a) A service braking system that is the primary means of stopping and holding the equipment.

(b) An emergency stopping system that is a secondary means of stopping the equipment in the event of any single failure of the service system.

(c) A parking brake system that will continuously hold a stopped machine stationary within the limits of traction so the operator may leave the vehicle without the vehicle moving, and to prevent movement of the vehicle while unattended.

(2) The braking systems in this section (OAR 437-007-0755) must comply with Society of Automotive Engineers' (SAE) or International Organization for Standards (ISO) Recommended Practices:

(a) ISO 11512 MAR95 — Braking Performance — In-Service Crawler Tractors and Crawler Loaders.

(b) J/ISO 3450 JAN98 — Earthmoving Machinery — Braking Systems of Rubber-Tired Machines — Systems and Performance Requirements and Test Procedures.

(c) J/ISO 11169 FEB99 — Machinery for Forestry — Wheeled Special Machines — Vocabulary, Performance Test Methods, and Criteria for Brake Systems.

(3) Self-propelled logging machines manufactured prior to July 1, 1985, must have braking systems installed, tested and maintained in as effective a condition as originally installed by the manufacturer.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0760**

##### **Outriggers**

(1) All outriggers must be placed on a stable base or cribbing.

(2) Hydraulic outriggers must have a positive holding device (velocity fuse, load check valve, manually operated valve, or equivalent) to prevent movement of the piston in the event of a hose, hose fitting or other failure in the hydraulic system.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-0765**

##### **Hauling or Moving Machines**

(1) The weight of any machine being hauled must not exceed the designed capacity of the transporting vehicle.

(2) Machines must be loaded, secured and unloaded so they do not create a hazard for personnel.

(3) Machines must not be moved or operated until all personnel are in the clear.

(4) A signal person must guide operators who do not have a clear and unobstructed view of the direction of travel and the surface being traveled.

(5) When an operator does not have a clear and unobstructed view of the direction of travel, an audible alarm or horn must be sounded before the machine, equipment or vehicle is moved.

(6) Track-mounted machines with manual transmissions must be equipped with a ratchet or other device which will prevent unintended disengagement or reversing of the machine, and the operator must be informed of the proper technique.

(7) When moving machines equipped with metal towers, the tower must be lowered. When needed for mobility, the tower may be



raised provided that it is adequately supported so that the stability of the machine is not impaired during movement.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0770****Protective Structure for Operators, General Requirements**

(1) Cabs and protective structures for machine operators must be:

(a) Provided when machine use exposes an operator to hazardous conditions.

(b) Sufficient in strength and dimension to withstand the impact of materials handled.

(2) Operator controlled skidding machines manufactured after April 1, 1992, must have adequate operator protection of 1/4-inch woven wire mesh with openings no greater than 2 inches in size or other materials providing equivalent or greater protection.

(3) Every tractor, skidder, front-end loader (other than high mast forklifts), scraper, grader and dozer manufactured on or after July 1, 1969, must be equipped with Roll-Over Protective Structures (ROPS) installed, tested and maintained in accordance with Division 2/N, OAR 437-002-0223, as amended through January 30, 2003.

**EXCEPTION:** This rule does not apply to log stackers used exclusively to lift, transport or stack logs in sorting yards or transfer stations.

(4) Every tractor, skidder, front-end loader (other than high mast forklifts), scraper, grader and dozer manufactured on or after July 1, 1980, must be equipped with ROPS meeting the Society of Automotive Engineers' SAE 1040 April 1980, Performance Criteria for Roll-Over Protective Structures (ROPS) for Construction, Earth-moving, Forestry and Mining Machines.

**EXCEPTION:** This rule does not apply to log stackers used exclusively to lift, transport or stack logs in sorting yards or transfer stations.

(5) Every tractor, skidder, front-end loader, scraper, grader and dozer manufactured on or after July 1, 1980, must be equipped with a falling object protective structure (FOPS) for overhead protection installed, tested and maintained in accordance with the Society of Automotive Engineers' SAE J231-1981, Minimum Performance Criteria for Falling Object Protective Structures (FOPS).

(6) Machines equipped with ROPS or FOPS as required in OAR 437-007-0770(3), (4) and (5) must comply with the Society of Automotive Engineers' SAE J397 April-1988, Deflection Limiting Volume (DLV) for Laboratory Evaluation of Roll-Over Protective Structures (ROPS), and Falling Object Protective Structures (FOPS) for Construction and Industrial Vehicles.

(7) The ROPS structure must have a shear or deflecting guard extending from the leading edge of the forward arch to the front part of the tractor frame. If longitudinal arches are used, they must extend from the rear of the tractor to the front frame of the tractor with each arch having an intermediate support located approximately at the dash so that operator access or egress is not impeded.

**EXCEPTION:** This rule does not apply to rubber-tired loaders, scrapers and graders.

(8) The opening in the rear of the ROPS structure must be covered with 1/4-inch woven wire having not less than 1 1/2-inch or more than 2-inch openings, or other material providing equivalent or greater protection. Affix this covering to the structural members so that ample clearance is provided between the screen and the back of the operator.

(9) ROPS structures must have side screens of the same strength as the back screen or vertical barrier bars spaced at intervals not greater than 6 inches on center and constructed of not less than 1-inch double strength pipe installed on all logging machines equipped with ROPS in addition to the back screen.

(10) Side barriers must extend forward to the front edge of the operator's seat or as far forward as possible from the rear corners of the canopy sides to a structural member behind the front edge of the seat.

(11) Protective structures must be of sufficient height and width so they:

(a) Do not impair the movement of the operator or prevent immediate escape from the machine in emergencies.

(b) Allow the operator as much visibility as possible.

(12) Clearance between the deck and the protective structures of the machines at points of egress must not be less than 52 inches.

(13) There must be a second means of egress from all logging machines.

(14) Structural members of the ROPS must have smooth, rounded edges and coverings free from projections which could puncture or tear flesh or clothing.

(15) Rollover protective systems must be maintained in a manner that will preserve their original strength. Welding may only be performed by qualified welders.

(16) Certified roll-over protective structures must be identified by a metal tag:

(a) Permanently attached to the ROPS in a position where it can be easily read.

(b) Permanently and clearly stamped, etched or embossed with the:

(A) Name and address of the certifying manufacturer or registered professional engineer.

(B) ROPS model number (if any).

(C) Vehicle make, model or series number that the ROPS is designed to fit.

(D) Maximum weight of the machine for which the structure is certified.

(E) SAE tag criteria number.

(17) Tractors and skidders manufactured prior to 1969 that cannot be fitted with complete ROPS may be used for cleaning debris off landings, snubbing vehicles and machines or as an anchor, provided no clearing, road construction or yarding is performed off a road or landing surface.

(18) Seat belts must be provided and used on all machines with ROPS/FOPS and have quick release buckles designed to minimize the possibility of accidental release.

(19) Seat belts must be maintained in an effective condition and comply with SAE Standard J386-1985.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0775****Protective Structure For Operators, Machines Manufactured On Or After July 1, 2004**

**NOTE:** The scope of coverage in the SAE and ISO standards referenced in OAR 437-007-0775(11) and (14) are not intended to exclude any machines included in the scope of this Division.

(1) Machines manufactured on or after July 1, 2004, that permit the operator to stand on the ground adjacent to the machine while operating the machine:

(a) Are not required to have a fully enclosed cab.

(b) Must have overhead and landing chute side protection meeting the requirements of SAE J1084 April 80.

(2) Cabs and protective structures on forest activities machines manufactured on or after July 1, 2004, must have smooth, rounded edges and coverings free from projections which could puncture or tear flesh and clothing.

(3) Any machine operator cab, protective structure or attached guarding manufactured on or after July 1, 2004, that is damaged or weakened, to a strength less than that required by certified performance criteria must be replaced or immediately repaired.

(4) Repairs or modifications to major structural members of any operator cab, protective structure or attached guarding on machines manufactured on or after July 1, 2004, certified to performance criteria, must comply with the specific instructions of the original equipment manufacturer or be certified by a professional engineer.

(5) An operator restraint system must be provided and used on all machines manufactured on or after July 1, 2004, and equipped with ROPS, FOPS, reinforced cabs or overhead guards. The operator restraint system must:

(a) Comply with SAE J386 NOV97 or ISO 6683 Amended 1:1990.

(b) Be maintained in an effective condition.

**EXCEPTION:** Use of the operator restraint system is not required when operating yarders that are stationary.

(6) The level of protection provided by any machine operator cab, protective structure or attached guarding manufactured on or after July 1, 2004, must be identified by a label. The label must:

(a) Comply with the labeling requirements of ISO 3471:1994 or ISO 12117:1997 as applicable.

(b) Not claim that exclusion from a standard is equivalent to compliance with that standard.

**NOTE:** Machines capable of 360-degree upper structure rotation are excluded from the SAE J1040 MAY94 and ISO 8082:1994 standards for ROPS. In this case, the exclusion from these standards does not allow the label on a machine capable of 360-degree upper structure rotation to state compliance with SAE J1040 MAY94 or ISO 8082:1994.

(7) Each machine used in forest activities that is manufactured on or after July 1, 2004, must have a fully enclosed cab for the operator which prevents objects from entering the cab. The fully enclosed cab must have:

(a) The upper portion enclosed with materials that allow for maximum visibility and meets the Operator Protective Structure (OPS) requirements of SAE J1084 APR80 or ISO 8084:1993.

(b) Transparent material must not have defects, such as, but not limited to, scratches, cracks, or broken safety glass which could create a hazard for the operator.

(c) The lower portion enclosed with solid material meeting the requirements of SAE J1084: APR80 or ISO 8084:1993.

(d) The overhead covering enclosed with solid material meeting the FOPS requirements of ISO 8083:1989 (11,600 Joules).

**EXCEPTION 1:** 437-007-0775(7)(a) is not required for the front window in machines operating in sort yards, on landings and similar prepared surfaces which are equipped with front guards meeting the SAE J1356 FEB88 requirements.

**EXCEPTION 2:** 437-007-0775(7)(a) and (7)(c) are not required on machines operating in mill yards.

(8) The machine operator space in cabs and protective structures manufactured on or after July 1, 2004, must comply with ISO 3411:1995.

(9) Access to machine operator cabs and protective structures manufactured on or after July 1, 2004, must comply with SAE J185-1988 or ISO 2867:1994.

(10) Each fully enclosed cab installed on machines manufactured on or after July 1, 2004, must have a second means of egress which can be opened from both the inside and outside without tools.

(11) Machines capable of handling material in front of or above the deflection limiting volume (DLV), as defined by SAE J397 APR98, including yarders with cabs mounted next to the tower (boom), manufactured on or after July 1, 2004, must have a front and top guard meeting the requirements of SAE J1356:FEB88.

**EXCEPTION:** The rule does not apply to rubber-tired or tracked front-end loaders when equipped with buckets or forks with hold down grapple arm(s).

(12) Machines used for forest activities and those identified by SAE J1116 MAR99 that are manufactured on or after July 1, 2004, must:

(a) Be equipped with ROPS which meet the criteria in SAE J1040-1994 or ISO 8082:1994.

(b) Comply with the requirements of OAR 437-007-0775(2) through (11).

**EXCEPTION 1:** This rule does not apply to high mast log stackers used exclusively to lift, transport or stack logs in sorting yards or transfer stations.

**EXCEPTION 2:** This rule does not apply to machines capable of 360-degree upper structure rotation that are excluded from SAE J1040:May 94 and ISO 8082:1994 standards for ROPS.

(13) Shear or deflector guarding must be:

(a) Installed in front of each cab to deflect whipping saplings and branches.

(b) Located so they do not impede visibility and access to the cab.

**EXCEPTION:** This rule does not apply to rubber-tired loaders, scrapers and graders.

(14) Machines used for forest activities manufactured on or after July 1, 2004, that are excluded from the ROPS, SAE J1040:1994 or ISO 8082:1994 requirements because they are capable of 360 degree upper structure rotation must be equipped with fully enclosed cabs that meet the requirements of 437-007-0775(2) through (11). These machines must be limited to use on surfaces that are prepared, excavated or constructed of solid material with a slope of less than 20 percent

unless the operator's cab is equipped with the following additional protection:

(a) A Tip Over Protective Structure (TOPS) that meets the requirements of ISO 12117 1997:(E) with the exception of the "Formulae for the determination of energy required" In section 6.1.4 Table 1. The "Formulae for the determination of energy required" In Table 1 is changed as follows:

(A) The lateral energy equation is replaced with 7300(M/10,000)0.9 or 20,000 Joules, whichever is greater where M is the machine mass in kilograms.

(B) The longitudinal energy equation is replaced with 4300(M/10,000)0.9 or 12,000 Joules, whichever is greater where M is the machine mass in kilograms.

(b) An "Off-Boom Side Cab Guard" that complies with the "Front Guard" requirements of SAE J1356: FEB88.

(c) An "Off-Boom Side Cab Guard" that complies with 437-007-0775(14)(b) when the following modifications are made to SAE J1356:FEB88:

(A) Section 3.2. Each occurrence of the term "Front Guard" in this section is replaced with "Off Boom Side Cab Guard."

(B) Section 3.2.4.1. The term "front of the DLV" on line 3 is replaced with "off boom side of the DLV".

(C) Section 5.2. Each occurrence of the term "Front Guard" in this section is replaced with "Off Boom Side Cab Guard".

(D) Section 5.2.3. The term "front of the DLV" on line 2 is replaced with "off boom side of the DLV".

(E) Section 6.2. The term "Front Guard" on line 1 is replaced with "Off Boom Side Cab Guard".

(15) Machines used for road construction activities on prepared surfaces with a slope of less than 20 percent are not required to have front and/or top cab protective structures when the machine's activities do not expose operators to the hazards of yarding, loading or timber falling.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2008, f. & cert. ef. 3-5-08

#### **437-007-0780**

##### **Protective Structures for Operators, Machines Used On Or After July 1, 2014**

Each machine used in forest activities on or after July 1, 2014, that is excluded from the ROPS, SAE J1040 MAY94 or ISO 8082:1994 requirements, because it is capable of 360 degree upper structure rotation, must:

(1) Meet the same requirements as those machines manufactured on or after July 1, 2004, or

(2) Be limited to use on surfaces that are prepared, excavated or constructed of solid materials with a slope of less than 20 percent when handling logs or other materials, or

(3) Have a clear path of travel and be limited to slopes of 40 percent or less when used only as anchors for cable yarding systems.

**EXCEPTION:** 437-007-0780 does not apply to machines manufactured before July 1, 2004 that are equipped and maintained with a front and top guard structure meeting the performance criteria of SAE J1356:FEB88 or ISO 10262:1998 Level II.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2008, f. & cert. ef. 3-5-08; OSHA 2-2014, f. & cert. ef. 5-29-14

#### **437-007-0800**

##### **General Requirements**

(1) Any worker falling a tree or bucking a log must be located so their work will not endanger others.

Figure 7-33 — Falling — Too Close [Figure not included. See ED. NOTE.]

(2) Personnel must not approach within two tree lengths of a tree being felled without receiving a signal from the person falling the tree that it is safe to approach.

(3) The minimum distance between any worker(s) manually falling trees and any other personnel must be twice the height of the trees being felled.

**EXCEPTION:** This does not apply to a team of two or more working on the same tree.  
Figure 7-34 — Falling — Two Tree Lengths [Figure not included. See ED. NOTE.]

(4) Workers who are single jacking must be positioned so they are close enough to render assistance to each other in case of an emergency. They must be:

- (a) Within sight of each other; or
- (b) Able to talk to each other by natural unassisted voice communication.

(5) Workers who are single jacking must work in compliance with 437-007-0215, Working Alone, and 437-007-0220, Medical Service and First Aid requirements.

(6) Workers whose primary job is to manually operate a chain saw for activities such as, falling and bucking trees, pre-commercial thinning, brush clearing and slashing must carry a shrill sounding whistle, such as a police whistle. The whistle must be used only to summon help in case of an emergency.

**NOTE:** This does not include chasers on active landings.

(7) Workers must not fall or buck trees within a unit of standing timber prior to any cutting operation if such falling or bucking creates a hazardous condition for subsequent cutters or operations.

(8) When hazardous conditions are created from tree cutting operation(s) next to roads, the requirements of OAR 437-007-0510 and 0515 apply.

(9) OAR 437-007-0230 applies when a tree could fall within 15 feet of a power line.

(10) An inexperienced worker must not fall trees or buck logs unless they are working under the direct supervision of a qualified person.

(11) When a worker is not sure how to safely fall or buck a tree, the tree must not be cut until the:

- (a) Worker confers with a supervisor or qualified person.
- (b) Safest possible work method or procedure is identified to complete the job.

(12) Workers must check for overhead hazards while falling, bucking or limbing trees.

(13) Workers must not fall and buck trees when their vision is impaired by weather or darkness.

(14) Spring poles and limbs under stress must be cut in a way that releases the tension and other personnel must be in the clear as the cut is being completed.

(15) Workers must not operate a chain saw:

- (a) To cut directly overhead in a manner that would cause limbs, chunks of bark, or pieces of wood to fall on the operator.

(b) At a distance that would require them to lose a safe grip on the saw.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### 437-007-0805

#### Mechanical Falling

(1) The minimum distance between mechanical falling machines or personnel must be twice the height of the trees being felled.

**NOTE:** Increase this distance where the operation of mechanical falling machines creates the possibility of thrown or flying objects.

(2) Mobile tree falling machines must be designed or have attachments installed to cause the tree to fall in the intended direction.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### 437-007-0810

#### Manual Falling

(1) Falling cuts must not be made in a standing tree while anybody is in the area where the tree could fall.

(2) Trees must not be felled if the wind is strong enough to prevent the tree from falling in the desired direction.

(3) Domino falling is prohibited.

**EXCEPTION:** A lodged tree can be dislodged by falling another tree into it.

(4) A worker must not:

- (a) Work under a lodged tree.
- (b) Cut a tree that another tree is lodged in.

(5) When any lodged or standing tree with undercuts or back cuts is left unattended, the hazardous area must be distinctly marked by hazard identification ribbon as specified in OAR 437-007-0205.

(6) Only qualified workers may fall danger trees.

(7) When falling danger trees:

- (a) Use extra caution.
- (b) Remove loose bark within reach from the ground before starting to fall the tree.

(c) Use a deep undercut with a wide face opening, and fall the danger tree in the direction of lean whenever possible to avoid vibration caused by wedging.

(8) One worker must not fall a tree or danger tree when the assistance of another worker is necessary to minimize the risk of injury caused by overhead hazards, loose bark, loose or interlocked limbs, conditions of the tree, terrain or cutting conditions.

(9) An escape route must be determined and arranged before a tree is fallen so the worker(s) falling the tree can move at least 25 feet away from and to the side of the base of the tree.

(10) The escape route must be clear of brush, snow, tools and other material that would impede a quick escape.

(11) Workers must not remain at the stump as the tree falls unless it is necessary to complete the backcut. Once the backcut is completed, the worker must immediately release the throttle and move a safe distance away from the tree.

(12) Trees must be felled into the open whenever practical.

(13) When manual falling or tree jacking, trees must not be felled directly uphill when the probability of the tree sliding back past the stump is likely.

(14) When manual falling or tree jacking, trees felled uphill must be quartered to the slope, to minimize exposure to sliding or rolling trees.

(15) When trees or snags are over 6 inches DBH:

- (a) Undercuts must not be less than 1/4 the diameter of the tree.
- (b) Face openings must not be less than 1/5 the diameter of the tree.

**EXAMPLE:** Acceptable undercuts:

A. Conventional undercut. Can be made with parallel saw cut and axe diagonal cut or both cuts with the saw. Generally used on trees of small diameter.

Figure 7-35 — Falling — Conventional Face

B. Humbolt cut. Both cuts made with the saw. Same as "A" except that waste is put on the stump.

Figure 7-36 — Falling — Humbolt Face

C. Open face cut. Both cuts made with the saw. The top and bottom face cuts generally form a 90 degree angle when completed. Works best on small diameter trees.

Figure 7-37 — Falling — Open Face [Figures not included. See ED. NOTE.]

(16) Undercuts must be completely removed and cleaned out unless it is necessary to use a Dutchman on either side of the cut.

(17) Undercuts and back cuts must be made at a sufficient height above the highest ground level to enable the person falling the tree to:

- (a) Safely make the cut.
- (b) Control the tree.
- (c) Have freedom of movement for a quick escape.

(18) Back cuts must be made above and on a horizontal plane with the face cut.

(19) Holding wood must not be completely cut through.

**NOTE:** When completing a swing cut, sufficient holding wood must be maintained to guide the tree during most of its fall.

[ED. NOTE: Figures referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### 437-007-0815

#### Wedges

(1) Wedges must be driven with a hammer or other suitable tool.

(2) Two wedges must be immediately available when falling trees over 15 inches DBH.



- (3) Wedges must be used when falling trees that:
    - (a) Are over 15 inches DBH.
    - (b) Do not have a predictable lean.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### 437-007-0820

##### Bucking Trees/Logs

- (1) Fallers and buckers working as a team must keep each other informed of their location.
  - (2) When a worker is bucking, they must give a timely warning to others within range of any log that may move after being cut off.
  - (3) Only qualified workers must buck windfalls.
  - (4) Before workers start bucking, they must carefully examine the tree or log to determine which way logs will roll, drop or swing.
  - (5) A worker must not buck a tree or log on the downhill side unless they:
    - (a) Are in a safe location.
    - (b) Block or secure the tree to prevent rolling.
  - (6) Before a worker starts to buck a tree or log they must:
    - (a) Clear away brush and other material which might interfere with a quick escape.
    - (b) Establish firm footing.
  - (7) Logs that are not completely bucked through must be conspicuously marked with hazard identification ribbon as required by 437-007-0205(1) through (5).
  - (8) Two or more persons must not buck the same tree or log at the same time.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### 437-007-0825

##### Tree Jacking

- (1) Hydraulic tree jacks must have:
    - (a) An internal operable load check valve, velocity fuse or equivalent device. When using hoses with a jack, the device must be installed between the ram and the first piece of hose out from the jack.
    - (b) An operable pressure gauge.
  - (2) If two or more tree jacks are used and operated with one pump, a one-way flow valve must be used to isolate the hydraulic fluid from one jack to another jack should a failure in the system occur.
  - (3) A qualified person must determine if it is safe to jack a tree.
  - (4) Hydraulic tree jacks must have enough lift power for the trees to be jacked and felled.
  - (5) Two workers, one of whom must be qualified in the use of jacks, must be present at the tree when using hydraulic tree jacks.
  - (6) The jack seat of hydraulic tree jacks must be level.
  - (7) A metal plate or pad must be placed between the ram and the saw cuts when using a hydraulic tree jack. The metal plate or pad must be of sufficient area and have a surface design to prevent the plate or pad from sinking into the wood or from slipping.
  - (8) The hydraulic tree jack seat must be on solid wood inside the bark ring.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### 437-007-0830

##### Tree Pulling

- (1) A qualified person must determine if it is safe to pull a tree.
- (2) Positive communications must be maintained at all times between the tree-pulling machine operator and the person falling the tree. Citizens' band radios are not considered positive communications.
- (3) An audible signal must be sounded when the initial pull is made on the tree and the line is tightened.
- (4) A choker, choker bell or a line with a sleeve shackle must be used as the means of attachment around the tree when tree-pulling.

The bight on the line must be only that necessary to hold the choker or line around the tree.

- (5) The tree-pulling machine must be equipped with a torque converter, fluid coupler or an equivalent device to ensure a steady, even pull on the line attached around the tree.
  - (6) The tree-pulling line must have as straight and direct a path from the machine to the tree as possible. Physical obstructions which prevent a steady, even pull on the tree-pulling line must be removed or the line must be rerouted.
  - (7) The use of a siwash, in lieu of using a block and strap for the purpose of changing the tree-pulling lead, is prohibited.
  - (8) In tree pulling operations, the back cut may be below and on a horizontal plane with the face cut.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### 437-007-0900

##### General Landing Work Practices

- (1) Before starting or moving any machine, the operator must determine that personnel are in the clear.
  - (2) When vehicles or machines are moved within the landing area all personnel must:
    - (a) Stay in the clear of the vehicle(s) or machine(s).
    - (b) Inform the operator of the intent to approach or be near the vehicle(s) or machine(s).
    - (c) Wait for the operator's permission to approach or be near the vehicle(s) or machine(s).
  - (3) Personnel must not approach the hazardous pinch point area created by the rotation of the machine's superstructure without:
    - (a) Informing the operator of that intent.
    - (b) Receiving acknowledgment from the operator that the person's intention is understood.
    - (c) The machine being stopped while personnel are within the hazardous area.
- NOTE:** OAR 437-007-0700 General Work Practices, paragraphs (1) through (3) from Division 7/H, are reprinted here.
- (4) Any tool or rigging that is not being used must be stored in a location where it will not create a hazard.
  - (5) Materials must not be pushed, thrown or dumped off the landing in a manner or at a time that will endanger personnel.
  - (6) Personnel must not brand, mark, buck, limb or trim logs in a location that will expose them to contact with moving lines, logs, rigging, machines, equipment or vehicles.
  - (7) Logs must not be placed in, moved about, or removed from the bucking area of the landing unless all personnel are in the clear.
  - (8) Tongs must not be carried over both shoulders with the tong points around the neck.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### 437-007-0905

##### Landings

- (1) Landing areas must be:
    - (a) Large and level enough to land, heel, tail/swing or process logs without striking standing timber, rigging, trucks, vehicles, equipment, other machines or objects.
- NOTE:** This is not intended to restrict the occasional yarding or loading of logs for poles, piling or an infrequent long break or tree length, provided the log is stabilized before unhooking the choker.
- (b) Large enough for safe movement of all machinery.
  - (c) Kept chunked out and have an even surface.
  - (2) Outrigger pads, tracks or wheels must be on firm, stable ground, cribbing or prepared surface.
  - (3) During road side thinning, logs stacked on the road side must be placed in a stable position.
  - (4) Roadside or continuous landings must be wide enough to safely operate the yarding and loading equipment.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
Stats. Implemented: ORS 654.001 - 654.295  
Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

**437-007-0910**

**Landing Logs**

- (1) Logs must not be landed until all personnel, trucks, machines, or vehicles are in the clear.
  - (2) After a turn is landed, all rigging must be completely stopped and logs must be stable before:
    - (a) Being approached by personnel.
    - (b) Chokers are unhooked.
  - (3) When chokers are manually unhooked, the yarder operator must receive a signal from the chaser before any lines are moved.
  - (4) Logs must not be permitted to accumulate in the landing chute to the point where they become a hazard.
  - (5) When yarding uphill, the landing chute must be cleared of logs before the next turn of logs is landed unless:
    - (a) The logs are fully contained in the landing chute; or
    - (b) There is no possibility that personnel working below the landing may be struck by sliding or rolling logs or materials coming off the landing.
  - (6) Logs must not be disturbed or moved from the chute when personnel working below could be struck by logs, chunks or other material sliding or rolling off the landing.
  - (7) The following apply when logs are landed. When the landing slope is:
    - (a) Twenty percent or less, logs may be landed and decked in the chute provided the logs can be left in a stable position.
    - (b) More than 20 percent, decking is not permitted in the chute if:
      - (A) A chaser is required to unhook the rigging from the logs.
      - (B) Personnel are working below the landing chute.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0915**

**Log Decks**

- (1) Logs must be placed in and removed from decks in an orderly manner to minimize rolling or shifting.
  - (2) Logs must not be decked in a location where they will slide or roll in the direction of personnel, vehicles, equipment or machines.
  - (3) Logs must be rearranged or decked at a different location if the landing process or weather conditions (rain, snow, ice, mud) prevent log stability and personnel are exposed to the hazard of rolling or sliding logs.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0920**

**General Cable Yarding and Ground Skidding Work Practice**

- (1) The requirements of OAR 437-007-0225(1) and (2) (working near unstable objects and danger trees) apply to all cable yarding and ground skidding operations, especially when yarding downhill.
  - (2) Choker holes must be dug from the uphill side of the log when there is danger of the log rolling or moving.
  - (3) Chokers must be placed near the end of logs.  
**NOTE:** Chokers may be placed in the middle of the log ("gut shot") if it will provide greater control when the turn is yarded or landed.
  - (4) Personnel must not stand on or near logs, root wads, or other objects which may be moved by the turn of logs.
  - (5) Before the go-ahead signal is given personnel must:
    - (a) Move to the side and behind all logs in the turn and be in the clear.
    - (b) Remain on their feet and face the turn.
    - (c) Stay in the clear until it is safe to return to the area where chokers are being set.
  - (6) When approaching or working around hang-ups, personnel must:
    - (a) Approach from above the hang-up.
    - (b) Be alert to the danger of logs rolling or sliding, siwashies, widow makers and danger trees.
    - (c) Workers must not ride on arches, reaches and turns of logs.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0925**

**Cable Yarding Work Practices**

- (1) Personnel must not ride hooks, lines, rigging, logs suspended in the air or being moved.
  - (2) Personnel must not hold onto haywire, running lines, drop lines or chokers as an assist when walking uphill.
  - (3) Personnel must not work in the bight of lines under tension.  
**EXCEPTIONS:** Personnel may be in the bight of lines when:
    - (a) Minor positioning of the rigging is needed to set chokers.
    - (b) They are protected by standing timber, terrain, or other objects of sufficient size to assure their safety.
  - NOTE:** "Lines under tension" means when:
    - (a) Logs are being moved or suspended.
    - (b) The rigging or carriage is moving to the landing or returning to the brush.
    - (c) Lines are tight-lined to clear up the road.
    - (d) Any movement or tightening of the line(s) other than that needed for minor positioning of the rigging or carriage to set chokers.
  - (4) Personnel must be in the clear of all lines, rigging and chokers until movement has stopped. Swinging chokers, hooks and rigging must be lowered to the ground.
  - (5) Personnel must be in the clear of trees, logs, root wads, chunks, rolling material, all lines and rigging before any lines are moved.
  - (6) Personnel must not stand next to skyline or running line anchor straps under tension.
  - (7) A minimum of one choker setter in each crew must be a qualified choker setter.
  - (8) Only one employee in any crew can give signals or voice communication at the point where chokers are being set.  
**NOTE:** Any person is authorized to give a stop signal when an employee is in danger or any other emergency condition is apparent.
  - (9) At least two members of the rigging crew must carry transmitters for each signal and control system being operated where chokers are being set.
  - (10) When only one person is setting chokers on any cable yarding system, they must:
    - (a) Carry transmitters for each signal and control system being operated where chokers are being set.
    - (b) Be in clear view of the yarder operator or another person with transmitters for each signal and control system being operated where chokers are being set.
- Stat. Auth.: ORS 654.025(2) & 656.726(4)  
 Stats. Implemented: ORS 654.001 - 654.295  
 Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-0927**

**Working Near Standing Tree Anchors, and Tail/Intermediate Support Trees**

- (1) Affected personnel must be notified of the potential failure zone of any tail tree, intermediate support tree and standing tree anchor.  
**NOTE:** The potential failure zone is that area which could be impacted by the failure of any part of a tail tree, intermediate support tree or standing tree anchor as the result of forces or loads imposed on the tree by guylines, running lines or skylines.
- (2) The boundaries of the potential failure zone must be determined by a competent person.
- (3) The boundaries of the potential failure zone must encompass the area into which the tree or parts of the tree could fall, slide or roll and all trees, logs, lines and material that could be impacted by the tree failure.
- (4) Personnel must be in the clear of the turn and out of the potential failure zone of a standing tree skyline or running line anchor before lines are tensioned.  
**NOTE:** Personnel may be in the potential failure zone when minor positioning of the rigging is needed or to set chokers.  
**NOTE:** "Before lines are tensioned" means before:
  - (a) Logs are moved or suspended.
  - (b) The rigging or carriage is moved to the landing or returned to the brush.
  - (c) Lines are tight-lined to clear up the road.
  - (d) Any movement or tightening of the line(s) other than that needed for minor positioning of the rigging or carriage to set chokers.

(5) Personnel working around tail and intermediate support trees must be in the clear of the turn and out of the potential failure zone before lines are tensioned.

**NOTE:** Personnel may be in the potential failure zone when minor positioning of the rigging is needed or to set chokers.

(6) If the potential failure zone cannot be determined, personnel must move at least 1 1/2 tree lengths from the base of tail and intermediate support trees, and in the clear before lines are tensioned.

(7) A competent person must instruct affected personnel in the safe work practices required for work activity in any potential failure zone. This instruction must identify the:

(a) Boundaries of the potential failure zone

(b) Potential for the boundaries of the failure zone to change when line pull and line angles change.

(c) Limitations or restrictions for entering or working in the potential failure zone.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-0930**

#### **Grapple Yarding**

(1) An audible signal does not need to be sounded before lines are moved while grapple yarding if employees are not exposed to logs or rigging movement.

(2) Chokers must not be set when using a grapple yarding system during:

(a) Hours of darkness.

(b) Periods when visibility is reduced to such an extent that the yarder operator cannot clearly see the person setting the choker.

(3) One person carrying a whistle signaling device may use voice communications to transmit instructions and directions to the yarder operator when picking up an occasional log with a choker on a grapple yarding system only:

(a) During daylight hours.

(b) When the choker setter is in clear view of the yarder operator at all times.

(c) When all lines are slacked to the ground prior to the choker setter approaching the rigging.

(d) When all lines remain stable until the choker setter returns to a safe location away from any running lines.

(4) Standard yarding system whistle signals must be used when the choker setter is not in clear view of the yarder operator when chokers are set on grapple yarding systems. (See Appendix 7-A.)

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-0935**

#### **Operation of Ground Skidding Machines and Vehicles**

(1) Machines must not be operated on slopes in excess of the following limits unless specified by the manufacturer of the equipment.

(a) Rubber-tired skidders — 30 percent.

(b) Crawler tractors, tracked feller bunchers, tracked excavators and loaders — 40 percent.

(c) Other forestry equipment designed for steep slopes — 50 percent.

(2) Operation in excess of the above limits may be permitted for specific limited application or in identified small areas provided the operator and the competent person plan how to safely operate on the steep slopes considering:

(a) Experience of the operator.

(b) Limitations of the machine and the soil conditions.

(c) Direction of travel (traveling straight up and down the slope).

(d) Requirements for turning the machine or vehicle on the slope.

(e) Weather.

(f) Load sizes.

(g) Any other adverse conditions.

(3) Turnarounds must be provided on all skidding roads so operators do not have to backup more than 250 feet.

(4) Towed equipment, such as skid pans, pallets, arches, and trailers, must be attached in a manner which will prevent overrunning of the towing vehicle, equipment or machine.

(5) Tractors, skidders, arches, or logs being yarded must not run over or rub against anchored lines, tailhold stumps, or other rigging.

(6) The yarding machine or vehicle, including its load, must be operated with safe clearance from trees, snags, logs, or other objects that may create a hazard for an employee.

(7) Each machine must be positioned during winching so the machine and winch are operated within their design limits.

(8) No load can exceed the rated capacity of the pallet, trailer, or other carrier.

(9) Arches must be equipped with line guards.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-0940**

#### **Signaling and Communications**

(1) Hand signals or audible contact, such as, but not limited to, whistles, horns, or radios, must be used whenever noise, distance, restricted visibility, or other factors prevent clear understanding of natural unassisted voice communications between employees.

(2) A whistle or horn, clearly audible and distinguishable to all personnel in the affected area, must be installed and used on all machines operating as yarders, loaders or tree pullers.

(3) All radio-controlled carriages and motorized skycars must have a warning horn which is sounded when any carriage function is activated.

(4) Standard yarding system whistle signals identified in Appendix 7-A must be used at cable logging operations.

(5) A new yarding system whistle signal may be adopted for an unusual or new situation not covered in the standard whistle signals provided:

(a) The new signal is used only for that specific situation.

(b) All employees are informed of the new signal.

(6) A list of the standard yarding whistles, any new yarding system whistle(s) and control system signals used to activate cable logging systems, machinery and equipment functions must be available at the work site.

(7) Affected personnel must understand the control system signals, hand signals and whistles used to activate equipment and machines.

(8) All audible signal systems, equipment and machinery activation signals must be tested and be fully functional prior to beginning the operation.

(9) Spare transmitters must be guarded against accidental activation.

(10) All personnel must be in the clear before any signal is given to move any log, load, rigging, or turn.

(11) Machine operators must not move any lines, logs, loads or rigging unless the signal received is clear and distinct. If in doubt, the operator must repeat the signal as understood and wait for confirmation.

(12) An audible signal must always be sounded before any line is moved.

(13) Voice communication, except as required by 437-007-0950(1), may be used to transmit instruction and direction to the yarder operator to move rigging and control the movement of logs provided that an audible signal is sounded before any line is moved.

(14) An audible signal does not need to be sounded when yarding logs with grapples if personnel are not exposed to line, log or rigging movement.

(15) When hand signals are used, an audible signal does not need to be sounded when personnel are aware of and not exposed to line, log or rigging movement.

(16) Hand signals may only be used:

(a) In plain sight of the machine operator.

(b) Within 300 feet of the machine operator.



**NOTE:** Hand signals may be used at any time as an emergency stop signal.

(17) Throwing of any type of material as a signal is prohibited.

(18) Citizens' band (CB) radios cannot be used to activate any signal, machine or process either automatically or by voice.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-0945**

#### **Electrical Signal Systems**

(1) All electrical signal system wires and attachments must be weatherproof.

(2) Electrical signal systems must be:

(a) Installed and adjusted to protect against accidental signaling.

(b) Maintained in good operating condition.

(3) Electrical signal system bugs (transmitter) must be designed so they cannot be accidentally tripped.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-0950**

#### **Voice Communication on Combined Signal/Voice Transmitters**

(1) Voice communication on the same radio frequencies used to transmit skyline, high-lead, slackline or skidder whistle signals (154.57 and 154.60 MHz channels), is limited to the reporting of injuries, or fire and emergency situations where special tools or precautions are needed to prevent or alleviate a hazardous situation. In addition:

(2) Voice transmissions must not be used to move the rigging and only used when the rigging is standing still.

(3) The rigging crew must call the yarder engineer by name to ensure that proper contact is established.

(4) The yarder engineer must acknowledge the call with a whistle "STOP" signal before the caller starts transmitting the voice message.

(5) Voice transmission must be kept as brief and to the point as possible.

(6) After receiving the voice message, the yarder engineer must again acknowledge with a whistle "STOP" signal that the message has been received and is clearly understood.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-1000**

#### **General Requirements**

(1) Trucks or rail cars must not be moved unless all personnel are in the clear.

(2) When the operator's vision is impaired, trucks or rail cars must not be moved without a signal from a spotter who has a clear view of the direction of travel.

(3) Trucks must not approach a landing while there is danger from incoming logs, logging machines, lines, or rigging.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-1005**

#### **Loading**

(1) It is the responsibility of the employer who has control of the actual loading operation to ensure compliance with OAR 437-007-1005(2) through (18) and 437-007-1010(1) through (13) which are applicable to log loading, securing loads and to the requirement for hard hats.

(2) The truck driver and personnel loading logs must use positive means of communication to control the movement of the truck being loaded.

(3) Citizens' band (CB) radios may be used for communication between the loader operator and the log truck driver during the loading process.

(4) Standing underneath a suspended trailer or its reach is prohibited.

(5) Only the driver and driver-trainee are permitted to be in the truck cab while logs are being loaded.

(6) Logs being moved or loaded must not pass over any personnel, occupied vehicles, machines, or truck cab.

(7) Personnel must not enter any hazardous area near a log truck being loaded without:

(a) Determining that it is safe to enter the area.

(b) Receiving permission from the loading machine operator and truck driver.

(c) The centers of all logs are below the top of the stakes or secured by the log loader.

**NOTE:** Hazardous areas include the areas:

(A) Between the deck or decks from which the logs are being removed.

(B) Over which the logs are carried to place them on the log truck.

(C) Along both sides of the log truck behind the cab guard.

(D) Underneath the load.

(8) Logs must not be lowered to the bunk while bunk or block adjustments are being made.

(9) Standing between a truck cab and a log being loaded or unloaded is prohibited.

(10) Bunk and wing logs must extend at least 6 inches beyond the front and rear bunk or stake.

(11) Loads must be built up or loaded so they are stable without the use of wrappers.

**NOTE:** Wrappers are considered to be a precautionary measure to ensure stability of the load during transit.

(12) Logs must be loaded in a manner to prevent excessive strain on wrappers, binders, bunk stakes, bunk chains, or straps.

(13) When there is danger of a log slipping out of the grapples, a strap of sufficient size and length must be used to hold the log.

(14) The closing line must be securely attached to the grapple in accordance with the manufacturer's recommendations.

(15) Double-ended logs must not be loaded above the stakes on the side of the load from which the binders or wrappers are intended to be applied or released.

(16) Logs must be loaded so no more than 1/3 of the length of the logs extends beyond the:

(a) Trailer bunks.

(b) Ends of supporting logs.

(17) Log loads must not impair full and free movement of the truck.

(18) Loads or logs must not be moved or shifted while binders are being applied or adjusted.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-1010**

#### **Securing Loads for Transport**

(1) Wrappers must not be thrown until personnel are in the clear.

(2) When logs are loaded at different locations or decks, log trucks must not be moved until the requirements for securing loads are met unless:

(a) The centers of all logs are below the top of the stakes; or

(b) Ground personnel and machines are not exposed to the hazard of falling logs or wood fiber.

(3) A fully loaded truck must not be moved more than 1 1/2 truck and trailer lengths in front of the loading area unless:

(a) The centers of all logs are below the top of the stakes; or

(b) The load is secured with at least two wrappers.

(4) All wrappers that are required to transport the load must be put on the load within sight of the loading area.

(5) Required wrappers and binders must be in place and hooked prior to tightening any of the binders.

(6) When drivers cannot safely throw wrappers over loads, alternate methods must be used, such as, pulling the wrappers over the load with the loading grapples. If the loaded truck is moved, the

movement must comply with the requirements of OAR 437-007-1010(3).

(7) Loads must be secured as follows:

(a) Any long logs (27 feet or more in length) must be secured with not less than four evenly spaced wrappers.

**EXCEPTION:** Loads consisting of only four long logs or less may be secured with one wrapper at or near each bunk.

(b) All short logs (less than 27 feet in length) must be secured with at least two evenly spaced wrappers.

(8) Wrappers must be evenly spaced over the length of the logs.

(9) A wrapper must be placed near each bunk stake.

(10) Trucks and trailers used for off highway hauling on private haul roads where traffic controls are enforced:

(a) Must meet the requirements of 437-007-1010(7); or

(b) All perimeter logs must be contained by no less than two wrappers.

(c) Wrappers must be placed near each end of the logs.

(d) The two binders, chains, cables, fasteners, wrappers or other wrapper attachments must each have a minimum breaking strength of 20,000 pounds.

(11) Logs loaded crosswise on a truck or trailer without solid ends or stakes high enough to restrain the logs must be secured with at least two wrapper cables which are firmly attached to the ends of the truck or trailer.

(12) All wrappers, except for gut wrappers or a one-log load wrapper, must surround the entire load.

(13) Unless otherwise required, arrange binders so that they can only be released from the side of the vehicle away from the brow log or dumping side.

(14) Grab hooks must not be directly attached to the wrapper wire rope.

(15) All required wrappers must be kept tight during transit.

(16) Loose ends of wrappers must be secured to prevent the wrapper end from swinging and creating a hazard.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1015**

##### **Binders and Wrappers**

(1) Each log truck must carry at least five binders and five wrappers.

(2) Binders, chains, cables, synthetic materials, fasteners, wrappers, or other wrapper attachments must each have a minimum breaking strength of not less than 15,000 pounds. The following components meet the 15,000-pound requirement:

(a) Chain of welded link construction:

(A) 5/16-inch alloy steel chain; or

(B) 3/8-inch high-test steel chain; or

(b) 7/16-inch IPS wire rope of 6 x 19 or 6 x 37 construction.

(3) Binders must have the manufacturer's name and minimum breaking strength stamped on the binder.

(4) Wrappers used to secure loads must not be used for any other purpose.

(5) Wrappers must be removed from service when:

(a) Wear has reduced the original chain link diameter by 15 percent.

(b) Chain links are deformed, stretched or cracked.

(c) Wire rope is frayed, stranded, knotted or otherwise defective.

(d) Wire rope has 12 1/2 percent of the wires broken within the distance of one lay.

(6) Binders must be removed from service when:

(a) Wear has reduced the original pin diameter by 15 percent.

(b) The yoke is spread.

(c) Handles are bent or broken.

(d) Hooks are bent or broken.

(e) Chain links are deformed, stretched or cracked.

(f) Swivels are defective.

(7) Defective binders, tighteners or other securing devices on binder chain or cable must be removed from service.

(8) Tighteners and other means of securing or attaching binder chain or cable must be used only in the manner for which they were intended.

(9) Welding on binders is prohibited.

(10) Knots must not be tied in wrappers.

(11) Binders for securing wrapper chain must have hooks of the correct size and design for the chain.

(12) Extension handles (swedes) for tightening or securing binders must not be longer than 36 inches.

(13) Extension handles (swedes) used to tighten binders must be of the safety swede type.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1020**

##### **Log Truck General Requirements**

(1) Manufacturers' handholds and steps provided on trucks must be maintained.

(2) The area between the truck frame rails, from the cab rearward as far as necessary to provide a safe work area, must have a walking surface of suitable non-slip material.

(3) Log trucks, with loads that are scaled at ramps, must have a personnel platform that:

(a) Extends outward from the side of each frame rail 18 inches.

(b) Is 18 inches long or as near 18 inches as the design of the truck will permit.

(c) Is capable of safely supporting a 500-pound load.

(d) Have a nonslip surface.

(4) There must be a step or other safe access for the driver to reach the space behind the cab.

(5) Log trucks must have a bulkhead meeting PUC requirements located between the load and cab. This bulkhead must extend to the top of the cab.

(6) All riders must be in the cab and use a seat and seat belt.

(7) Tire chain hooks must not present a hazard to workers. The arrangement and location of the tire chain hooks may include, but are not limited to:

(a) Under the scaler platform with the hook tips toward the center of the truck; or

(b) Inside an enclosure, such as a bottomless box attached to the truck frame, or

(c) Shielded with guards (such as hinged metal covers).

(8) Empty spare tire racks must be removed from bulkheads when there is no tire in them unless the lower part of the rack folds back against the upper part.

(9) Additional vehicle requirements that apply to log trucks are contained in Subdivision F, Roads and Vehicles, OAR 437-007-0520 through 437-007-0570.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1025**

##### **Log Truck Safety Chains or Cables**

(1) Each log truck and trailer combination, and each independent trailer (mule train) hooked to a log truck and trailer combination must have one or more safety chains or cables with a rated breaking strength of not less than the gross weight of the towed trailer(s).

(2) The means of attachment for safety chains or cables must:

(a) Be securely attached to the truck frame or to the truck frame extension.

(b) Form a separate continuous connection between the truck frame or truck frame extension and the reach.

(c) Be attached within 12 inches of the reach eye.

(d) Provide strength equivalent to the chain or cable.

(3) Safety chains or cables must:

(a) Prevent the trailer reach from contacting the ground in the event of disengagement from the truck.

(b) Provide a positive connection that cannot become inoperative by any condition of use or exposure.

(4) Safety chains must be replaced when they have cuts, cracks or wear has reduced the chain diameter by 15 percent.

(5) Safety cables must be replaced when the wire rope is frayed, stranded, 12 1/2 percent of the wires are broken within the distance of one lay or is otherwise defective.

(6) Safety chain links must not be welded except to close cold-shut links.

(7) Use cold-shut links only if they are:

(a) Welded.

(b) One size larger than the chain being used.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1030**

##### **Log Truck and Trailer Hitches (Couplings)**

(1) All log truck and trailer combinations must be equipped with couplings (hitches) that:

(a) Will withstand, in any direction, the potential stresses imposed.

(b) Have two independent locking devices that will continue working despite dirt and debris.

(c) Remain securely locked.

(d) Are attached to the truck frame or extension with at least four machine bolts (120,000 PSI or stronger), 3/4-inch or larger in diameter and secured with lock nuts.

(2) Hitches (couplings) having parts that are broken, cracked, worn, deformed more than 1/4-inch or are otherwise defective must be removed from service until repaired to comply with the manufacturer's specifications.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1035**

##### **Log Truck and Trailer Brakes**

(1) Truck and trailer brakes must be tested before moving any load.

(2) Brake slack adjusters must be adjusted to meet DOT specifications.

(3) Vehicles with defective brakes must not be operated.

(4) Brake drums must not be welded.

(5) Engine-type brakes must be considered auxiliary controls, not a substitute for the primary braking systems.

(6) Air or vacuum brake lines and fittings must be approved for brake line systems and not be interchangeable with water or other lines.

(7) Splices in air brake lines must:

(a) Be made with fittings approved for air brake line service.

(b) Not restrict air flow below the minimum required for the line size.

(8) If disconnected trailers are not equipped with effective brakes, wheels must be chocked, blocked or the trailer must be otherwise secured.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1040**

##### **Log Truck Trailer Reaches and Drawbars**

(1) The reaches of unloaded trailers being towed must have and use a 1-inch pin near the end or an equally effective means to prevent pulling or stripping through the tunnel.

(2) Reach locks or tighteners must be the type that securely locks the reach in the tunnel.

(3) A reach smaller than the largest size usable in the tunnel must not be used.

(4) Trailer reach tunnels must not be altered to accommodate a smaller reach.

(5) A grab iron or an adequate handhold must be on both sides near the coupling end of trailer reaches and be in good repair.

(6) Inspect the entire length of extendable reaches monthly, including the portion that is normally in the tunnel.

(7) Bent, defective, cracked or excessively worn reaches must be removed from service.

(8) Reaches must not be welded without approval from the manufacturer.

(9) Pup trailer drawbar eyes must not be build up or rings inserted.

(10) Eyes in compensating reaches must have insert rings secured to the eyes by welding.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1045**

##### **Log Truck Trailers**

(1) Trailer hoisting straps must:

(a) Be fastened securely to the trailer frame.

(b) Be used when hoisting the trailer.

(c) Be maintained in good condition.

(d) Enable the unloading machine to engage the strap without placing personnel in danger.

(e) Comply with the out-of-service requirements for wire rope in OAR 437-007-0605(5).

(2) At least one binder or an equivalent method must be used to secure a trailer loaded on a truck for transport.

(3) When unloading a trailer from a truck:

(a) Hoist it clear.

(b) Drive the truck forward until clear.

(c) Lower the trailer to within 1-foot of the ground before approaching it.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1050**

##### **Log Truck and Trailer Bunks and Stakes**

(1) Every truck or trailer transporting logs loaded lengthwise must have bunks and bunk blocks, or stakes.

(2) All stakes, stake extensions and bunks and their securing hardware must be designed and constructed to withstand their anticipated loads.

(3) Defective stakes, stake extensions, bunks or means provided for securing or locking the stakes in hauling position must be removed from service.

(4) Stakes or blocks that release must have the releasing mechanism at the opposite side of the bunk.

(5) All swivel-type bunks must have locks or another method for keeping bunks perpendicular to the reach until the first full bunk tier of logs is loaded.

(6) Bunk locks must be disengaged before starting to haul the load.

(7) Bunk blocks must extend at least 8 inches above the top edge of the bunk.

(8) Bunk blocks and stakes must not extend beyond the end of the bunk.

(9) Stake extensions must be secured to the stake.

(10) Bunks or bolsters must be either straight or curve upward. Bunks with ends lower than their center must not be used.

(11) Log bunks on trucks and trailers must keep the logs from slipping endways.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1055**

##### **Log Truck and Trailer Bunk Chains and Cables**

(1) Chains or cables used to secure bunk blocks or stakes must have a manufacturer's rating for a safe working load of not less than 6,600 pounds. The following chain and wire rope meet the 6,600 pound requirement:

(a) Chain of welded link construction:

(A) 3/8-inch alloy steel chain, or

(B) 7/16-inch high-test steel chain, and

(b) 5/8-inch IPS wire rope in 6 x 19 or 6 x 37 construction.



(2) Bunk chains must be immediately removed from service when they contain cuts, cracks, other defects or when wear has reduced the original chain diameter by 15 percent.

(3) Wire rope used for stake straps must meet the requirements of OAR 437-007-0605(4).

(4) Only repair links with strength equivalent to the chain are permissible for repairs or attachments for chains.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1060**

##### **Additional Requirements for Log Trucks Equipped With Self-Loaders**

(1) Self-loaders built for log trucks after July 1, 1980, must have a:

(a) Load check valve (velocity fuse) or similar device on the jib boom.

(b) Seat offset from the point of attachment of the boom.

(c) Seat and boom structure that rotate concurrently.

(2) The operators of self-loading log trucks must:

(a) Not heel logs over their heads.

(b) Avoid heeling logs on the operator side of the boom.

(3) There must be a safe and adequate means of access to and exit from the loading work station on self-loading log trucks.

(4) A self-loading log truck must not load itself or another truck when the loading process is:

(a) Under or within an active spar guyline circle or similar overhead hazard.

(b) Out of a deck when yarding or skidding pose a hazard to the loader operator.

(5) When loading around powerlines the requirements of OAR 437-007-0230 must be complied with.

(6) Self-loading log truck operators must not unload their own load unless they use a positive means of securing the logs when wrappers and binders are removed.

**NOTE:** The loading boom, when placed alongside the load, may serve this purpose when no other means are available.

(7) Self-loading log truck operators must not operate chain saws or yard logs when working alone.

(8) Self-loading log truck operators must comply with OAR 437-007-0210, Checking System, and 437-007-0215, Working Alone requirements.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **Subdivision L — Log Dumps, Ponds and Yards**

#### **437-007-1100**

##### **General Work Practices**

(1) It is the responsibility of the employer who has actual control of the log or wood fiber unloading, handling or storage activities to develop, post and enforce yard rules.

(2) Unauthorized foot and vehicle traffic is prohibited in the log or wood fiber unloading, handling or storage areas.

(3) No person is permitted to approach the immediate vicinity of a log or wood fiber handling machine without:

(a) Notifying the operator of the intention to approach the machine; and

(b) Receiving an acknowledgment from the operator.

(4) No person may enter the area next to a loaded log truck unless:

(a) They are protected by a barrier or log handling machine; or

(b) The centers of all logs are below the top of the stakes; or

(c) The load is secured with tight wrapper(s).

(5) Unauthorized persons must not operate vehicle(s), equipment or machines in log or wood fiber unloading, handling and storage areas.

(6) Before starting or moving any machine, the operator must determine that no personnel are in the path of the machine.

(7) All persons must be in the clear and plain view of the operator before the log or wood fiber unloading machine is moved.

(8) Logs must not be swung over ground personnel, occupied machinery, equipment or vehicles.

(9) The operator's attention must not be distracted from duties while engaged in operating a log-handling machine.

(10) Loads on forklift-type log handling machines must be transported as low as safely operable without obstructing visibility.

(11) Riding on any part of a log handling machine, other than the operator's seat, is prohibited.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1105**

##### **General Requirements for Log and Wood Fiber Unloading, Handling and Storage Areas**

(1) It is the responsibility of the employer who has actual control of the log or wood fiber unloading, handling operations or storage activities to insure that road beds are:

(a) Hard-packed material.

(b) Of sufficient width and evenness to provide for safe operation of vehicles and mobile machinery.

(2) Log or wood fiber handling operations must be arranged so that ground personnel, buildings, machines and vehicles are not exposed to the hazards associated with the movement of logs and log handling machines.

(3) A clear space, free of obstructions, not less than 10 feet wide must be maintained the length of and parallel to the log or wood fiber load on the side opposite the unloader.

(4) Roadways and traffic lanes must be kept clear of protruding log ends and debris.

(5) Log or wood fiber unloading, handling and storage areas must be maintained in a condition which is conducive to safe operation of mobile equipment.

(6) Logs or wood fiber in decks or piles must be placed in a orderly manner which will eliminate as far as possible the hazards from rolling or shifting logs.

(7) Do not allow bark, chunks, mud and other debris to accumulate enough to become a hazard.

(8) The employer must implement an effective method to control dust at log unloading, handling and storage areas.

(9) All forklift-type log handling machines must be equipped with a grapple system and the arms must be closed whenever logs or wood fiber are being carried.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1110**

##### **Wrappers Removal General**

(1) Yard rules for removing wrappers, binders and loads must be posted.

(2) Loads with logs or wood fiber above the stakes must be secured before all wrappers and binders are removed.

(3) Personnel must inspect log or wood fiber loads for potential hazards that could be created when binders are released and wrappers are removed.

(4) An extra wrapper or metal band of equal strength must be in place to hold the logs or wood fiber in place when it becomes necessary to remove a wrapper from fouled or dislodged logs.

(5) Wrappers must not be removed at weigh stations or other points of transit unless requirements for securing loads are met.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1115**

##### **Barriers For Securing Log Loads**

(1) Barriers used to secure loads must:

(a) Be at least 15 feet high.

(b) Be designed to prevent logs from striking personnel as binders and wrappers are being removed.

(c) Have the barrier controls, if any, on the release side of the unloading station and forward of the truck cab guard.

(2) Barriers and the area surrounding the barrier structure must be free of accumulations of bark, mud and other debris.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03; OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1120**

##### **Removing Wrappers From Barrier Secured Loads**

(1) Any person releasing binders and removing wrappers at a barrier, must not extend their upper body beyond the front of the protective structures.

(2) After binders and wrappers have been removed at a barrier, loaded log or wood fiber trucks must not move through areas where ground personnel are present unless:

(a) The centers of all logs are below the top of the stakes; or

(b) Ground personnel and machines are not exposed to the hazard of falling logs or wood fiber.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1125**

##### **Removing Wrappers From Machine Secured Loads**

(1) When a log handling machine is used to secure a load, binders should be released and wrappers removed from the side of the load on which the unloader operates.

(2) If binders and wrappers must be removed from log loads on the side opposite the unloading machine, all logs must be secured from displacement before binders and wrappers are removed.

(3) Any person removing binders and wrappers must be in the clear and in full view of the unloading operator before giving a signal to move the unloading machine or the load of logs.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1130**

##### **Removing Center Wrappers From Unsecured Loads**

When any binder and wrapper is removed before a log load is secured by a barrier or log handling machine:

(1) There must not be double-ended logs loaded above the stakes on the side of the load from which the binders and wrappers are being released.

(2) All short logs (27 feet or less) above the stakes or bunk blocks must be secured by a minimum of one tight binder and wrapper prior to the placement of the unloading grapple arms.

(3) All long logs (more than 27 feet) above the stakes or bunk blocks must be secured by a minimum of two tight binders and wrappers prior to the placement of the unloading grapple arms.

**NOTE:** The wrappers nearest the truck and trailer bunks should be retained to allow clearance for the unloading device.

(4) The remaining binders and wrappers must not be removed before the load is secured by a barrier or log handling machine.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1135**

##### **Unloading Logs**

(1) The truck driver must be in front of the truck or in the truck cab when logs are unloaded.

(2) When logs are unloaded, the loads must not be passed over the truck cab or personnel.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1140**

##### **Split Loads**

When logs are to be unloaded at different destinations within the log handling or storage areas, vehicles must not be moved after each partial unloading until the requirements for securing loads are met unless:

(1) The centers of all logs are below the top of the stakes; or

(2) There are no ground personnel and machines exposed to the hazard of falling logs.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1145**

##### **Loading or Unloading Trailers**

(1) When forklift-type machines are used to load, unload, or handle trailers, a secure means of holding the lifting attachment on the fork must be installed and used.

(2) When trailers are to be loaded after dark, sufficient lights must be provided for a safe operation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1150**

##### **Trailer Hoists**

(1) All trailer loading devices must be designed, constructed and maintained so as to have a five-to-one safety factor for the rated load capacity.

(2) Trailer loading hoists must be high and wide enough so they can safely load the maximum-sized trailers they are expected to handle without hanging up or striking the equipment.

(3) Trailer-loading-hoist controls (buttons) must have clear marking to indicating the "up" and "down" directions of travel.

(4) Trailer loading hoists must have an upper limit switch installed and maintained to prevent the hook or other end fittings from contacting the upper sheaves. In addition:

(a) The upper limit switch must not be used as an operating control.

(b) If the upper limit switch does not function properly, the hoist must not be used until repairs are made.

(5) Electric-powered trailer loading hoist controls (buttons) connected to flexible cords (pendant lines) must be secured with devices or fittings that prevents pull from being directly transmitted to joints or terminal screws.

(6) Pendants must be installed so that the control switch does not touch the ground when retracted.

(7) All electrical equipment must be weatherproof-type or adequately protected from the weather, and must meet or exceed the requirements of the National Electrical Code.

(8) Electric-powered hoists using handheld cord remote controls in grounded locations must be actuated by circuits operating at less than 50 volts to ground.

(9) Trailer loading hoists, except A-frames or bridge cranes, must be equipped with reach guides or devices that will keep the reach in proper alignment.

(10) A tag rope or other safe guidance device must be used to guide trailers being loaded by A-frame loaders.

(11) The maximum capacity that can be lifted by the trailer loader hoist must be posted in a conspicuous location where it can be easily seen by any person operating the hoist.

(12) Trailer loading hoists must be inspected at least every 30 days and must be maintained in good repair.

(13) A written trailer loading hoist inspection report signed by the person making the inspection must be kept on file by the company for 12 months.

(14) The employer must do an annual lifting test on each loading device and keep a written record of the tests.

(a) The written record must contain the:

(A) Date of the test.

(B) Name of person conducting the test.

(C) Amount of weight lifted.

(b) The written record of test results must be kept in the office of the employer or at the site.

(c) The test weight must not be:

(A) Less than 125 percent of the maximum rated load.

(B) More than 130 percent of the maximum rated load.

(15) Each trailer loading hoist drum must be designed and arranged so the hoisting line will maintain lead and spool evenly without chafing, crossing, or kinking.

(16) A braking system must be installed on trailer loading hoists that has the ability to safely brake and hold 1 1/2 times the weight of the full rated load.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-1155****Dry Land Log and Fiber Handling and Processing**

(1) Identification tags must not be applied or pulled unless logs are resting in a stationary place, such as bunks, cradles, skids, or sorting tables.

(2) When personnel are required to work on logs unloaded onto skids (bay logs), sufficient space must be maintained between the top of the skids (bay logs) and the ground or deck so logs will clear the prone body of a person.

(3) Logs placed onto skids (bay logs) for processing must be laid out so that the person bucking them has enough room to operate the chain saw safely. The diameter of the logs must be taken into consideration.

(4) Logs placed in bays or onto skids (bay logs) for processing or scaling must not be moved until the ground personnel have finished their tasks, or unless ground personnel request assistance to move a log to complete the task (i.e., extracting a pinched saw).

(5) Machines and ground personnel must not enter the swing radius of a machine without permission of the operator. The swing radius is determined by combining the working radius of the machine and the length of logs being handled.

(6) Ground personnel must not walk or work behind front-end loaders and forklift-type log handling machines without contacting the operator.

(7) Log handling machines must not carry logs over an active processing bay.

(8) Loads on forklift-type log handling machines must be transported as low as safely operable without obstructing visibility.

(9) The requirements of OAR 437, division 2/N, Materials Handling and Storage, apply to Overhead and Gantry Cranes used to unload, process and deck logs.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-1160****Water Dumps, Log Ponds and Booms**

(1) A minimum of two people must work at water dumps when logs are being unloaded. At least one person must be an experienced unloading machine operator.

(2) At least two people must be present for stowing, sorting or boom work of any kind except when one person is feeding the slip (hot lane) from a designated area.

(3) All water dumps must have brow logs except when logs are lifted from the truck or rail car.

(4) If mobile log handling machines are used to dump loads, adequate stops must be provided to prevent the machines from running off the edge of the dump.

(5) When a brow log is used with a parbuckle system, all personnel are prohibited from going between the brow log and the load of logs at any time.

(6) Unloading lines must be arranged so that it is not necessary for a person to attach them on the water or dump side of the load.

(7) The unloading machine operator must:

(a) Have an unobstructed view of the dump and the logs being unloaded; or

(b) Receive a signal before dumping the logs.

(8) All personnel must be in the clear and a signal given before logs are dumped.

(9) When dry land log dumps use unloading methods similar to those of water dumps, OAR 437-007-1160(5) through (8) will apply.

(10) All personnel working on logs or around boom sticks in water must wear sharp-caulked shoes or slip-on sharp-caulked shoes.

(11) Metal or conductive pike poles must not be used around exposed electrical conductors.

(12) Defective poles, blunt or dull pikes must not be used.

(13) Sufficient walkways and floats must be installed and securely anchored to provide safe passage for personnel.

(14) Decks, floats or other walkways must be kept above the waterline at all times, and they must be capable of supporting four times the imposed load.

(15) Pond rafts must be removed from service when they are no longer capable of remaining above water while supporting a 500-pound load on any edge.

(16) All regular boom sticks and foot logs must be:

(a) Reasonably straight, free of protruding knots and have the bark removed, and

(b) Capable of supporting any necessary weight of personnel and equipment above the waterline at either end.

(17) Gaps between ends of boom sticks must not exceed 24 inches.

(18) All wire must be removed from booms and chains before they are reused or hung in rafting stalls.

(19) Permanent cable swifters must be arranged so it will not be necessary to roll boom sticks in order to attach or detach them.

(20) When cable swifters or dogging lines become hazardous from an excessive amount of jagers, they must be discarded.

(21) Stiff booms must be constructed of not less than two float logs or equivalent timbers and must have a minimum width of 36 inches.

(22) Float logs or equivalent timbers must be securely joined together by not less than 4-inch by 6-inch cross ties.

(23) Stiff booms must be planked over with not less than 2-inch planking, securely fastened and kept in good repair, at all sorting gaps or locations where mechanical devices are operated.

(24) Walkways along sorting gaps must be at least 4 feet wide. Other planked walkways must be at least 22 inches wide.

(25) Life rings attached to 90 feet of 1/4-inch line with a minimum breaking strength of 500 pounds, must be provided at convenient points adjacent to water that is 5 feet or more in depth.

(26) Life rings must have a minimum of 30 inches outside diameter and 17 inches inside diameter.

(27) Life rings must be maintained so as to retain a 32-pound positive buoyancy.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-1165****Boats**

(1) Gasoline-powered inboard motorboats must be equipped with a mechanical exhaust system for ventilating the engine compartment and bilges.

(2) Mechanical exhaust systems must be powered by non-sparking fans or the fan motor must be located outside the bilge and engine compartment.

(3) Gasoline-powered inboard motorboats must not be started until the bilges and engine compartment have been mechanically vented of combustible fumes that may have accumulated.

(4) Decks of boats must be covered with a slip-resistant material.

(5) Boats must be provided with:

(a) At least one 3A-40B:C fire extinguisher.

(b) A life ring or equivalent with line attached.

**EXCEPTION:** A life ring is not required on small pond boats designed to transport only one employee.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

**437-007-1200****Helicopter Operation**

(1) Prior to daily operations, a briefing must be conducted. This briefing must set forth the plan of operation for the pilot(s) and ground personnel. Anytime a change in operating procedure is necessary, affected personnel must be notified in advance.

(2) There must be reliable radio communications available between the helicopter service areas, woods, landing and ground



crews. In the absence of radio communication there must be a designated signal person.

(3) Personnel must get the pilot's attention and permission before approaching a helicopter that has the rotor blades turning.

(4) When approaching or leaving a helicopter that has the rotor blades turning, personnel must follow the specific company procedures established for the type and make of aircraft.

(5) Personnel must wear high-visibility hard hats. When personnel are exposed to rotor wash, the hard hats must be secured by a chin strap.

(6) Personnel are not required to wear hard hats when:

(a) Working in helicopter service areas to perform activities, such as refueling or maintenance.

(b) Filling buckets from dip-tanks or tankers.

(c) Loading seed, fertilizer or chemicals.

(7) The flagging and signing requirements of OAR 437-007-0510 and 437-007-0515 must be complied with when the helicopter flight path crosses a road(s).

(8) Riding the hook of a helicopter is prohibited, except in a life-threatening emergency.

(9) The drop zone must be large enough for the load(s) to be landed without endangering the landing crew.

(10) The landing crew must be in the clear until the:

(a) Load is placed on the ground.

(b) Chokers are released from the hook.

(11) The landing must be kept as free of debris as possible.

(12) Before any load is moved, personnel must be in the clear.

(13) When the helicopter is carrying a load or chokers, personnel must remain in the clear. Under no circumstances may personnel and occupied machines or vehicles be under a suspended load.

(14) If ground personnel need to lighten a load, they must remain in the clear until the load is stabilized.

(15) If a load must be aborted or lightened by the pilot, ground personnel must be in the clear before the pilot releases the hook.

(16) The yarding helicopter must be equipped with a siren to warn personnel of any hazardous situation.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1205**

##### **Aircraft Refueling/Maintenance Area**

(1) The helicopter refueling and maintenance area must be located so personnel are not exposed to the hazards created by yarding and log handling activities.

(2) Unauthorized personnel are not allowed to be within 50 feet of an active refueling operation or fueling equipment.

(3) The refueling area must be posted with "NO SMOKING" signs.

(4) The following are prohibited within 50 feet of the refueling area or refueling equipment:

(a) Smoking.

(b) Open flames.

(c) Exposed flame heaters.

(d) Flare pots.

(e) Open flame lights.

(f) Operating pre-heaters.

(5) At least one or a combination of portable fire extinguishers must be provided for each refueling and maintenance area. The minimum ratings of portable fire extinguishers must be equivalent to: [Table not included. See ED. NOTE.]

NOTE: Helicopter overall length, includes the tail boom and the rotors fully extended.

(6) Personnel in the refueling area must be trained to effectively use fire extinguishers.

(7) All refueling personnel must be knowledgeable about the specific procedure to be followed for the aircraft being fueled.

(8) Before starting the refueling operation:

(a) Refueling equipment and the refueling nozzle must be electrically bonded to the helicopter.

(b) All bonding connections must be electrically and mechanically firm to clean unpainted metal parts.

NOTE: The use of conductive hose is not acceptable to accomplish this bonding.

(9) Helicopters using Jet A type fuel may be fueled with the engine(s) running.

(10) Helicopters using Jet B type fuel or aviation gasoline must not be fueled with the engine(s) running.

(11) To control spills:

(a) Self-closing nozzles or deadman controls must be used and they must not be blocked open.

(b) Nozzles must not be dragged along the ground.

(c) Pouring or gravity flow of fuel is not permitted from containers with a capacity of more than 5 gallons.

(12) When a spill creates a fire hazard, the refueling operation must be immediately stopped until a competent or authorized person determines that it is safe to resume the refueling operation.

[ED. NOTE: Tables referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1300**

##### **Scope of Rules**

The purpose of the rules in Subdivision N is to provide minimum safety and health requirements for all public and private employers who engage in wildland fire prevention, wildland fire suppression or prescribed fire that includes activities such as, but not limited to:

(1) Fire line construction;

(2) Engine (fire truck) operation;

(3) Dozer, skidgine and pumper-cat operation;

(4) Snag felling;

(5) Fire detection;

(6) Forest patrols;

(7) Helicopter operation;

(8) Slash burning;

(9) Mop-up;

(10) Laying hose lines;

(11) Tending dip-tanks;

(12) Handling, mixing and applying fire suppression chemicals.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1303**

##### **Application of Rules**

(1) Except as otherwise specified, the rules in Subdivision N apply to all personnel engaged in wildland fire prevention, wildland fire suppression or prescribed fire activities when there is potential for exposure to wildland fire hazards such as, but not limited to:

(a) Burn injuries;

(b) Burning embers;

(c) Extreme fire behavior;

(d) Entrapment;

(e) Falling snags;

(f) Rolling materials;

(g) Smoke inhalation.

(2) The rules in Subdivision N do not limit the use of other applicable safety and health rules.

(3) The rules in Subdivision N do not apply to personnel assigned to wildland fire suppression support activities, such as fire camp support positions which will not expose them to wildland fire hazards.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1305**

##### **General Requirements**

(1) Tactical and command fire suppression communications must provide a clear line of communication to all affected personnel.

(2) When employees are required to handle, mix and/or apply hazardous chemicals, the employer must develop, implement and maintain a written hazard communication program meeting the

requirements of Division 2, Subdivision 2/Z, Toxic and Hazardous Substances, 1910.1200, Hazard Communication.

(3) During the initial attack on a wildland fire, when the fire and/or the fire suppression activity creates a hazardous condition for traffic and warning signs and/or flaggers are not controlling traffic, a vehicle with emergency flashing lights must be used to warn traffic.

**NOTE:** See Division 7 Subdivision F, 437-007-0510 Roads, Vehicles, Flagging and Flammables.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1310**

##### **Personnel Assignments**

(1) The employer and/or their authorized representative must take into account the physical capability of each employee to safely perform assigned tasks:

- (a) Prior to job assignment; and
- (b) While the employee performs those tasks.

(2) Personnel performing wildland fire suppression or prescribed fire activities except as provided for in OAR 437-007-1315(1) and (2), must:

- (a) Work in teams of two or more; and
- (b) Be positioned so they are close enough to render assistance to one another in case of an emergency.

**NOTE:** This rule does not prohibit the ignition and monitoring of burn piles and landings by one employee when a competent person has determined that conditions are such that the fire(s) will not spread beyond the fuels intended to be burned.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1315**

##### **Single Personnel Assignments**

(1) Single employee assignments such as watchers, security and forest patrol personnel may take appropriate action to contain, control or extinguish a fire upon discovery only when:

(a) They have first reported the fire, described their intended fire suppression activities, and agreed on a checking system as required by OAR 437-007-0210; and

(b) Their fire suppression activities are consistent with firefighter training and safety; and

(c) There is an escape route to a safety zone that will not be cut off if the fire increases in size or changes direction.

(2) A competent person must ensure that watchers, security and forest patrol personnel, and other single employee assignment personnel who are expected to perform fire suppression activities:

(a) Have received Basic Wildland Fire Safety Training as required by OAR 437-007-1325; and

(b) Are qualified in the operation of assigned fire suppression machines, equipment, and use of fire fighting tools; and

(c) Are advised of the requirements of OAR 437-007-1315(1) and other job site conditions, known by the employer, which could affect the extent of their fire suppression activities; and

(d) Are physically capable of performing assigned fire suppression activities as required by OAR 437-007-1310(1).

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1320**

##### **Personal Protective Equipment**

Personnel performing wildland fire suppression or prescribed fire activities must wear:

(1) Pants and a long-sleeved shirt made of cotton, wool, denim or other fire resistant materials.

**NOTE:** The employer is not required to provide the clothing listed in OAR 437-007-1320(1).

(a) Clothing made from common permanent-press materials or synthetic fibers that melt when exposed to flame or heat must not be worn.

(b) When special protective clothing made of aramid or other fire resistant materials is required by the employer, the employer must provide it at no cost to the personnel.

(2) Footwear that:

(a) Covers and provides protection and support for the foot and ankle, such as heavy duty leather lace-up boots with an 8-inch high top.

(b) Provides for secure footing and traction for the assigned task.

**NOTE:** Caulked boots, in accordance with the requirement of OAR 437-007-0330, may be required for some fire suppression or prescribed fire duties.

(c) Is fire and melt resistant.

(d) Is made of or covered with chain saw cut resistant material when operating a chain saw.

**NOTE:** The employer is not required to provide the minimum basic footwear listed in OAR 437-007-1320(2).

(3) Head protection in accordance with the requirement of OAR 437-007-0305(1) and (2). When wearing hard hats around helicopters, the hats must be secured by a chin strap.

**NOTE:** To reduce the possibility of blowing objects when working around helicopters, hard hats need not be worn when a competent person has determined there is no danger from falling or flying objects.

(4) Upper body cover and/or hard hats of a high-visibility color in accordance with the requirement of OAR 437-007-0310.

(5) Eye and face protection in accordance with the requirements of OAR 437-007-0315.

(6) Hand protection in accordance with the requirements of OAR 437-007-0320(1) and (2).

(7) Leg protection in accordance with the requirements of OAR 437-007-0325 when operating chain saws.

(8) Hearing protection in accordance with the requirements of OAR 437-007-0335.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

#### **437-007-1325**

##### **Training**

The following requirements are in addition to the training requirements of OAR 437-007-0140.

(1) The employer and/or their authorized representative must ensure that all personnel who may be called upon to do wildland fire suppression and/or prescribed fire activities receive Basic Wildland Fire Safety Training as follows:

(a) Once a year, between January 1 and the legal declaration of fire season, for personnel who are employed at the time training is presented.

**NOTE 1:** Personnel who have previously received Basic Wildland Fire Safety Training need only receive refresher training on those portions of the curriculum outlined in Appendix 7-C that are relevant to the fire suppression activities to which they may be assigned.

**NOTE 2:** Basic Wildland Fire Safety Training is not required for personnel who are assigned to fire support positions that will not expose them to wildland fire hazards.

(b) Newly hired and/or reassigned personnel who have not received Basic Wildland Fire Safety Training must be trained within 17 days of being assigned or dispatched to wildland fire suppression or prescribed fire activities. In the interim, they may perform wildland fire suppression, or prescribed fire activities provided they work under the direct supervision of a competent person who must:

(A) Brief personnel (prior to starting fire suppression or prescribed fire activities) about the escape route(s), safety zone(s), anticipated fire activity, and what to do if they get separated from the competent person; and

(B) Provide continuous on-the-job supervision; and

(C) Provide on-the-job fire safety training; and

(D) Supervise no more than 5 untrained personnel.

**NOTE:** When an untrained runner is enroute, direct supervision may be achieved by radio contact provided there is a competent person providing direct supervision at both the pick-up and drop-off points.

(2) Basic Wildland Fire Safety Training must:

(a) Be presented by a qualified person; and

(b) Provide instruction and training on the curriculum outline in Appendix 7-C; and [Appendix not included. See ED. NOTE.]

(c) Be presented in a language and manner that the employee(s) is able to understand.

(3) The employer must keep a current written record of Basic Wildland Fire Safety Training for each employee.

(4) Personnel who are issued fire shelters must receive instructions from a qualified person prior to issue, and at least once a year thereafter, on:

(a) How to inspect and care for the shelter; and

(b) How, when and where to deploy the shelter; and

(c) What a person needs to do in the deployed shelter.

**NOTE:** When fire shelters are required, an orderly transition for employee training must be consistent with fire suppression needs and employee safety.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-1330**

#### **Equipment, Vehicles and Machines, General Requirements**

(1) Fire fighting equipment, vehicles and machines must be:

(a) Inspected for defects prior to the start of each shift.

(b) Maintained in accordance with the appropriate manufacturers' recommendations.

(2) Fire fighting equipment, vehicles, and machines that are defective or damaged so as to render them hazardous to operate, must be removed from service and not returned to service until repairs are completed.

(3) A safe and adequate means of access and egress such as steps, ladders, and handholds must be provided and maintained to all parts of vehicles and machines where employees must go.

(4) Machine and vehicle access must comply with the Society of Automotive Engineers' SAE J185-1988 or ISO 2867:1994, Access Systems for Off-Road Machines.

(5) An effective means of communication must be established when it is necessary for personnel to communicate with the operator of a vehicle, equipment or machine.

(6) When military vehicles are used to transport personnel, they must be equipped with standard military seating, backrests and endgates or equivalent.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-1335**

#### **Vehicle Operation**

(1) The operation of vehicles must comply with the requirements of OAR 437-007-0520 through 437-007-0570.

(2) All equipment hauled on a vehicle must be adequately secured when the vehicle is in motion.

(3) Vehicles must be brought to a full stop before personnel disembark.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-1340**

#### **Machine Operation**

(1) When machines used for fire trail construction or fire fighting are operated on slopes in excess of the limitations for machine operation as defined in OAR 437-007-0935(1) and (2), a competent person must ensure that measures are taken to provide stability such as:

(a) Using the blade; or

(b) Tying to stumps, anchors, or other machines; or

(c) Using materials to limit the slope under the machine; or

(d) Limiting the operating range of movement and/or the machine loading to maintain stability.

(2) The machine operator and a competent person must agree how to safely operate on all steep slopes taking into consideration the:

(a) Experience of the operator.

(b) Limitations of the machine.

(c) The soil conditions.

(d) Direction of travel (traveling straight up and down the slope).

(e) Hazards of turning the machine on the slope.

(f) Weather.

(g) Load size.

(h) Any other adverse condition(s).

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-1345**

#### **Helicopter Operations**

(1) Helicopter facilities must be kept clear of loose objects and unauthorized personnel.

(2) Personnel must not smoke within 50 feet of a helicopter, fuel storage, or fueling equipment.

(3) Unless authorized by the pilot or helicopter ground crew, personnel must stay at least:

(a) 50 feet away from small helicopters (50 feet or less overall length); and

(b) 100 feet away from large helicopters.

**NOTE:** Helicopter overall length, includes the tail boom and the rotors fully extended.

(4) A competent person must provide a detailed briefing on helicopter safety procedures to all passengers prior to loading.

(5) Personnel assigned to ride in helicopters must:

(a) Be briefed in the correct approach, riding and off-loading procedures for the particular type of helicopter.

(b) Follow instructions of helicopter personnel at all times when around helicopter.

(c) Carry all tools at their side (not slung over their shoulder) when around helicopters.

(6) Unless told otherwise by a competent person, personnel must approach and leave the helicopter in full view of the pilot.

(7) Personnel must stay away from turning tail rotors at all times.

(8) Personnel must not stand directly beneath a hovering helicopter unless they have been trained or are being trained in performing sling load hookup or bucket filling operations.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 2-2005, f. 5-27-05, cert. ef. 6-1-05

### **437-007-1400**

#### **Jerk Wire Whistle System**

The use of a jerk wire whistle system for any type of yarding operation is prohibited.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

### **437-007-1405**

#### **Radio Signal Systems**

(1) When space transmission of radio signals is used to initiate any whistle, horn, bell, or other audible signaling device, or when such transmission of radio signals is used to activate or control any machine, material-handling device or other equipment hazardous to employees, the following must apply:

(a) An operational whistle signal must be maintained.

(b) A permit assigning tone frequencies and area of use for each radio unit to be used for the control and activation of any signal, machine or equipment, must be obtained from Department of Consumer and Business Services, Oregon Occupational Safety and Health Division (Oregon OSHA), by an owner prior to placing the unit in operation. Permits must be issued on the basis of compliance with the criteria contained in Appendix 7-F. [Appendix not included. See ED. NOTE.]

(c) Radio equipment must not be used without displaying a permit as required by this rule. The permit must be prominently displayed on the receiver of the unit or on the transmitter in the yarder for radio-controlled carriages.



(d) Applicants for permits must submit the following information concerning the equipment to the Department of Consumer and Business Services, Oregon OSHA:

- (A) Name and address of applicant;
- (B) The assigned radio frequency;
- (C) The manufacturer of the unit;
- (D) The serial number of the receiver;
- (E) The tone frequencies upon which the unit operates;
- (F) The intended use or function of the unit; and
- (G) The designated area in which the equipment will be used.

(See the Radio Signal Permit Area Map in Appendix 7-F.) [Appendix not included. See ED. NOTE.]

(e) Before moving any unit from one assigned area to another, a new permit must be secured from the Department of Consumer and Business Services, Oregon OSHA. (See the Radio Signal Permit Area Map in Appendix 7-F.) [Appendix not included. See ED. NOTE.]

(f) Users shall notify the Department of Consumer and Business Services, Oregon OSHA, within 15 days after the radio signaling device is:

- (A) Permanently retired (in what manner);
- (B) Sold (to whom); or
- (C) Stolen.

(g) Upon receipt and approval of a properly completed application, OR-OSHA must issue a permit within 30 days; or if OR-OSHA is unable to issue a permit within 30 days of receipt and approval of a properly completed application, the applicant must be notified of the proposed date of issuance.

(2) Additional systems must be certified in advance as spares, providing they are used only as replacements for malfunctioning systems during the time required to repair the original equipment.

(3) Each radio receiver must have its tone frequencies in hertz (cycles per second), the manufacturer's name and serial number, and the assigned radio frequency clearly and permanently indicated on the outside of the case. When the duration or width of the tone frequencies performs a function, the duration or width must also be permanently indicated on the outside of the case.

(4) Single tone frequency must not be used on radio equipment designed to initiate whistle or other audible signal, or to activate or control any machine, material-handling device, or other equipment hazardous to employees.

(5) All adjustment, repair or alteration of radio signaling devices must be done only by or under the immediate supervision and responsibility of a person holding a first or second class commercial radio operator's license (for either radio telephone or radio telegraph) issued by the Federal Communications Commission. All replacement parts must be of such quality as to cause the unit to meet the minimum performance specifications outlined in Appendix 7-F.

(6) At least one model of each radio system must be tested and certified that it meets or exceeds the minimum requirements for performance as specified in Appendix 7-F of this standard. This model must be a random selection from stock. A copy of such performance report must be signed by the person or persons who tested the unit and submitted to Department of Consumer and Business Services, Oregon OSHA. [Appendix not included. See ED. NOTE.]

(7) Radio-controlled devices must be tested each day before work begins. If, at any time, any part of the equipment fails to function properly, or if interference, overlap, fadeout or blackout of radio signals is encountered, the system shall not be used until the source of trouble is detected and corrected.

(8) Two or more whistle signal receivers on the same tone frequency is prohibited.

[ED. NOTE: Appendices referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 5-2003, f. 6-2-03, cert. ef. 12-1-03

#### **437-007-1500**

##### **Tree Climbing General Requirements**

- (1) The employer must develop rescue procedures that include:
  - (a) Adequate personnel and equipment to perform the rescue.
  - (b) Training in procedures to rescue a climber from a tree.

(2) When rescuing a climber, use procedures or equipment that will:

- (a) Provide support to the climber's upper body (chest) and pelvis,
- (b) Maintain the injured climber in an up-right position during rescue.

**NOTE:** Rescues may be accomplished using standard, familiar equipment, not special gear designed solely for rescue, as long as it supports the body as stated above.

(3) When the injured climber is wearing only a climbing belt, before rescue starts, provisions must be made to prevent the climber from slipping through the climbing belt.

**NOTE:** A climbing saddle or sit harness is designed to prevent slipping.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

#### **437-007-1505**

##### **Climbing Equipment General Requirements**

(1) Before leaving the ground, the climber must:

- (a) Visually check their climbing equipment,
- (b) Immediately remove defective or damaged climbing equipment from service.

(c) Check hardware for secure closure before placing their weight on the lanyard or life support rope.

(d) Tie, dress and set all climbing knots.

(2) Splices must be made according to cordage manufacturer's recommendations.

(3) Life support ropes (climbing line) that are in service must:

- (a) Be easily identifiable.
- (b) Have a minimum breaking strength of 5,400 pounds.
- (c) Be used only for climbing.

(4) Remove life support rope from climbing service when:

- (a) It has been subjected to a shock load.
- (b) There is excessive wear or damage detected during inspection.

(5) Webbing used for life support must be applied in a manner that provides a minimum breaking strength of 5,400 pounds.

(6) Climbing hardware must have a minimum breaking strength of 5,000 pounds.

(7) Lanyard snap hooks must be self closing and self locking.

(8) When a cutting tool is used in a tree, the climbing rope (lanyard) must be a high-quality steel safety chain of 3/16-inch size or larger or a wire core rope.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

#### **437-007-1510**

##### **Climbing Procedures General Requirements**

(1) Before climbing a tree, assess the tree and immediate area for any potential hazards that could affect the climbing activity.

(2) When stopping to rest or work, the climber must be secured to the tree.

(3) When using a knot to adjust the length of a cable core lanyard, use a "cats paw" (Becket Hitch), friction hitch or mechanical friction device attached to a compatible size eye splice or D-ring of a climbing belt, saddle or harness.

(4) Don't use climbing belts by themselves for rappels, ascender use, or friction hitch climbing.

(5) While climbing operations are active, personnel on the ground must be positioned where they will not be struck by falling objects.

(6) When it is necessary for ground personnel to work directly below the climber, the climber must not be engaged in any activity where tools, rigging or other objects could be dropped or dislodged from the tree.

(7) The climber must give warning when any equipment or material is in danger of dropping, or is to be dropped deliberately.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

**437-007-1520**

**Four Inch Tie-In Systems**

(1) Use a belay (snubbing) system, with dynamic rope, when climbing above the 4-inch bole diameter in conifers or above the last secure tie-in point capable of providing life support in hardwoods.

(2) Install 4-inch tie-in system protection (rigging points) at least every 3 feet along the bole or branch to limit falls to no more than 6 feet.

(3) Climbers must not:

(a) Place side loads on the carabiner gate.

(b) Use static cordage for applications where dynamic loading could occur.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

**437-007-1525**

**Belayed (Snubbing) Climbing System**

(1) The belay line must be a dynamic rope with a minimum 5400 pounds breaking strength.

(2) Do not use a body belay.

(3) Do not use a chest harness as the tie-in point.

(4) Follow the requirements of **Appendix 7-K**.

[ED. NOTE: Appendix referenced are available from the agency.]

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

**437-007-1530**

**Three Point Climbing System**

(1) Use a three-point climbing system (three-points of contact) when tree climbing.

**NOTE:** A three-point system is not required when using an approved rappel or ascender system.

(2) While tree climbing, three-points of contact must be firmly in place on a secure surface before moving to another point.

**NOTE 1:** Each hand and foot (or climbing spur) is considered a potential point of contact.

**NOTE 2:** Other parts of the body, such as a hooked knee or armpit, may be considered contact points if the body part is physically capable of supporting the full body weight.

**NOTE 3:** A lanyard around the tree bole or appropriate limb that is secured to the safety harness or climbing belt on both ends counts as two points of contact.

(3) Do not use unsound branches or stubs for support.

(4) Climbing without being secured to the tree is not allowed except in conifers when, in the judgment of the qualified climber, the density of branches growing from the stem would require so many limb-overs, attaching and reattaching the lanyard, as to become a greater hazard than simply climbing that section of the tree.

(5) Climbing in conifers without being secured is not allowed above the 4-inch bole diameter.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

**437-007-1535**

**Storage and Transportation of Climbing Equipment General Requirements**

Do not store or transport climbing equipment:

(1) Near extreme heat sources.

(2) In contact with gas, oil, chemicals, chemical vapors, battery and other acids.

(3) In contact with sharp or pointed objects and other items that can damage the climbing gear.

Stat. Auth.: ORS 654.025(2) & 656.726(4)

Stats. Implemented: ORS 654.001 - 654.295

Hist.: OSHA 3-2008, f. 3-7-08, cert. ef. 7-1-08

**DIVISION 81**

**AGRICULTURAL OPERATIONS AND FARMING**

**437-081-0879**

**General**

Tools shall be appropriate for the purpose for which they are used; they shall be of proper size or capacity, and shall be safely used.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist: WCB 1-1975, f. 1-24-75, cert. ef. 3-31-75; WCB (Safety) 3-1976, f. 3-1-76, cert. ef. 3-15-76; WCD 5-1977, f. 4-20-77, cert. ef. 6-1-77, Renumbered from 33-6-4

**437-081-0985**

**Pneumatic Powered Tools (Safety Line)**

A safety line or chain shall be attached to the hose and to the tool housing to keep the hose from whipping should the coupling break. A safety check valve shall be installed in the air line at the manifold to automatically shut off the air supply should a fracture occur anywhere in the line.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist: WCB 1-1975, f. 1-24-75, cert. ef. 3-31-75; WCB (Safety) 3-1976, f. 3-1-76, cert. ef. 3-15-76; WCD 5-1977, f. 4-20-77, cert. ef. 6-1-77, Renumbered from 33-6-36

**437-081-2305**

**Storage, Handling, Use of Cylinders (Valve Opening Location)**

Always stand to one side of the outlet when opening the valve.

Stat. Auth.: ORS 654.025(2) & 656.726(3)

Stats. Implemented: ORS 654.001 - 654.295

Hist: WCB 1-1975, f. 1-24-75, cert. ef. 3-31-75; WCB (Safety) 3-1976, f. 3-1-76, cert. ef. 3-15-76; WCD 5-1977, f. 4-20-77, cert. ef. 6-1-77