



Oregon Administrative Rules
Chapter 437

Division 2

General Occupational Safety and Health

General Environmental Controls

Subdivision

J

Administrative
Order 3-2022



Pursuant to **Oregon Revised Statutes (ORS) 654**, The Oregon Safe Employment Act (OSEAct), the Oregon Department of Consumer and Business Services, Occupational Safety and Health Division (Oregon OSHA), adopted these rules.

The Secretary of State designated Oregon Administrative Rules Chapter 437 as the Oregon Occupational Safety and Health Division Rules. Six subject areas are designated as “Divisions” of these rules.

- **Division 1** Administration of the Oregon Safe Employment Act
- **Division 2** General Occupational Safety and Health Rules
- **Division 3** Construction
- **Division 4** Agriculture
- **Division 5** Maritime Activities
- **Division 7** Forest Activities

Oregon-initiated rules are numbered in a uniform system developed by the Secretary of State. This system does not number the rules in sequence (001, 002, 003, etc.). Omitted numbers may be assigned to new rules at the time of their adoption.

Oregon-initiated rules are arranged in the following codification structure prescribed by the Secretary of State for Oregon Administrative Rules (OAR):

Chapter	Division	Subdivision	Rule	Section	Paragraphs
437	002	N	0221	(1)	(a)(A)(i)(I)

Cite as 437-002-0221(1)(a)

Many of the Oregon OSHA rules are adopted by reference from the Code of Federal Regulations (CFR), and are arranged in the following federal numbering system:

Part	Subpart (Subdivision)	Section	Paragraphs
1910	N	.176	(a)(1)(i)(A)(1)(i)

Cite as 1910.176(a)(1)

The terms “subdivision” and “subpart” are synonymous within OAR 437, Oregon Occupational Safety and Health rules.

These rules are available for viewing in the Office of the Secretary of State, Oregon State Archives Building, Salem, Oregon.

These rules are available in electronic and printable formats at osha.oregon.gov.

Printed copies of these rules are available at:

Department of Consumer & Business Services
Oregon Occupational Safety & Health Division (Oregon OSHA)
350 Winter St. NE
Salem, OR 97301-3882

Or call the Oregon OSHA Resource Library at 503-378-3272.

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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, (lockout/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.

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).

Statutes Implemented: ORS 654.001 through 654.295.

History: OR-OSHA Admin. Order 2-1990, filed 1/19/90, effective 3/1/90 (L/T).

OR-OSHA Admin. Order 4-1991, filed 2/25/91, effective 3/15/91 (L/T).

OR-OSHA Admin. Order 13-1992, filed 12/7/92, effective 2/1/93 (2/J).

OR-OSHA Admin. Order 8-1993, filed 7/1/93, effective 7/1/93 (Conf. Sp.).

OR-OSHA Admin. Order 5-1994, filed 9/30/94, effective 9/30/94 (Conf. Sp.).

OR-OSHA Admin. Order 4-1997, filed 4/2/97, effective 4/2/97.

OR-OSHA Admin. Order 4-1999, filed 4/30/99, effective 4/30/99.

OR-OSHA Admin. Order 5-1999, filed 5/26/99, effective 5/26/99 (Conf. Sp.).
OR-OSHA Admin. Order 12-2001, filed 10/26/01, effective 10/26/01 (group lockout).
OR-OSHA Admin. Order 7-2008, filed 5/30/08, effective 5/30/08.
OR-OSHA Admin. Order 3-2011, filed 11/1/11, effective 11/1/11.
OR-OSHA Admin. Order 4-2011, filed 12/8/11, effective 12/8/11.
OR-OSHA Admin. Order 6-2012, filed 9/28/12, effective 4/1/13.
OR-OSHA Admin. Order 7-2013, filed 12/12/13, effective 12/12/13.

1910.141 Sanitation

(a) General.

- (1) Scope. This section applies to permanent places of employment.
- (2) Definitions applicable to this section.

Nonwater carriage toilet facility means a toilet facility not connected to a sewer.

Number of employees means, unless otherwise specified, the maximum number of employees present at any one time on a regular shift.

Personal service room means a room used for activities not directly connected with the production or service function performed by the establishment. Such activities include, but are not limited to, first aid, medical services, dressing, showering, toilet use, washing and eating.

437-002-0141 *Additional Oregon Sanitation Requirements*

Note: OR-OSHA did not adopt 1910.141(a)(2) "Potable water." In Oregon, the following "Potable water" definition, OAR 437-002-0141(1)(a) applies. In addition, a definition for "Sanitary" was adopted in (b):

*437-002-0141(1)(a) **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.*

*437-002-0141(1)(b) **Sanitary** means free from agents injurious to health.*

Toilet facility means a fixture maintained within a toilet room for the purpose of defecation or urination, or both.

Toilet room means a room maintained within or on the premises of any place of employment, containing toilet facilities for use by employees.

Toxic material means a material in concentration or amount which exceeds the applicable limit established by a standard, such as 1910.1000 and 1910.1001 or, in the absence of an applicable standard, which is of such toxicity so as to constitute a recognized hazard that is causing or is likely to cause death or serious physical harm.

Urinal means a toilet facility maintained within a toilet room for the sole purpose of urination.

Water closet means a toilet facility maintained within a toilet room for the purpose of both defecation and urination and which is flushed with water.

Wet process means any process or operation in a workroom which normally results in surfaces upon which employees may walk or stand becoming wet.

(3) Housekeeping.

- (i) All places of employment shall be kept clean to the extent that the nature of the work allows.
- (ii) The floor of every workroom shall be maintained, so far as practicable, in a dry condition. Where wet processes are used, drainage shall be maintained and false floors, platforms, mats, or other dry standing places shall be provided, where practicable, or appropriate waterproof footwear shall be provided.
- (iii) To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, and unnecessary holes and openings.

437-002-0141(2) Expectoration. Expectoration upon the walls, floors, workplaces, or stairs of any establishment is prohibited.

(4) Waste disposal.

- (i) Any receptacle used for putrescible solid or liquid waste or refuse shall be so constructed that it does not leak and may be thoroughly cleaned and maintained in a sanitary condition. Such a receptacle shall be equipped with a solid tight-fitting cover, unless it can be maintained in a sanitary condition without a cover. This requirement does not prohibit the use of receptacles which are designed to permit the maintenance of a sanitary condition without regard to the aforementioned requirements.

- (ii) All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a sanitary condition.

437-002-0141(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.*
- (5) Vermin control. Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin. A continuing and effective extermination program shall be instituted where their presence is detected.
- (b) Water supply.
- (1) Potable water.
 - (i) Potable water shall be provided in all places of employment, for drinking, washing of the person, cooking, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.
 - (ii) (Reserved)
 - (iii) Portable drinking water dispensers shall be designed, constructed, and serviced so that sanitary conditions are maintained, shall be capable of being closed, and shall be equipped with a tap.
 - (iv) (Reserved)

- (v) Open containers such as barrels, pails, or tanks for drinking water from which the water must be dipped or poured, whether or not they are fitted with a cover, are prohibited.
 - (vi) A common drinking cup and other common utensils are prohibited.
- (2) Nonpotable water.
- (i) Outlets for nonpotable water, such as water for industrial or firefighting purposes, shall be posted or otherwise marked in a manner that will indicate clearly that the water is unsafe and is not to be used for drinking, washing of the person, cooking, washing of food, washing of cooking or eating utensils, washing of food preparation or processing premises, or personal service rooms, or for washing clothes.
 - (ii) Construction of nonpotable water systems or systems carrying any other nonpotable substance shall be such as to prevent backflow or backsiphonage into a potable water system.
 - (iii) Nonpotable water shall not be used for washing any portion of the person, cooking or eating utensils, or clothing. Nonpotable water may be used for cleaning work premises, other than food processing and preparation premises and personal service rooms: Provided that this nonpotable water does not contain concentrations of chemicals, fecal coliform, or other substances which could create insanitary conditions or be harmful to employees.

Note: Water supply systems design and construction standards are contained in the Oregon Health Division rules, OAR Chapter 333, Division 61, Public Water Systems.

(c) Toilet Facilities.

437-002-0141(4) Toilet Facilities. Toilet facilities at permanent worksites must be reasonably accessible.

(1) General.

- (i) Except as otherwise indicated in this paragraph (c)(1)(i), toilet facilities, in toilet rooms separate for each sex, shall be provided in all places of employment in accordance with Table J-1 of this section. The number of facilities to be provided for each sex shall be based on the number of employees of that sex for whom the facilities are furnished. Where toilet rooms will be occupied by no more than one person at a time, can be locked from the inside, and contain at least one water closet, separate toilet rooms for each sex need not be provided. Where such single-occupancy rooms have more than one toilet facility, only one such facility in each toilet room shall be counted for the purpose of Table J-1.

Table J - 1

	Minimum number of water closets ¹
1 to 15	1
16 to 35	2
36 to 55	3
56 to 80	4
81 to 110	5
111 to 150	6
Over 150	(²)

¹ Where toilet facilities will not be used by women, urinals may be provided instead of water closets, except that the number of water closets in such cases shall not be reduced to less than 2/3 of the minimum specified.

² One additional fixture for each additional 40 employees.

- (ii) The requirements of paragraph (c)(1)(i) of this section do not apply to mobile crews or to normally unattended work locations so long as employees working at these locations have transportation immediately available to nearby toilet facilities which meet the other requirements of this subparagraph.
 - (iii) The sewage disposal method shall not endanger the health of employees.
- (2) Construction of toilet rooms.
- (i) Each water closet shall occupy a separate compartment with a door and walls or partitions between fixtures sufficiently high to assure privacy.

(d) Washing facilities.

(1) General. Washing facilities shall be maintained in a sanitary condition.

437-002-0141(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.

(2) Lavatories.

- (i) Lavatories shall be made available in all places of employment. The requirements of this subdivision do not apply to mobile crews or to normally unattended work locations if employees working at these locations have transportation readily available to nearby washing facilities which meet the other requirements of this paragraph.
- (ii) Each lavatory shall be provided with hot and cold running water, or tepid running water.
- (iii) Hand soap or similar cleansing agents shall be provided.
- (iv) Individual hand towels or sections thereof, of cloth or paper, air blowers or clean individual sections of continuous cloth toweling, convenient to the lavatories, shall be provided.

(3) Showers.

- (i) Whenever showers are required by a particular standard, the showers shall be provided in accordance with paragraphs (d)(3)(ii) through (v) of this section.

Note: OR-OSHA did not adopt 1910.141(d)(3)(ii). In Oregon, OAR 437-002-0141(6) applies:

437-002-0141(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.

- (ii) Body soap or other appropriate cleansing agents convenient to the showers shall be provided as specified in paragraph (d)(2)(iii) of this section.

- (iv) Showers shall be provided with hot and cold water feeding a common discharge line.
 - (v) Employees who use showers shall be provided with individual clean towels.
- (e) Change rooms. Whenever employees are required by a particular standard to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.
- (f) Clothes drying facilities. Where working clothes are provided by the employer and become wet or are washed between shifts, provision shall be made to insure that such clothing is dry before reuse.
- (g) Consumption of food and beverages on the premises.
 - (1) Application. This paragraph shall apply only where employees are permitted to consume food or beverages, or both, on the premises.
 - (2) Eating and drinking areas. No employee shall be allowed to consume food or beverages in a toilet room nor in any area exposed to a toxic material.
 - (3) Waste disposal containers. Receptacles constructed of smooth, corrosion resistant, easily cleanable, or disposable materials, shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, unless unused, and shall be maintained in a clean and sanitary condition. Receptacles shall be provided with a solid tight-fitting cover unless sanitary conditions can be maintained without use of a cover.
 - (4) Sanitary storage. No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material.
- (h) Food handling. All employee food service facilities and operations shall be carried out in accordance with sound hygienic principles. In all places of employment where all or part of the food service is provided, the food dispensed shall be wholesome, free from spoilage, and shall be processed, prepared, handled, and stored in such a manner as to be protected against contamination.

(39 FR 23502, June 27, 1974, as amended at 40 FR 18446, April 28, 1975; 40 FR 23073, May 28, 1975; 43 FR 49748, Oct. 24, 1978)

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).

Statutes Implemented: ORS 654.001 through 654.295.

History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.

OR-OSHA Admin. Order 6-1994, f. 9/30/94, ef. 9/30/94.

OR-OSHA Admin. Order 4-1999, f. 4/30/99, ef. 4/30/99.

OR-OSHA Admin. Order 4-2011, f. 12/8/11, ef. 12/8/11.

437-002-0141(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.*

Statutory Authority ORS 654.025(2) and ORS 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: WCB No. 1-1967, f. 1/12/67, ef. 1/15/67.
WCB Admin. Order 3-1975, f. 10/6/75, ef. 11/1/75.
OR-OSHA Admin. Order 6-1994, f. 9/30/94, ef. 9/30/94.

1910.142 Temporary Labor Camps.

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).

Statutory Authority: ORS 654.025(2) and 656.726(4).
Statutes Implemented: ORS 315.164, 658.750, 658.755, 658.780, 658.785, 658.805, 658.810 and 658.825.
History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.
OR-OSHA Admin. Order 10-1995, f. 11/29/95, ef. 11/29/95.
OR-OSHA Admin. Order 5-2000, f. 5/18/00, ef. 6/1/00.
OR-OSHA Admin. Order 4-2008, f. 3/24/08, ef. 5/1/08.

1910.143 Nonwater Carriage Disposal Systems (Reserved).**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 All.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 working 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.*

Statutory Authority: ORS 654.025(2) and 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: WCB Admin. Order, Safety 3-1975, f. 10/6/75, ef. 11/1/75.
OR-OSHA Admin. Order 6-1994, f. 9/30/94, ef. 9/30/94.

1910.144 Safety Color Code for Marking Physical Hazards.

- (a) Color identification.
 - (1) Red. Red shall be the basic color for the identification of:
 - (i) Fire protection equipment and apparatus. (Reserved)
 - (ii) Danger. Safety cans or other portable containers of flammable liquids having a flashpoint at or below 80 degrees F, table containers of flammable liquids (open cup tester), excluding shipping containers, shall be painted red with some additional clearly visible identification either in the form of a yellow band around the can or the name of the contents conspicuously stenciled or painted on the can in yellow. Red lights shall be provided at barricades and at temporary obstructions. Danger signs shall be painted red.
 - (iii) Stop. Emergency stop bars on hazardous machines such as rubber mills, wire blocks, flat work ironers, etc., shall be red. Stop buttons or electrical switches which letters or other markings appear, used for emergency stopping of machinery shall be red.

- (2) (Reserved)
- (3) Yellow. Yellow shall be the basic color for designating caution and for marking physical hazards such as: Striking against, stumbling, falling, tripping, and “caught in between.”

(39 FR 23502, June 27, 1974, as amended at 43 FR 49748, Oct. 24, 1978; 49 FR 5322, Feb. 10, 1984)
Statutory Authority: ORS 654.025(2) and ORS 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.
OR-OSHA Admin. Order 4-1997, f. 4/2/97, ef. 4/2/97.
OR-OSHA Admin. Order 7-2008, f. 5/30/08, ef. 5/30/08.

1910.145 Specifications for Accident Prevention Signs and Tags.

- (a) Scope.
 - (1) These specifications apply to the design, application, and use of signs or symbols (as included in paragraphs (c) through (e) of this section) intended to indicate and, insofar as possible, to define specific hazards of a nature such that failure to designate them may lead to accidental injury to workers or the public, or both, or to property damage. These specifications are intended to cover all safety signs except those designed for streets, highways, and railroads. These specifications do not apply to plant bulletin boards or to safety posters.
 - (2) All new signs and replacements of old signs shall be in accordance with these specifications.
- (b) Definitions. As used in this section, the word “sign” refers to a surface on prepared for the warning of, or safety instructions of, industrial workers or members of the public who may be exposed to hazards. Excluded from this definition, however, are news releases, displays commonly known as safety posters, and bulletins used for employee education.

437-002-0145 Additional Oregon Rules for Accident Prevention Signs and Tags

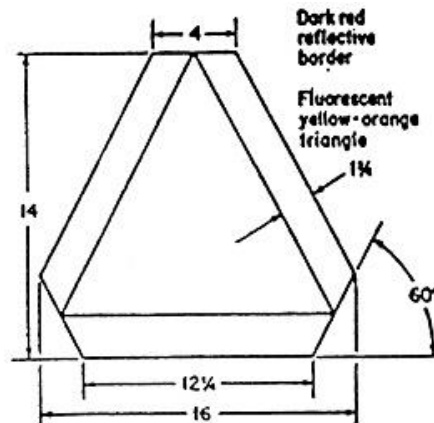
Warning Devices. Warning signs, danger signs, warning flags, warning lights, or similar devices shall be conspicuously posted at all locations where existing conditions not otherwise adequately guarded warrant their use.

Statutory Authority: ORS 654.025(2) and 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: WCB No. 1-1967, f. 1/12/67, ef. 1/15/67.
OR-OSHA Admin. Order 6-1994, f. 9/30/94, ef. 9/30/94.

- (c) Classification of signs according to use.
- (1) Danger signs.
 - (i) There shall be no variation in the type of design of signs posted to warn of specific dangers and radiation hazards.
 - (ii) All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.
 - (2) Caution signs.
 - (i) Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.
 - (ii) All employees shall be instructed that caution signs indicate a possible hazard against which proper precaution should be taken.
 - (3) Safety instruction signs. Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.
- (d) Sign design.
- (1) Design features. All signs shall be furnished with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard.
 - (2) Danger signs. The colors red, black, and white shall be those of opaque glossy samples as specified in Table 1, "Fundamental Specification of Safety Colors for CIE Standard Source 'C,'" of ANSI Z53.1-1967 or in Table 1, "Specification of the Safety Colors for CIE Illuminate C and the CIE 1931 2 degrees Standard Observer," of ANSI Z535.1-2006 (R2011), incorporated by reference in 1910.6.
 - (3) (Reserved)
 - (4) Caution signs. The standard color of the background shall be yellow; and the panel, black with yellow letters. Any letters used against the yellow background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of ANSI Z53.1-1967 or Table 1 of ANSI Z.535.1-2006 (R-2011), incorporated by reference in 1910.6.
 - (5) (Reserved)

- (6) Safety instruction signs. The standard color of the background shall be white; and the panel, green with white letters. Any letters used against the white background shall be black. The colors shall be those of opaque glossy samples as specified in Table 1 of ANSI, Z53.1-1967 or in Table 1 of ANSI Z535.1-2006 (R-2011), incorporated by reference in 1910.6.
- (7) (Reserved)
- (8) (Reserved)
- (9) (Reserved)
- (10) Slow-moving vehicle emblem. This emblem (see Figure J-7) consists of a fluorescent yellow-orange triangle with a dark red reflective border. The yellow-orange fluorescent triangle is a highly visible color for daylight exposure. 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. The emblem is intended as a unique identification for, and it shall be used only on, vehicles which by design move slowly (25 mph or less) on the public roads. The emblem is not a clearance marker for wide machinery nor is it intended to replace required lighting or marking of slow-moving vehicles. Neither the color film pattern and its dimensions nor the backing shall be altered to permit use of advertising or other markings. The material, location, mounting, etc., of the emblem shall be in accordance with the American Society of Agricultural Engineers Emblem for Identifying Slow-Moving Vehicles, ASAE R276, 1967, or ASAE S276.2 (ANSI B114.1-1971), which are incorporated by reference as specified in 1910.6.

Figure J - 7 Slow-Moving Vehicle Emblem



Note: All dimensions are in inches.

- (e) Sign wordings.

- (1) (Reserved)
 - (2) Nature of wording. The wording of any sign should be easily read and concise. The sign should contain sufficient information to be easily understood. The wording should make a positive, rather than negative suggestion and should be accurate in fact.
 - (3) (Reserved)
 - (4) Biological hazard signs. The biological hazard warning shall be used to signify the actual or potential presence of a biohazard and to identify equipment, containers, rooms, materials, experimental animals, or combinations thereof, which contain, or are contaminated with, viable hazardous agents. For the purpose of this subparagraph the term “biological hazard,” or “biohazard,” shall include only those infectious agents presenting a risk or potential risk to the well-being of man.
- (f) Accident prevention tags.
- (1) Scope and application.
 - (i) This paragraph (f) applies to all accident prevention tags used to identify hazardous conditions and provide a message to employees with respect to hazardous conditions as set forth in paragraph (f)(3) of this section, or to meet the specific tagging requirements of other OSHA standards.
 - (ii) This paragraph (f) does not apply to construction or agriculture.
 - (2) Definitions.

Biological hazard or BIOHAZARD means those infectious agents presenting a risk of death, injury or illness to employees.

Major message means that portion of a tag’s inscription that is more specific than the signal word and that indicates the specific hazardous condition or the instruction to be communicated to the employee. Examples include: “**High Voltage**,” “**Close Clearance**,” “**Do Not Start**,” or “**Do Not Use**” or a corresponding pictograph used with a written text or alone.

Pictograph means a pictorial representation used to identify a hazardous condition or to convey a safety instruction.

Signal word means that portion of a tag’s inscription that contains the word or words that are intended to capture the employee’s immediate attention.

Tag means a device usually made of card, paper, pasteboard, plastic or other material used to identify a hazardous condition.

- (3) Use. Tags shall be used as a means to prevent accidental injury or illness to employees who are exposed to hazardous or potentially hazardous conditions, equipment or operations which are out of the ordinary, unexpected or not readily apparent. Tags shall be used until such time as the identified hazard is eliminated or the hazardous operation is completed. Tags need not be used where signs, guarding or other positive means of protection are being used.
- (4) General tag criteria. All required tags shall meet the following criteria:
 - (i) Tags shall contain a signal word and a major message.
 - (A) The signal word shall be either “Danger,” “Caution,” or “Biological Hazard,” “BIOHAZARD,” or the biological hazard symbol.
 - (B) The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee.
 - (ii) The signal word shall be readable at a minimum distance of 5 feet (1.52 m) or such greater distance as warranted by the hazard.
 - (iii) The tag’s major message shall be presented in either pictographs, written text or both.
 - (iv) The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.
 - (v) All employees shall be informed as to the meaning of the various tags used throughout the workplace and what special precautions are necessary.
 - (vi) Tags shall be affixed as close as safely possible to their respective hazards by a positive means such as string, wire, or adhesive that prevents their loss or unintentional removal.
- (5) Danger tags. Danger tags shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees. Danger tags shall be used only in these situations.
- (6) Caution tags. Caution tags shall be used in minor hazard situations where a non- immediate or potential hazard or unsafe practice presents a lesser threat of employee injury. Caution tags shall be used only in these situations.

- (7) Warning tags. Warning tags may be used to represent a hazard level between “Caution” and “Danger,” instead of the required “Caution” tag, provided that they have a signal word of “Warning,” an appropriate major message, and otherwise meet the general tag criteria of paragraph (f)(4) of this section.
- (8) Biological hazard tags.
- (i) Biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, or combinations thereof, that contain or are contaminated with hazardous biological agents.
- (ii) The symbol design for biological hazard tags shall conform to the design shown below:



Biological Hazard Symbol
Configuration

- (9) Other tags. Other tags may be used in addition to those required by this paragraph (f), or in other situations where this paragraph (f) does not require tags, provided that they do not detract from the impact or visibility of the signal word and major messages of any required tag.

(Approved by the Office of Management and Budget under control number 1218-0132)
Statutory Authority: ORS 654.025(2) and ORS 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.
OR-OSHA Admin. Order 4-1997, f. 4/2/97, ef. 4/2/97.
OR-OSHA Admin. Order 4-1997, f. 4/2/97, ef. 4/2/97.
OR-OSHA Admin. Order 3-2011, f. 11/1/11, ef. 11/1/11.
OR-OSHA Admin. Order 7-2013, f. 12/12/13, ef. 12/12/13.

Appendices To 1910.145(f), Accident Prevention Tags

Appendix A to 1910.145(f) – Recommended Color Coding

While the standard does not specifically mandate colors to be used on accident prevention tags, the following color scheme is recommended by OSHA for meeting the requirements of this section:

DANGER – Red, or predominantly red, with lettering or symbols in a contrasting color.

CAUTION – Yellow, or predominantly yellow, with lettering or symbols in a contrasting color.

WARNING – Orange, or predominantly orange, with lettering or symbols in a contrasting color.

BIOLOGICAL HAZARD – Fluorescent orange or orange-red, or predominantly so, with lettering or symbols in a contrasting color.

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).

Statutes Implemented: ORS 654.001 through 654.295.

History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.

Appendix B to 1910.145(f) – References for Further Information

The following references provide information which can be helpful in understanding the requirements contained in various sections of the standard:

1. Bresnahan, Thomas F., and Bryk, Joseph, "The Hazard Association Values of Accident Prevention Signs," Journal of American Society of Safety Engineers; January 1975.
2. Dreyfuss, H., Symbol Sourcebook, McGraw Hill; New York, NY, 1972.
3. Glass, R.A. and others, Some Criteria for Colors and Signs in Workplaces, National Bureau of Standards, Washington, DC, 1983.
4. Graphic Symbols for Public Areas and Occupational Environments, Treasury Board of Canada, Ottawa, Canada, July 1980.
5. Howett, G.L., Size of Letters Required for Visibility as a Function of Viewing Distance and Observer Acuity, National Bureau of Standards, Washington, DC, July 1983.
6. Lerner, N.D. and Collins, B.L., The Assessment of Safety Symbol Understandability by Different Testing Methods, National Bureau of Standards, Washington, DC, 1980.
7. Lerner, N.D. and Collins, B.L., Workplace Safety Symbols, National Bureau of Standards, Washington, DC, 1980.
8. Modley, R. and Meyers, W.R., Handbook of Pictorial Symbols, Dover Publication, New York, NY, 1976.
9. Product Safety Signs and Labels, FMC Corporation, Santa Clara, CA, 1978.
10. Safety Color Coding for Marking Physical Hazards, Z53.1, American National Standards Institute, New York, NY, 1979.
11. Signs and Symbols for the Occupational Environment, Can. 3-Z-321-77, Canadian Standards Association, Ottawa, September 1977.
12. Symbols for Industrial Safety, National Bureau of Standards, Washington, DC, April 1982.
13. Symbol Signs, U.S. Department of Transportation, Washington, DC, November 1974.

(39 FR 23502, June 27, 1974, as amended at 43 FR 49749, Oct. 24, 1978; 43 FR 51759, Nov. 7, 1978; 49 FR 5322, Feb. 10, 1984; 51 FR 33260, Sept. 19, 1986)

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).

Statutes Implemented: ORS 654.001 through 654.295.

History: OR-OSHA Admin. Order 13-1992, f. 12/7/92, ef. 2/1/93.

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.*

Acceptable entry conditions - *The conditions that must exist in a permit-required confined space to allow safe entry and work.*

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.*

Atmospheric hazard (see the definition of hazardous atmosphere).

Atmospheric testing – see “Testing.”

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.

Authorized – Approved by the employer or controlling contractor.

Authorized entrant - An employee who is authorized by the employer to enter a permit space.

Barrier - A physical obstruction that blocks or limits access.

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.

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.

Confined space – A space that meets all of the following:

- Large enough and so configured that an employee can fully enter the space and perform work.
- Has limited or restricted means for entry and/or exit.
- Is not designed for continuous human occupancy.

Continuous system – a confined space that meets all of the following:

- Part of, and contiguous with, a larger confined space (for example, storm sewers, sanitary sewers, or steam tunnels)
- 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.

Control or controlling - Authority to regulate, direct or influence.

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.

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.

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.

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.

Entrant (see the definition of authorized entrant).

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.

Entry Permit – Written authorization from the employer, controlling contractor, or host employer to enter a permit-required confined space and perform work.

Entry supervisor - The person (such as the employer, foreman, or crew chief, or any other designated employee) responsible for:

- Determining if acceptable entry conditions are present at a permit space where entry is planned; and
- Authorizing entry and overseeing entry operations; and
- Terminating entry as required.

Hazard – For the purpose of this rule, hazard means a physical hazard or hazardous atmosphere.

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.

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.

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 flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit.
- 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.

- An atmospheric oxygen concentration below 19.5 percent (oxygen deficient) or above 23.5 percent (oxygen enriched).
- 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.

- An atmosphere that presents an immediate danger to life or health (IDLH).

Host employer - An employer who owns or manages the property on which confined space work is taking place.

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.

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.

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:

- blanking or blinding.
- misaligning or removing sections of lines, pipes, or ducts.
- a double block-and-bleed system.
- Machine guarding;
- Blocking or disconnecting all mechanical linkages;
- 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".

Mobile worker - An employee who performs work in multiple locations such as customer sites, company offices, private homes, vendor offices, or construction sites.

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.")

Non-entry rescue - Retrieval of entrants from a permit space without entering the permit space.

Permit-required confined space (permit space) - A confined space that has one or more of the following characteristics:

- Contains, or has a potential to contain, a hazardous atmosphere.
- Contains a material that has the potential to engulf an entrant.
- 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.
- Contains any other recognized serious safety or health hazard that can inhibit an entrants ability to escape unaided.

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:

- Explosives; mechanical, electrical, hydraulic, and pneumatic energy; radiation; temperature extremes; engulfment; noise; and inwardly converging surfaces; and
- Chemicals that can cause death or serious physical harm through skin or eye contact (rather than through inhalation).

Potential hazards - All reasonably anticipated conditions within the space and outside the space that can adversely affect conditions within the space.

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.

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.

Retrieval system - The equipment, including mechanical retrieval devices, used for non-entry rescue of authorized entrants from a permit space.

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.

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.

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.

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.

You - The employer.

You can use this table to determine which requirements to follow.

Requirements for Confined Spaces

The requirements in the following paragraphs apply									
(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Evaluation	Permit-required confined space entry programs and permits	Permit Entry	Equipment	Personnel	Rescue	Alternate entry	Training	Multi-employer worksites	Records
For spaces that are									
Confined spaces	X								
Permit-required confined spaces	X	X	X	X	X		X	X	X
Never enter	X								
If you only									
Use alternate entry procedures	X			X		X	X		
Have other employers your space	X							X	X
Are a rescue service provider		X	X	X	X		X		X

(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)(f).*
- (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.*

- (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.*

- (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) *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 attendants' 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.*

(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."*

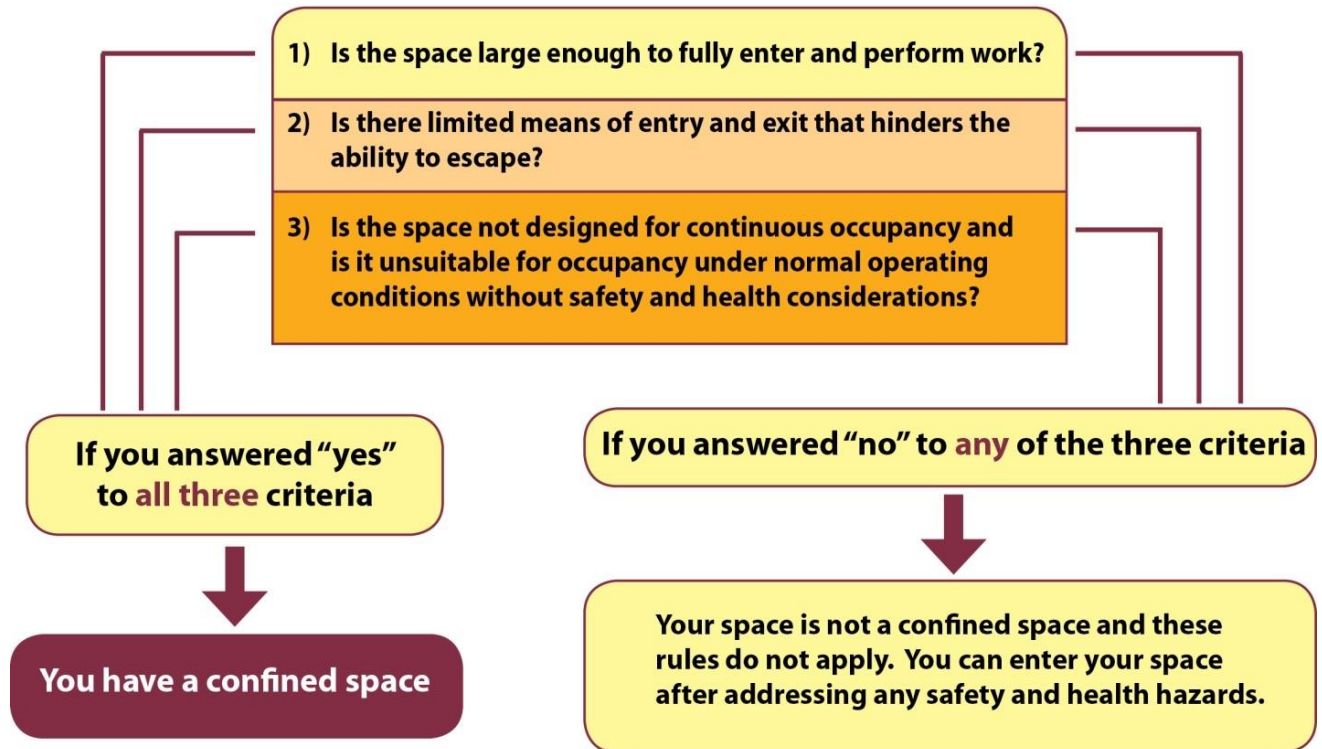
(14) Effective dates. *For work covered under Division 3, Construction, these rules are effective as of March 1, 2015.*

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: OR-OSHA Admin. Order 6-2012, f. 9/28/12, ef. 4/1/13.
OR-OSHA Admin. Order 5-2014, f.10/20/14, ef. 1/1/15.
OR-OSHA Admin. Order 3-2015, f. 10/9/15, ef. 1/1/16.

Non-Mandatory Appendix A to 437-002-0146

Part I: Evaluate the space to determine if you have a confined space.

Evaluate the Space



Evaluation of confined spaces

A confined space is defined as having three distinct characteristics.

It must meet all three in order to be a confined space.

1 – It must be large enough to enter.

First, it must be large enough and so configured that an employee can fully enter and perform work. A space that is just large enough that an employee could just barely squeeze into, but cannot perform any work does not meet this definition. Similarly, a space that is large enough that an employee can only get part of their body into, but can't fully enter, does not meet this definition. While there may be hazards associated with these types of spaces, they are not addressed with this particular rule.

2 – It must have limited means of entry and exit.

Second, it must have a limited means for entry and exit. Typically, if you must contort your body to enter a space it may be limited means of entry and exit. Examples of this include having to climb through a porthole, climb up a ladder, or crawling through a tunnel in order to exit.

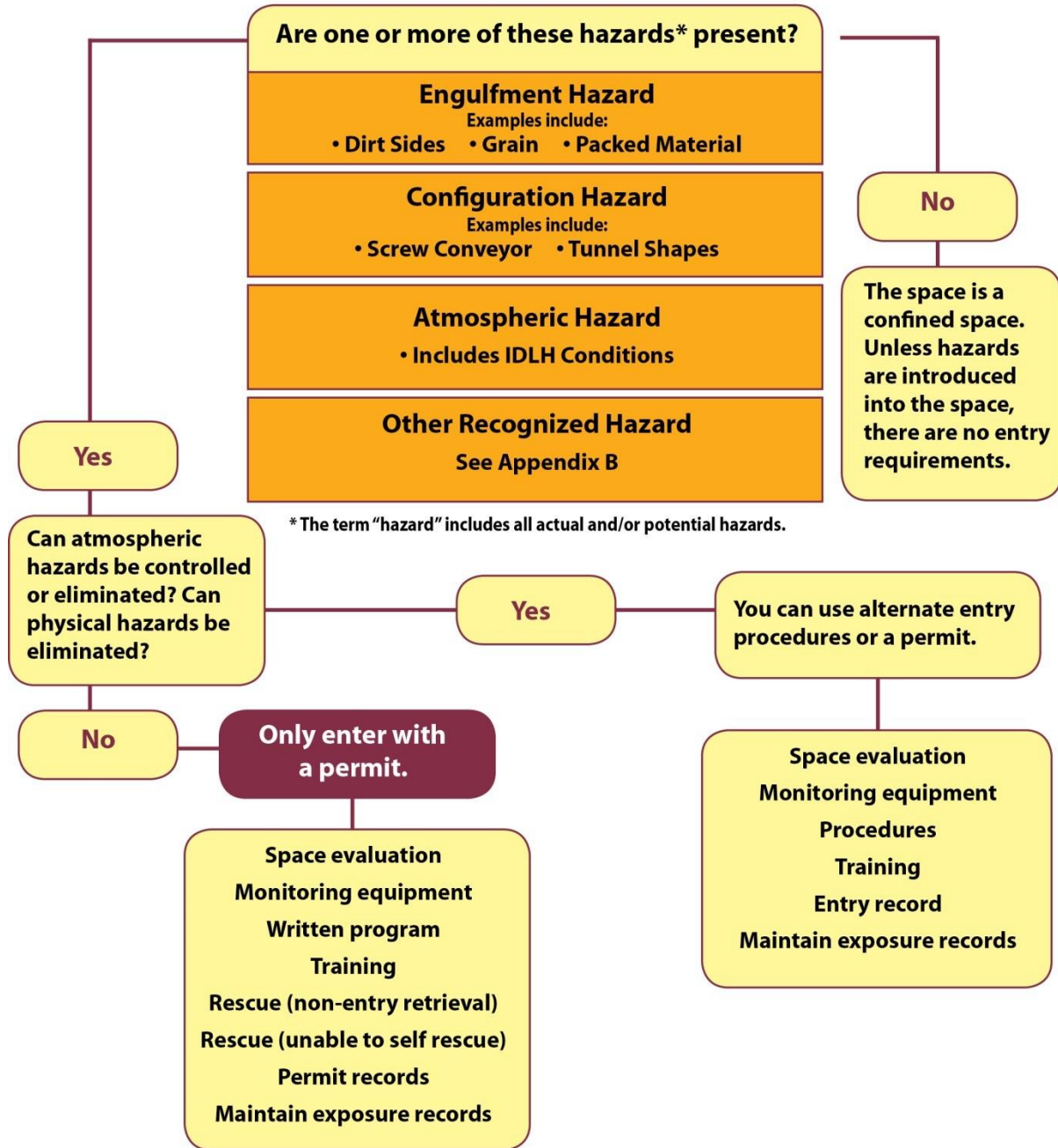
Another way of measuring limited means of entry and exit is to determine how difficult it would be to extract an injured person from the space. If there is a need for any type of technical rescue operation to remove an immobilized person from the space then you likely have limited entry and exit. It is important to recognize that each space should be evaluated on a case by case basis and a limitation in one set of circumstances may not be a limitation elsewhere.

3 – It is not designed for continuous occupancy.

Third, it is not designed for continuous human occupancy. This particular characteristic can cause a certain amount of confusion and discussion. A space that is designed for periodic occupancy is not the same thing as a space that is designed for continuous occupancy. The presence of a fixed ladder, lighting, or ventilation does not automatically mean that the space was designed for continuous occupancy. One must look at the primary function and purpose of the space. A space may have lighting to facilitate periodic occupancy. This lighting may be needed to safely enter and exit, read gauges or perform maintenance or repairs to equipment in the space. Similarly, ventilation may be necessary to keep equipment from overheating or provide fresh air for temporary job assignments or tasks. In both cases the work required to be performed in these spaces is intermittent or temporary in nature. Was the space designed for an employee to be permanently assigned to perform work there or was the space designed to house and protect operating equipment that needs to be monitored or occasionally maintained?

Non-Mandatory Appendix A to 437-002-0146
Part II: Determine if you have a permit-required confined space.

You determined that you have a confined space.



Evaluation of Permit-Required Confined Spaces

A permit space is a confined space with an actual or potential hazard that can inhibit an entrant's ability to safely exit the space.

*Once a confined space is identified, the next step is to determine if it is a permit-required confined space (permit space). There are 2 types of actual or potential hazards. **Atmospheric hazards** can include an oxygen-deficient or oxygen-rich atmosphere, a toxic atmosphere, or an explosive atmosphere. **Physical hazards** can include entrapment, engulfment, electrocution, heat stroke, moving machinery, or any other serious hazard.*

Atmospheric Hazards

In evaluating the atmospheric hazards, it is important to include conditions within the space, systems connected to the space, conditions outside of the space, and anything that is brought into the space in order to perform assigned tasks. For example, workers may need to enter one part of a tunnel where there are no obvious sources of atmospheric hazards, but workers in another part of the tunnel may be creating an atmospheric hazard that has the potential to migrate to other parts of the system. These need to be identified by all affected parties. Another example of overlooked hazards can be with a space with a particularly small volume with several workers inside. In these situations the simple act of breathing can create an oxygen-deficient atmosphere.

Another consideration for evaluating atmospheric hazards is using air monitoring equipment to evaluate conditions within a permit space. Any air monitoring equipment must be used according to the manufacturer's instructions, and employees using those meters must know how to use them. There have been several fatalities in permit required confined spaces where the air monitoring equipment alarms identified an unsafe condition but were ignored by the operator. If there is any indication of equipment failure all permit required confined space operations must stop until the equipment is repaired.

Also, there can be a tendency to oversimplify the results of oxygen testing when evaluating an oxygen-deficient atmosphere. While the rule clearly identifies 19.5% as an oxygen-deficient atmosphere that does not mean that nothing more needs to happen if the meter reads 19.6% oxygen. Typically, the normal atmospheric concentration of oxygen is around 20.8% to 21.5%. If your meter reads 20.9% outside of the space, and 19.9% inside the space that is telling you that something has displaced 1% of the oxygen inside the space, which equates to 10,000 parts-per-million of another gas. To place this into perspective, an atmosphere containing 1200 parts-per-million of carbon monoxide is considered to be immediately dangerous to life and health. It is vitally important to identify that other gas to truly identify all of the hazards of that space.

Physical Hazards

Physical hazards can come in many different forms. The hazard could be related to the configuration of a space, equipment inside the space or materials which can flow into a space and entrap an entrant. There are several ways of eliminating physical hazards through lockout/tagout, blanking and blinding or a physical separation on piping systems from the confined space.

In evaluating physical hazards, it is important to understand that the confined space must be evaluated as it normally operates. There can be a tendency to evaluate a space after protective actions, such as lockout/tagout, are taken, and then not designate it as a permit space. If any actions, such as lockout/tagout, are necessary to make the space safe for entry, then it is a permit space. While lockout/tagout is recognized as a elimination of hazards, it is only a temporary elimination that exists only as long as the lock is in place. Once the lock is removed, the hazard is no longer eliminated. Another consideration for using lockout/tagout is that all of the requirements for the control of hazardous energy in 1910.147, where applicable, still apply. Any hazards that still remain after applying lockout/tagout must still be addressed.

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).
Statutes Implemented: ORS 654.001 through 654.295.
History: OR-OSHA Admin. Order 6-2012, f. 9/28/12, ef. 4/1/13.
OR-OSHA Admin. Order 5-2014, f.10/20/14, ef. 1/1/15.

Non-Mandatory Appendix B to 437-002-0146 - Potential Confined Space Hazards

What follows is a compilation of hazards and conditions which may compromise safe confined space entry and/or rescue procedures. The list is not exhaustive. Specific confined spaces may have hazards unique to that space. All hazards need to be evaluated and eliminated or controlled prior to entry. Consider hazards that may be present initially as well as those that may develop during the course of work.

Atmospheric hazards:

- *Oxygen deficiency*
- *Oxygen enrichment*
- *Inert gases used to exclude oxygen (for example, nitrogen, helium, steam, freons, argon, or carbon dioxide)*
- *Flammable or explosive gases, liquids, vapors, mists, fibers, or dusts*
- *Toxic dusts, mists, fumes, smoke, vapors, fibers, or gases*
- *Airborne biological contaminants, including molds, bacteria, viruses and other potential disease-inducing agents*

Engulfment hazards – presence of materials that can capture or surround an entrant:

- *Avalanche of materials*
- *Surrounding and suffocating*
- *Trenching cave-ins*
- *Drowning*
- *Bridged materials which collapse when stepped on*

Falls from heights

Falling objects (tools, structural materials, debris)

Harness or lifeline snag points (e.g., agitator blades, piping, screws, etc.)

Configuration of space:

- *Complexity of internal structure*
- *Inwardly sloping walls or floors*
- *Tight and/or narrow diameter spaces - entrapment*
- *Access restricting rescue*

Ignition sources – examples include:

- *Grinding*
- *Welding, cutting, burning, brazing*

- *Space heaters*
- *Hand tools*
- *Power tools*
- *Exposed light bulbs*
- *Sources of static electric discharge (e.g., synthetic clothing, transfer of liquids or gases not bonded and grounded)*
- *Non-intrinsically safe equipment*

Illumination – insufficient in quality or quantity

Moving mechanical equipment:

- *Agitators*
- *Tumblers*
- *Crushers*
- *Mixing blades*
- *Screw conveyors*
- *Shakers*

Electrical power sources

- *Transmission lines*
- *Junction boxes*
- *Transformers*
- *Electrically powered equipment taken into the space or installed in the space*

Hydraulically or pneumatically powered equipment

Pressurized lines

- *Steam*
- *Hydraulic*
- *Pneumatic*
- *Fuel and other gas*
- *Water*

Radiation

- *Ionizing*
- *Non-ionizing (including lasers)*

Process material lines, open or leaking lines which introduce:

- *Toxic materials*
- *Flammable or combustible*
- *Oxidizing materials*
- *Corrosive materials*

- *Heated liquid or gaseous substances (such as steam) containing hydraulic oils, other fluids, or gases*
- *Other substances hazardous to health or that may displace oxygen*

Isolation is difficult or impossible -- Examples of environments in which significant isolation issues may arise:

- *Wastewater sewer systems*
- *Stormwater drain systems*
- *Dams*
- *Hydro-electric plants*
- *Nuclear plants*

Hazards originating in adjacent areas:

- *Exhaust or flue gases*
- *Chemical releases*

Mobile confined spaces that are not adequately secured prior to entry:

- *Moving (such as ships and barges; or rail cars or tank trucks that do not have chocks or wheel blocks)*
- *Rotating (cement or other trucks which may not be properly locked out)*
- *Shifting (tank trucks lacking a cab or jack stand)*
- *Crushing (garbage trucks which may not be properly locked out)*

Noise (preventing the ability to communicate or hear warnings)

Slippery surfaces

Surface contaminants – liquids and solids on floors, walls, ceilings, or other interior surfaces that may cause eye or skin irritation, burns, or other adverse health effects upon contact

Thermal (heat and cold) extremes:

- *Surfaces (radiant or conduction)*
- *Air temperature (convection)*

Tripping hazards

Uncontrolled lateral movement or swing potential with suspended loads

Vibration – Vibrating equipment or vibration of the confined space

Work or equipment introducing additional hazards:

- *Hot work (welding, cutting, burning, grinding)*
- *Inerting*

- *Abrasive blasting*
- *Surface coating and painting*
- *Use of solvents, degreasers, and other cleaning agents*
- *Demolition activities*
- *Use of internal combustion engines*
- *Use of space heaters*
- *Use of equipment which is not approved or fit for use in the type of confined space, such as non-intrinsically safe or no GFCI when needed.*

Statutory Authority: ORS 654.025(2) and ORS 656.726(4).

Statutes Implemented: ORS 654.001 through 654.295.

History: OR-OSHA Admin. Order 6-2012, f. 9/28/12, ef. 4/1/13.

OR-OSHA Admin. Order 5-2014, f.10/20/14, ef. 1/1/15.

***Non-mandatory Appendix C to 437-002-0146
Sample Confined Space Entry Permit and Alternate Entry Form***

The following confined space entry permit and alternate entry form can be modified to fit your particular entry. Make sure you use only the appropriate portions of the forms to create your own entry permit or alternate entry form.

*You can also design your own entry permit or alternate entry form. You're **not** required to use the examples provided here.*

Confined Space Entry Permit

Permit date: / /

Work shift: 1st 2nd 3rd

Expires: / /

Time started: Click or tap here to enter text.

Permit space to be entered Click or tap here to enter text.
(name and location of space):

Purpose of entry: Click or tap here to enter text.

Pre-entry checklist

Do not enter this permit space until the following “needs action” conditions are corrected.

OK	Needs action	
<input type="checkbox"/>	<input type="checkbox"/>	Before entering the permit space, the supervisor or designee must notify the rescue team. IDLH conditions require at least one rescue team member located outside the space.
<input type="checkbox"/>	<input type="checkbox"/>	A minimum of two employees must be assigned to work involving permit space entry. One employee must remain outside the permit space at all times.
<input type="checkbox"/>	<input type="checkbox"/>	The surrounding area must be surveyed to show that it is free of hazards such as drifting vapors from tanks, piping, sewers, or vehicle exhaust.
<input type="checkbox"/>	<input type="checkbox"/>	Those responsible for operation of the gas monitor have been trained.
<input type="checkbox"/>	<input type="checkbox"/>	Gas monitor calibration tests and functional test (fresh air calibration) have been performed this shift on the gas monitor.
<input type="checkbox"/>	<input type="checkbox"/>	The atmosphere will be continuously monitored while the space is occupied, if required by entry procedure.

Identify potential hazards	Yes	No	N/A
Possible atmospheric hazards			
Lack of oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combustible gases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combustible vapors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Combustible dusts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Toxic gases/vapors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Possible non-atmospheric hazards			
Noise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Chemical contact	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical hazard	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mechanical exposure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature extreme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Engulfment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Entrapment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other non-atmospheric hazard (list on separate page)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Sample Alternate Entry Form

Location of space:

Entry date: / /

Duration of entry:

List entrants' names

List physical hazards in the space

List atmospheric hazards in the space

List each action taken to eliminate physical and atmospheric hazards in the space

Action

Description

Ventilation

Is ventilation required? YES NO

If "YES," type of ventilation:

Amount of ventilation (cfm or AC/hr):

Air monitoring

Substance monitored	Unit	Permissible levels		Monitoring results	
				Initial Test	Peak reading during entry

Instruments used for air monitoring

Model# or type

Calibration (or bump test) date

Additional notes about the space and entry (including if evacuation was necessary)

Person responsible for ensuring the space is safe to enter

Name:

Job title:

Signature:

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 6-2012, f. 9/28/12, ef. 4/1/13.

OR-OSHA Admin. Order 5-2014, f. 10/20/14, ef. 1/1/15.

Non-Mandatory Appendix D to 437-002-0146 - Rescue Service Considerations

- (1) This appendix provides guidance to employers in choosing an appropriate rescue service. It contains criteria that may be used to evaluate the capabilities both of prospective and current rescue teams. Before a rescue team can be trained or chosen, however, a satisfactory permit program, including an analysis of all permit-required confined spaces to identify all potential hazards in those spaces, must be completed. Oregon OSHA believes that compliance with all the provisions of 437-002-0146 will enable employers to conduct permit space operations without recourse to rescue services in nearly all cases. However, experience indicates that circumstances will arise where entrants will need to be rescued from permit spaces. It is therefore important for employers to select rescue services or teams, either on-site or off-site, that are equipped and capable of minimizing harm to both entrants and rescuers if the need arises.*
- (2) For all rescue teams or services, the employer's evaluation should consist of two components: an initial evaluation, in which employers decide whether a potential rescue service or team is adequately trained and equipped to perform permit space rescues of the kind needed at the facility and whether such rescuers can respond in a timely manner, and a performance evaluation, in which employers measure the performance of the team or service during an actual or practice rescue. For example, based on the initial evaluation, an employer may determine that maintaining an on-site rescue team will be more expensive than obtaining the services of an off-site team, without being significantly more effective, and decide to hire a rescue service. During a performance evaluation, the employer could decide, after observing the rescue service perform a practice rescue, that the service's training or preparedness was not adequate to effect a timely or effective rescue at his or her facility and decide to select another rescue service, or to form an internal rescue team.*

 - a. Initial Evaluation*

- i. *The employer should meet with the prospective rescue service to facilitate the evaluations required by 437-002-0146(9). 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.*
- ii. *The capabilities required of a rescue service vary with the type of permit spaces from which rescue may be necessary and the hazards likely to be encountered in those spaces. Answering the questions below will assist employers in determining whether the rescue service is capable of performing rescues in the permit spaces present at the employer's workplace.*
 1. *What are the needs of the employer with regard to response time (time for the rescue service to receive notification, arrive at the scene, and set up and be ready for entry)? For example, if entry is to be made into an IDLH atmosphere, or into a space that can quickly develop an IDLH atmosphere (if ventilation fails or for other reasons), the rescue team or service would need to be standing by at the permit space. On the other hand, if the danger to entrants is restricted to mechanical hazards that would cause injuries (e.g., broken bones, abrasions) a response time of 10 or 15 minutes might be adequate.*
 2. *How quickly can the rescue team or service get from its location to the permit spaces from which rescue may be necessary? Relevant factors to consider would include: the location of the rescue team or service relative to the employer's workplace, the quality of roads and highways to be traveled, potential bottlenecks or traffic congestion that might be encountered in transit, the reliability of the rescuer's vehicles, and the training and skill of its drivers.*
 3. *What is the availability of the rescue service? Is it unavailable at certain times of the day or in certain situations? What is the likelihood that key personnel of the rescue service might be unavailable at times? If the rescue service becomes unavailable while an entry is underway, does it have the capability of notifying the employer so that the employer can instruct the attendant to abort the entry immediately?*

4. *Does the rescue service meet all the requirements of paragraph (9)(b)(B) of the standard? If not, has it developed a plan that will enable it to meet those requirements in the future? If so, how soon can the plan be implemented?*
5. *For off-site services, is the service willing to perform rescues at the employer's workplace? (An employer may not rely on a rescuer who declines, for whatever reason, to provide rescue services.)*
6. *Is an adequate method for communications between the attendant, employer and prospective rescuer available so that a rescue request can be transmitted to the rescuer without delay? How soon after notification can a prospective rescuer dispatch a rescue team to the entry site?*
7. *For rescues into spaces that may pose significant atmospheric hazards and from which rescue entry, patient packaging and retrieval cannot be safely accomplished in a relatively short time (15-20 minutes), employers should consider using airline respirators (with escape bottles) for the rescuers and to supply rescue air to the patient.*
8. *If the employer decides to use SCBA, does the prospective rescue service have an ample supply of replacement cylinders and procedures for rescuers to enter and exit (or be retrieved) well within the SCBA's air supply limits?*
9. *If the space has a vertical entry over 5 feet in depth, can the prospective rescue service properly perform entry rescues? Does the service have the technical knowledge and equipment to perform rope work or elevated rescue, if needed?*
10. *Does the rescue service have the necessary skills in medical evaluation, patient packaging and emergency response? Where necessary, can the rescue service perform patient decontamination before being transported to a medical facility?*
11. *Does the rescue service have the necessary equipment to perform rescues, or must the equipment be provided by the employer or another source?*

b. Performance Evaluation.

Rescue services are required by paragraph (9)(d) of the standard to practice rescues prior to an entry or within 12 months of an entry, provided that the team or service has not successfully performed a permit space rescue within that time. As part of each practice session, the service should perform a critique of the practice rescue, or have another qualified party perform the critique, so that deficiencies in procedures, equipment, training, or number of personnel can be identified and corrected. The results of the critique, and the corrections made to respond to the deficiencies identified, should be given to the employer to enable it to determine whether the rescue service can quickly be upgraded to meet the employer's rescue needs or whether another service must be selected. The following questions will assist employers and rescue teams and services evaluate their performance.

- i. Have all members of the service been trained as permit space entrants, at a minimum, including training in the potential hazards of all permit spaces, or of representative permit spaces, from which rescue may be needed? Can team members recognize the signs, symptoms, and consequences of exposure to any hazardous atmospheres that may be present in those permit spaces?*
- ii. Is every team member provided with, and properly trained in, the use and need for PPE, such as SCBA or fall arrest equipment, which may be required to perform permit space rescues in the facility? Is every team member properly trained to perform his or her functions and make rescues, and to use any rescue equipment, such as ropes and backboards, that may be needed in a rescue attempt?*
- iii. Are team members trained in the first aid and medical skills needed to treat victims overcome or injured by the types of hazards that may be encountered in the permit spaces at the facility?*
- iv. Do all team members perform their functions safely and efficiently? Do rescue service personnel focus on their own safety before considering the safety of the victim?*
- v. If necessary, can the rescue service properly test the atmosphere to determine if it is IDLH?*
- vi. Can the rescue personnel identify information pertinent to the rescue from entry permits, hot work permits, and SDSs?*

- vii. *Has the rescue service been informed of any hazards to personnel that may arise from outside the space, such as those that may be caused by future work near the space?*
- viii. *If necessary, can the rescue service properly package and retrieve victims from a permit space that has a limited size opening (less than 24 inches (60.9 cm) in diameter), limited internal space, or internal obstacles or hazards?*
- ix. *If necessary, can the rescue service safely perform an elevated (high angle) rescue?*
- x. *Does the rescue service have a plan for each of the kinds of permit space rescue operations at the facility? Is the plan adequate for all types of rescue operations that may be needed at the facility? Teams may practice in representative spaces, or in spaces that are “worst-case” or most restrictive with respect to internal configuration, elevation, and portal size. The following characteristics of a practice space should be considered when deciding whether a space is truly representative of an actual permit space:*
 - 1. *Internal configuration.*
 - a. *Open – there are no obstacles, barriers, or obstructions within the space. One example is a water tank.*
 - b. *Obstructed – the permit space contains some type of obstruction that a rescuer would need to maneuver around. An example would be a baffle or mixing blade. Large equipment, such as a ladder or scaffold, brought into a space for work purposes would be considered an obstruction if the positioning or size of the equipment would make rescue more difficult.*
 - 2. *Elevation.*
 - a. *Elevated – a permit space where the entrance portal or opening is above grade by 4 feet or more. This type of space usually requires knowledge of high angle rescue procedures because of the difficulty in packaging and transporting a patient to the ground from the portal.*

1910.147 The Control of Hazardous Energy (Lockout/Tagout).**(a) Scope, application and purpose.****(1) Scope.**

- (i) This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy could cause injury to employees. This standard establishes minimum performance requirements for the control of such hazardous energy.
- (ii) This standard does not cover the following:
 - (A) Note: Oregon OSHA did not adopt the exemptions to lockout/tagout in 1910.147(a)(1)(ii)(A). Oregon OSHA has applicable rules for construction and agriculture.
 - (B) Employment covered by parts 1915, 1917 and 1918 of this title;
 - (C) Installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering;
 - (D) Exposure to electrical hazards from work on, near, or with conductors or equipment in electric utilization installations, which is covered by Subdivision S of this Division; and
 - (E) Oil and gas well drilling and servicing.

(2) Application.

- (i) This standard applies to the control of energy during servicing and/or maintenance of machines and equipment.
- (ii) Normal production operations are not covered by this standard (See Subdivision O of this Division). Servicing and/or maintenance which takes place during normal production operations is covered by this standard only if:
 - (A) An employee is required to remove or bypass a guard or other safety device; or

- (B) An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

Note: Exception to paragraph (a)(2)(ii): Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection (See Subdivision O of this Division).

(iii) This standard does not apply to the following.

- (A) Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.
- (B) Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that (1) continuity of service is essential; (2) shutdown of the system is impractical; and (3) documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

(3) Purpose.

- (i) This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start-up or release of stored energy in order to prevent injury to employees.
- (ii) When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

(b) Definitions applicable to this section.

Affected employee. An employee whose job requires him/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/her to work in an area in which such servicing or maintenance is being performed.

Authorized employee. A person 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 this section.

Capable of being locked out. An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized. Connected to an energy source or containing residual or stored energy.

Energy isolating device. A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated 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.

Energy source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot tap. A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal production operations. The utilization of a machine or equipment to perform its intended production function.

Servicing and/or maintenance. Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting up. Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout. The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout device. A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

(c) General.

(1) Energy control program. The employer shall 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 shall be isolated from the energy source, and rendered inoperative.

(2) Lockout/tagout.

(i) If an energy isolating device is not capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize a tagout system.

- (ii) If an energy isolating device is capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in paragraph (c)(3) of this section.
 - (iii) After January 2, 1990, 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 shall be designed to accept a lockout device.
- (3) Full employee protection.
- (i) When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program.
 - (ii) In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, the employer shall 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 shall 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 energization.
- (4) Energy control procedure.
- (i) Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Note: Exception: The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist:

- (1) The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shut down which could endanger employees;
 - (2) The machine or equipment has a single energy source which can be readily identified and isolated;
 - (3) The isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment;
 - (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 employee performing the servicing or maintenance;
 - (7) The servicing or maintenance does not create hazards for other employees; and
 - (8) The employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.
- (ii) The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance including, but not limited to, the following:
- (A) A specific statement of the intended use of the 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.
- (5) Protective materials and hardware.

The following Oregon-initiated rule relates to 29 CFR 1910.147(c)(5):

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.

Stat. Auth.: ORS 654.025(2) and ORS 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 2-1990, f. 1/19/90, ef. 3/1/90.
OR-OSHA Admin. Order 12-2001, f. 10/26/01, ef. 10/26/01.

- (i) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.
- (ii) Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:
 - (A) Durable.
 - (1) Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
 - (2) Tagout devices shall 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.
 - (3) Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
 - (B) Standardized. Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
 - (C) Substantial.
 - (1) Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

- (2) Tagout devices. Tagout devices, including and their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a nonreusable type, attachable by hand, self-locking, and nonreleasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.
- (D) Identifiable. Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).
 - (iii) Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.
- (6) Periodic inspection.
 - (i) The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
 - (A) The periodic inspection shall be performed by an authorized employee other than the one(s) utilizing the energy control procedure being inspected.
 - (B) The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
 - (C) Where lockout is used for energy control, the periodic inspection shall 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 shall 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 (c)(7)(ii) of this section.

- (ii) The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.
- (7) Training and communication.
- (i) The employer shall 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 the energy controls are acquired by employees. The training shall include the following:
 - (A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
 - (B) Each affected employee shall 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 utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
 - (ii) When tagout systems are used, employees shall 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.
- (iii) Employee retraining.
- (A) Retraining shall 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 when there is a change in the energy control procedures.
 - (B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
 - (C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- (iv) The employer shall certify that employee training has been accomplished and is being kept up-to-date. The certification shall contain each employee's name and dates of training.
- (8) Energy isolation. Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.
- (9) Notification of employees. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.
- (d) Application of control. The established procedures for the application of energy control (the lockout or tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:

- (1) Preparation for shutdown. Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall 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.
- (2) Machine or equipment shutdown. The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
- (3) Machine or equipment isolation. All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
- (4) Lockout or tagout device application.
 - (i) Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
 - (ii) Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a “safe” or “off” position.
 - (iii) Tagout devices, where used, shall 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.
 - (A) Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached.
 - (B) Where a tag cannot be affixed directly to the energy isolating device, the tag shall 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.
- (5) Stored energy.
 - (i) Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

- (ii) If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.
- (6) Verification of isolation. Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and de-energization of the machine or equipment have been accomplished.
- (e) Release from lockout or tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:
 - (1) The machine or equipment. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
 - (2) Employees.
 - (i) The work area shall be checked to ensure that all employees have been safely positioned or removed.
 - (ii) After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.
 - (3) Lockout or tagout devices removal. Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. Exception to paragraph (e)(3): When the authorized employee who applied the lockout or tagout device is not available to remove it, that 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 shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:
 - (i) Verification by the employer that the authorized employee who applied the device is not at the facility;
 - (ii) Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and

- (iii) Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.
- (f) Additional requirements.
 - (1) Testing or positioning of machines, equipment or components thereof. In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:
 - (i) Clear the machine or equipment of tools and materials in accordance with paragraph (e)(1) of this section;
 - (ii) Remove employees from the machine or equipment area in accordance with paragraph (e)(2) of this section;
 - (iii) Remove the lockout or tagout devices as specified in paragraph (e)(3) of this section;
 - (iv) Energize and proceed with testing or positioning;
 - (v) Deenergize all systems and reapply energy control measures in accordance with paragraph (d) of this section to continue the servicing and/or maintenance.
 - (2) Outside personnel (contractors, etc.).
 - (i) Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.
 - (ii) The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.
 - (3) Group lockout or tagout.
 - (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 or tagout device.
 - (ii) Group lockout or tagout devices shall be used in accordance with the procedures required by paragraph (c)(4) of this section including, but not necessarily limited to, the following specific requirements:

- (A) Primary responsibility is 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 for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment and
 - (C) When more than one crew, craft, department, etc. is involved, assignment of overall job-associated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and
 - (D) Each authorized employee shall affix a personal lockout or tagout device to the group lockout 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.
- (4) Shift or personnel changes. Specific procedures shall be utilized 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 oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

BILLING CODE 4510-26-M
(FR Doc. 89-20574 Filed 8-31-89; 8:45 am)
BILLING CODE 4510-26-C

Stat. Auth.: ORS 654.025(2) and ORS 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 2-1990, f. 1/19/90, ef. 3/1/90.
OR-OSHA Admin. Order 4-1991, f. 2/25/91, ef. 3/15/91.
OR-OSHA Admin. Order 12-2001, f. 10/26/01, ef. 10/26/01.
OR-OSHA Admin. Order 3-2011, f. 11/1/11, ef. 11/1/11.

Note: The following Appendix to 1910.147 serves as a nonmandatory guideline to assist employers and employees in complying with the requirements of this section, as well as to provide other helpful information. Nothing in the Appendix adds to or detracts from any of the requirements of this section.

Appendix A to 1910.147 – Typical Minimal Lockout Procedure

General

The following simple lockout procedure is provided to assist employers in developing their procedures so they meet the requirements of this standard. When the energy isolating devices are not lockable, tagout may be used, provided the employer complies with the provisions of the standard which require additional training and more rigorous periodic inspections. When tagout is used and the energy isolating devices are lockable, the employer must provide full employee protection (see paragraph (c)(3)) and additional training and more rigorous periodic inspections are required. For more complex systems, more comprehensive procedures may need to be developed, documented and utilized.

Lockout Procedure

Lockout procedure for

(Name of Company for single procedure or identification of equipment if multiple procedures are used.)

Purpose

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

Compliance With This Program

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize or use that machine or equipment.

Type of compliance enforcement to be taken for violation of the above.

Sequence Of Lockout

- (1) Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.
-

Name(s)/Job Title(s) of affected employees and how to notify.

- (2) The authorized employee shall refer to the company procedure to identify the type and magnitude of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.
-

Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.

- (3) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress stop button, open switch, close valve, etc.).
-

Type(s) and location(s) of machine or equipment operating controls.

- (4) Deactivate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).
-

Type(s) and location(s) of energy isolating devices.

- (5) Lockout the energy isolating device(s) with assigned individual lock(s).
 - (6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
-

Type(s) of stored energy--methods to dissipate or restrain.

- (7) Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

Caution: Return operating control(s) to neutral or “off” position after verifying the isolation of the equipment.

Method of verifying the isolation of the equipment.

- (8) The machine or equipment is now locked out.

Restoring Equipment To Service. When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken:

- (1) Check the machine or equipment and the immediate area around the machine or equipment to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
- (2) Check the work area to ensure that all employees have been safely positioned or removed from the area.
- (3) Verify that the controls are in neutral.
- (4) Remove the lockout devices and reenergize the machine or equipment.

Note: The removal of some forms of blocking may require reenergization of the machine before safe removal.

- (5) Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

(54 FR 36687, Sept. 1, 1989, as amended at 54 FR 42498, Oct. 17, 1989; 55 FR 38685, 38686, Sept. 20, 1990)
BILLING CODE 4510-26-C; 4510-26-M

Stat. Auth.: ORS 654.025(2) and ORS 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 2-1990, f. 1/19/90, ef. 3/1/90.
OR-OSHA Admin. Order 4-1991, f. 2/25/91, ef. 3/15/91.

Non-Mandatory Appendix to 1910.147 – Alternative Control of Hazardous Energy

Procedure for aerial tramways, aerial lifts and tows

An alternate procedure is needed to perform regular operation and maintenance on specialized cable transport systems. As such, Oregon OSHA recognizes that the nature of equipment locations over long distances and elevation require remote active work positions. The following procedures, when implemented, will be viewed as complying with the comparable provisions of 1910.147 Control of Hazardous Energy Standard (lockout/tagout).

Alternative Procedure Criteria:

- (A) If the procedures in this appendix are adhered to, employees may operate and maintain the lift equipment using the control circuit stop switches for repetitive type work on towers and terminals. Manual reset stop switches, which are considered disconnect switches, are required on all lifts.*
- (B) A designated operator in charge (OIC), as described in ANSI B77.1-2011, must be trained and experienced in normal operational and emergency procedures. The OIC must be stationed at the control console and have the exclusive authorization to energize and move a lift or tow.*
- (C) If the OIC leaves the control console or station while employees are working on the equipment at remote locations:
 - (1) An energy isolating device on the disconnect switch is required.*
 - (2) Post a sign on the control panel or the main electrical disconnect stating “employees working on lift” with their current location.*
 - (3) All potential stored energy in the drive bullwheel must be removed by setting bullwheel brakes, ensuring other power sources are secured.**
- (D) Training.
 - (1) All personnel working under this procedure must be thoroughly trained in the specific procedures of their individual responsibilities.*
 - (2) Remote work crews must be trained in how the lift may come into motion, where to position themselves, and how to activate remote stop switches.**
- (E) Communication.*

The OIC must communicate to all exposed employees when a zero energy state is in effect. In addition, the OIC must confirm movement requests with all work crews prior to engagement.

- (1) The preferred method is a radio channel for communication between the OIC and remote work crews.*
 - (2) If anyone loses communication, it must be restored before resuming work or prior to removing energy control devices.*
 - (3) All lift controls and radios for communication must be checked for proper function prior to any work. Ensure that radio battery life is sufficient for the duration of the work.*
 - (4) Communication between the OIC and remote work crews will be on a positive identification and location basis using consistent and defined terminology. This is critical if there are other radio communications or other crews working on other lifts.*
- (F) Work basket platform (work chair).*
- (1) The OIC and work crew must determine a safe speed for the particular lift.*
 - (2) The work basket must not travel around the terminal bullwheel when loaded with passengers, except at a very slow speed.*
 - (3) Employees riding in the work basket must face the direction of travel when in motion.*
 - (4) Employees in a work basket must ensure that equipment or tools, etc., will not be entangled on towers, ramps, or terminals as a work basket passes. All tools must be kept within the work basket when moving.*
 - (5) Ensure that no one is permitted to work below the work basket during service and maintenance.*
 - (6) Use personal fall protection system with designated anchor points on each work basket for employees to attach to. Employees must use caution when transferring between the work chair and tower to avoid incorrect attachment.*
 - Employees must not hook onto the tower or tower equipment while in the work basket.*
 - Employees working from the towers must not hook onto any moving part of the lift.*

- (7) *Work chair passengers and OIC must agree on communications prior to moving the work chair. The OIC must confirm the current location of work chair, intended destination of work chair, the approximate distance they will travel, and that all passengers and their lanyards are clear prior to moving work chair.*

437-002-0156 Heat Illness Prevention

- (1) *Scope and application. This standard applies whenever an employee performs work activities, whether in indoor or outdoor environments, where the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit.*

Note: *When another applicable standard addresses other hazards that may be present, employers must comply with the requirements of that standard and this standard. Where the requirements of one standard are more protective than another for the same hazard, employers must follow the requirements that provide the higher level of employee protection.*

- (a) *The following workplaces and operations are exempt from the requirements of this standard.*
- (A) *Incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period.*
 - (B) *Exposures to heat generated from the work process – such as occurs in bakeries – is not subject to this standard. In such cases, employers must follow the requirements of OAR 437-002-0144(2).*
 - (C) *All emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications, when employees are engaged in those operations.*
 - (D) *Buildings and structures that have a mechanical ventilation system that keeps the heat index below 80 degrees Fahrenheit.*
- (b) *The following workplaces and operations are partially exempt from certain requirements of this standard.*
- (A) *Employers whose employees perform either “rest” or “light” workloads, as defined in Table 1.1 of Appendix A: Mandatory Information for Heat Illness Prevention, are exempt from the requirements of sections (3) through (10) only when the heat index is less than 90 degrees Fahrenheit.*
 - (B) *Associated support activities for wildland firefighters, such as fire camp services and fire management, are exempt only from the requirements of section (7).*

(C) *Employees who work from home are subject only to the training requirements in sections (9) and (10).*

(2) *Definitions.*

- (a) **Acclimatization** - *Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within seven to fourteen days of regular work for at least two hours per day in the heat. This time frame applies to fit individuals with no underlying medical conditions.*
- (b) **Drinking water** - *Potable water that is suitable to drink and that is cool (66 °F – 77 °F) or cold (35 °F – 65 °F).*
- (c) **Heat Illnesses** - *Medical conditions resulting from the body's inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope, and heat stroke.*
- (d) **Shade** - *Blockage of direct sunlight is shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not sufficient when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with working air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions, and that does not deter or discourage access or use.*
- (e) **Temperature-controlled environment** - *an indoor setting where the temperature is maintained with a mechanical cooling system.*

(3) *Access to shade. Establish and maintain one or more shade areas that are immediately and readily available to exposed employees that are outdoors when the heat index in the work area equals or exceeds 80 degrees Fahrenheit. The shade areas must meet the following criteria:*

- (a) *The shade area must either be open to the outside air (at least three open sides) or provide mechanical ventilation for cooling.*
- (b) *The amount of shade present must be at least enough to accommodate the number of employees on recovery or rest period, so that they can sit in a normal posture fully in the shade. Employees must remove any PPE that retains heat, such as chemical resistant suits, during recovery and rest periods.*

- (c) *The shade must be located as close as practical to the areas where employees are working.*
- (d) *Shade present during meal periods must be large enough to accommodate the number of employees on the meal period that remain onsite.*
- (e) *If trees or other vegetation are used to provide shade, such as in orchards or forests, the thickness and shape of the shaded area must provide sufficient shadow to protect employees.*

Exception: *When the employer can demonstrate that providing access to shade is not safe or it interferes with the ability of employers and employees to complete the necessary work in a particular situation, for example, during high winds or when an employee is walking through range land, employers must identify and implement alternative cooling measures that provide equivalent protection such as providing cooling vests (either with fans or ice packs), water-dampened cotton clothing, or similar effective measures. The Heat Illness Prevention Plan under section (8) must include the use, care, and maintenance of the alternative cooling methods, in writing.*

- (4) *Drinking water. Ensure that a sufficient supply of drinking water is immediately and readily available to exposed employees at all times, at no cost, when the heat index in the work area equals or exceeds 80 degrees Fahrenheit.*
 - (a) *Supplied drinking water must be either cool or cold, see subsection (2)(b).*
 - (b) *Supply each employee with enough drinking water to enable them to consume up to 32 ounces per hour. Employers are not required to supply the entire quantity of drinking water needed for all employees on a full shift at the beginning of the shift. Employers may begin the shift with smaller quantities of drinking water when effective procedures are established to replenish the water consumed during the shift.*
 - (c) *Employees must have ample opportunity to drink water required under this section.*

Note: *Drinking water packaged as a consumer product and electrolyte-replenishing beverages that do not contain caffeine (for example, sports drinks) are acceptable substitutes, but should not completely replace required water supplies.*

- (5) *High-heat practices. When engineering controls (such as fans or air conditioning) and administrative controls (such as scheduling work during the cooler part of the day or limiting an employee's exposure) do not reduce an employee's exposure to a heat index of less than 90 degrees Fahrenheit, implement and maintain high-heat practices and procedures by following subsections (5)(a) through (e) below.*

- (a) *Communication must occur in a language and vocabulary readily understood by all employees, by voice, electronic, or other equally-effective means, so that employees at the worksite can contact a supervisor at any time, when necessary. An electronic device, such as a cell phone, may be used for this purpose only if reception in the area is constant and reliable.*
- (b) *Implement one or more of the following to promptly identify any employee suspected of experiencing heat-related illness:*
 - (A) *Regular communication with employees working alone, such as by radio, cellular phone, or other alternative means;*
 - (B) *Create a mandatory buddy system; or*
 - (C) *Implement other equally-effective means of observation or communication.*
- (c) *Designate and equip one or more employees at each worksite as authorized to call for emergency medical services, and allow other employees to call for emergency services when designated employees are not immediately available; such a practice supplements existing requirement to ensure that emergency medical care is immediately available in all workplaces, as required by OAR 437-002-0161(4), 29 CFR 1910.50, or OAR 437-007-0220.*
- (d) *When employees work in buildings and structures that do not have a mechanical ventilation system, employers must:*
 - (A) *Directly measure the temperature and humidity in these places at the same time and location when occupied by employees to determine the current indoor heat index;*
 - (B) *Use the National Institute for Occupational Safety and Health's (NIOSH) Heat Safety Tool app to determine the heat index outside of the building or structure and assume that it is the same inside (See section 2 in Appendix A: Mandatory Information for Heat Illness Prevention); or*
 - (C) *If the structure is designed or otherwise known to be affected by outdoor humidity, for example, hoop houses and greenhouses in nursery operations, the employer must measure and use the actual humidity inside the structure.*

- (e) *Develop and implement a written heat illness prevention rest break schedule that protects employees exposed to a heat index equal to or greater than 90 degrees Fahrenheit. Employers must choose and implement only one of the three options; choose either (A), (B), or (C) as described below.*

Note: *The purpose of the heat illness prevention rest breaks is to allow the body to cool down and recover from working when the heat index equals or is greater than 90 degrees Fahrenheit.*

Note: *Option (A) allows an employer to implement a self-designed schedule by building on a minimum rest break schedule using four specified elements. Option (B) allows an employer to implement a schedule by using an example heat illness prevention plan designed by NIOSH. Option (C) allows an employer to implement a schedule by using a simplified schedule designed by Oregon OSHA and based on a high-heat scenario in the NIOSH plan.*

(A) *Employer-designed heat illness prevention rest break schedule: Implement a written employer-specific, heat illness prevention rest break schedule using the minimum rest break durations and intervals in Table 1. Employers must protect employees from heat illness by integrating the elements in subsections (i) through (iv) into to their heat illness prevention rest break schedule, which may increase the duration or interval of the rest break beyond the minimum requirements to be protective.*

- (i) *The effect of personal protective equipment (PPE) on the body’s ability to retain heat;*
- (ii) *The effect of the type of work clothing on the body’s ability to retain heat;*
- (iii) *Relative humidity, whether work activities are indoors or outdoors; and*
- (iv) *The intensity of the work being performed.*

Note: *Employers should consider the effect of exposure to direct sunlight when developing employer-specific heat illness prevention rest break schedule.*

Table 1 - Minimum employer-designed heat illness prevention rest break schedule, upon which subsections (i) through (iv) must be applied:

Heat index (°F)	Rest break durations and intervals
<i>90 or greater</i>	<i>10 minutes every two hours</i>
<i>100 or greater</i>	<i>15 minutes every hour</i>

- (B) *NIOSH work/rest schedule: Implement a written heat illness prevention rest break schedule using the information found in section 3 of Appendix A: Mandatory Information for Heat Illness Prevention based on NIOSH recommendations.*

Note: The NIOSH work/rest schedule uses unadjusted ambient temperatures (in degrees Fahrenheit), and employers must follow the instructions underneath Table 3.1 in Appendix A: Mandatory Information for Heat Illness Prevention. Employers must be aware that different work/rest schedules exist for those wearing chemical-resistant suits; see Table 3.2 in Appendix A: Mandatory Information for Heat Illness Prevention.

- (C) *Simplified heat illness prevention rest break schedule: Implement a written simplified heat illness prevention rest break schedule using Table 2.*

Table 2 - Minimum simplified rest break schedule:

<i>Heat index (°F)</i>	<i>Rest break durations and intervals</i>
<i>90 or greater</i>	<i>10 minutes every two hours</i>
<i>95 or greater</i>	<i>20 minutes every hour</i>
<i>100 or greater</i>	<i>30 minutes every hour</i>
<i>105 or greater</i>	<i>40 minutes every hour</i>

Note: The Table 2 heat illness prevention rest break schedule is only required during the specified heat index.

- (f) *The heat illness prevention rest breaks under subsection (5)(e) are only required during the specified heat index, and may be provided concurrently with any other meal or rest period required by policy, rule or law – if the timing of the preventative rest break coincides with the otherwise required meal or rest period. However, the heat illness prevention rest break must be calculated using only the time spent in the shade and when employees are not performing work other than “rest” or “light” work. The requirement for heat illness prevention rest breaks does not prohibit “rest” or “light” work-related activities conducted in a temperature-controlled environment, such as paperwork, at the discretion of the employee.*
- (g) *Except when the heat illness prevention rest breaks coincide with the existing unpaid meal break, the heat illness prevention rest break is a work assignment. Heat illness prevention rest breaks are only required during the time of the shift that the heat index equals or exceeds 90 degrees Fahrenheit.*

- (6) *Emergency medical plan. The employer's Emergency Medical Plan must address employee exposure to excessive heat, in accordance with OAR 437-002-0161(4). When employers are performing Construction activities, they must also comply with 29 CFR 1926.50. For those employers that fall under Division 7 Forest activities, they must comply with OAR 437-007-0220. These plans must address the types medical situations that employees could encounter, including those conditions relating to excessive heat exposure.*
- (7) *Acclimatization plan. Develop and implement an acclimatization plan and procedures in writing. Employers must choose between two options, either (a) or (b) as described below, and implement the chosen plan.*
- (a) *Employer-designed acclimatization plan option: Employers who develop their own acclimatization plan must integrate and implement the following factors into their program:*
- (A) *Acclimated and unacclimated workers;*
 - (B) *The effects of clothing and personal protective equipment on adding to the heat burden of workers;*
 - (C) *The personal and environmental risk factors that put workers at a higher risk of heat-related illness;*
 - (D) *Re-acclimatizing workers as necessary, either due to changes in the weather or a worker spending more than seven days away from the job; and*
 - (E) *The use and maintenance of auxiliary cooling systems such as water-cooled garments, air-cooled garments, cooling vests, and wetted overgarments.*
- (b) *NIOSH acclimatization plan option: Employers that choose not to develop their own acclimatization plan must follow the acclimatization plan developed by the Centers for Disease Control and Prevention and NIOSH; see section 4, Appendix A: Mandatory Information for Heat Illness Prevention.*

Note: *Based upon the variable weather patterns across the state, Oregon OSHA recognizes that there is no "one-size-fits-all" acclimatization plan. Employers should be aware that acclimatization to heat takes longer for unfit individuals compared to fit individuals.*

Note: *Employers should consider the effect of exposure to direct sunlight when developing their acclimatization plan.*

- (8) *Heat illness prevention plan. Develop, implement, and maintain an effective heat illness prevention plan in writing. The plan must be made available at the worksite to employees and to Oregon OSHA upon request. The plan must contain at least the following information:*
- (a) *How employees will be trained on the hazards of heat exposure and the necessary steps to prevent heat-related illnesses;*
 - (b) *How to recognize the symptoms of dehydration, and how to respond to suspected heat-related illnesses in others;*
 - (c) *How sufficient amounts of cool, potable water in work areas will be provided;*
 - (d) *How employees will be provided frequent opportunities and encouragement to stay hydrated by drinking water;*
 - (e) *How employees will be provided sufficient space to rest in a shaded area or cool climate-controlled area, and where heat-affected employees may cool off and recover when signs and symptoms of heat-related illnesses are recognized;*
 - (f) *How the employer will implement the heat illness prevention rest break schedule when necessary to keep employees safe; and*
 - (g) *How the employer will implement heat acclimatization procedures for new employees or employees returning to work from extended absences of seven or more days.*
- (9) *Supervisor and employee training. Provide heat illness prevention training to all employees, including new employees, supervisory and non-supervisory employees in a language and vocabulary readily understood, and in a manner that facilitates employee feedback. Such training must be provided annually before employees begin work that should reasonably be anticipated to expose them to the risk of heat illness, and include at least the following:*
- (a) *The environmental and personal risk factors (for example, chronic obstructive pulmonary disease, asthma, kidney disease, obesity, etc.) for heat illness that may limit an individual's tolerance to excessive heat, as well as the added burden of heat load on the body caused by exertion, clothing (See section 5 in Appendix A: Mandatory Information for Heat Illness Prevention), and personal protective equipment;*

- (b) *The employer's procedures for complying with the requirements of this standard, including, but not limited to, the employer's responsibility to provide water, heat index information (including the risks to experiencing a heat-related illness), shade, preventative rest breaks, and access to first aid, as well as how employees can exercise their rights under this standard without fear of retaliation;*
 - (c) *The importance of frequent consumption of small quantities of water, up to 32 ounces per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties;*
 - (d) *The concept, importance, and methods of the acclimatization plan pursuant to the employer's procedures under section (8);*
 - (e) *The different types of heat illness, the common signs and symptoms of heat illness, and the appropriate first aid and emergency response to the different types of heat illness, including how heat illness may progress quickly from mild signs and symptoms to a serious and life-threatening condition;*
 - (f) *The importance for employees to immediately report to the employer, directly or through the employee's supervisor, signs and symptoms of heat illness in themselves or in others; and*
 - (g) *The effects of nonoccupational factors (drugs, alcohol, obesity, etc.) on tolerance to occupational heat stress.*
- (10) *Training documentation. Verify compliance with section (9) by preparing and maintaining written or electronic training records that can be provided to Oregon OSHA upon request. Such records must contain the name or identification of each employee trained, the date(s) of the training, and the name of the person who conducted the training. The most recent annual training record for each affected employee must be maintained.*

Statutory/Other Authority: ORS 654.025(2), 654.035 & 656.726(4)

Statutes Implemented: ORS 654.001 through 654.295

History: OSHA 3-2022, adopt filed 05/09/2022, effective 06/15/2022

Appendix A to 437-002-0156 - Mandatory Information for Heat Illness Prevention

To protect the health and safety of employees from heat-related illnesses, employers should consider using the resources in this appendix. Please note that some resources may use temperatures in Celsius instead of Fahrenheit. To convert to degrees Fahrenheit, use this formula: Fahrenheit (°F) = (Celsius x 1.8) + 32

- 1. Most heat-related illnesses affect workers who do strenuous physical activity. When workers engage in intense work, their bodies create heat. This "metabolic" heat combines with environmental heat (from temperature, sunlight, humidity, etc.) so workers' core temperature can rise to dangerous levels. To prevent a hazardous combination of environmental and metabolic heat, employers should be aware of workers' activity level.*

Workload can be classified as rest, light, moderate, heavy, or very heavy.

- Light: Sitting or standing with minimal arm and leg work.*
- Moderate: Continuous modest intensity, such as light pushing/pulling or normal walking.*
- Heavy: Intense upper body work such as carrying loads or sawing.*
- Very heavy: Intense activity at an almost maximum pace.*

Table 1.1 Metabolic Heat and Workload (Physical Activity Level)

Level of Workload / Physical Activity *	Examples	Metabolic Rate in Watts, "typical" recognizing that different ways of doing the same task may lead to dramatically different wattage
<i>Rest</i>	<ul style="list-style-type: none"> • <i>Sitting</i> • <i>Thinking</i> 	<i>115</i>
<i>Light</i>	<ul style="list-style-type: none"> • <i>Sitting with minimal hand and arm work</i> • <i>Sewing</i> • <i>Writing or drawing</i> • <i>Driving a car</i> • <i>Occasional or slow walking</i> • <i>Stooping, crouching, or kneeling</i> • <i>Standing watch</i> 	<i>180</i>
<i>Moderate</i>	<ul style="list-style-type: none"> • <i>Pushing and pulling light carts</i> • <i>Hammering nails</i> • <i>Picking fruit or vegetables</i> • <i>Continuous normal walking</i> • <i>Driving or operating mobile equipment</i> • <i>Raking</i> • <i>Mopping or vacuuming floors</i> • <i>Scraping, painting, or plastering</i> • <i>Laundry/dry cleaning</i> • <i>Tapping and drilling</i> • <i>Machining</i> • <i>Molding</i> • <i>Packaging</i> • <i>Laboratory work</i> • <i>Cooking</i> • <i>General carpentry</i> • <i>Using hand tools</i> • <i>Light pushing/pulling or normal walking.</i> 	<i>300</i>

Level of Workload / Physical Activity *	Examples	Metabolic Rate in Watts, <i>“typical” recognizing that different ways of doing the same task may lead to dramatically different wattage</i>
Heavy	<ul style="list-style-type: none"> • Intense arm and trunk work • Carrying loads • Shoveling • Sawing or heavy carpentry • Roofing • Pushing and pulling heavy carts or wheelbarrows • Fast walking (> 4 mph) • Landscaping • Casting • Manual raising and lowering loads • Stacking lumber • Truck and automobile repair • Waxing and buffing by hand • Welding • Heavy item assembly • Grinding and cutting • Drilling rock or concrete • Mixing cement • Felling trees 	415
Very heavy	<ul style="list-style-type: none"> • Any activity done at near maximum pace • Climbing stairs, ladder, or ramp • Using an axe • Intense shoveling or digging • Sledgehammer use • Stacking concrete • Brick or stone masonry 	520

* Workers who are overweight or obese might produce more metabolic heat than other workers who perform the same tasks. The above table assumes a 70-kg (154-pound) worker.

Table 1.1 is copied from federal OSHA’s guidance on Heat Hazard recognition, which can be accessed at: <https://www.osha.gov/heat-exposure/hazards> under the Metabolic Heat and Workload (Physical Activity Level) tab

2. The OSHA-NIOSH Heat Safety Tool app is a useful resource for planning outdoor work activities based on how hot it feels throughout the day. It features real-time heat index and hourly forecasts specific to your location, as well as occupational safety and health recommendations from OSHA and NIOSH. It can be accessed and downloaded at: <https://www.osha.gov/heat/heat-app>
3. NIOSH Work/rest schedules.

A. Table 3.1. Work/rest schedules for workers wearing normal work clothing*

Adjusted temperature (°F)†	<u>Light work</u> (minutes work/rest)	<u>Moderate work</u> (minutes work/rest)	<u>Heavy work</u> (minutes work/rest)
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	Normal	30/30	20/40
105	Normal	25/35	15/45
106	45/15	20/40	Caution‡
107	40/20	15/45	Caution‡
108	35/25	Caution‡	Caution‡
109	30/30	Caution‡	Caution‡
110	15/45	Caution‡	Caution‡
111	Caution‡	Caution‡	Caution‡
112	Caution‡	Caution‡	Caution‡

* With the assumption that workers are physically fit, well-rested, fully hydrated, under age 40, and have adequate water intake and that there is 30% RH [relative humidity] and natural ventilation with perceptible air movement.

† Note: Adjust the temperature reading as follows before going to the temperature column in the table: Full sun (no clouds): Add 13°
Partly cloudy/overcast: Add 7°
No shadows visible/work is in the shade or at night: no adjustment
Per relative humidity:
10%: Subtract 8°
20%: Subtract 4°
30%: No adjustment
40%: Add 3°

50%: Add 6°

60%: Add 9°

‡ High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 3.1 above is copied from the following publication; see page 76 in NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

B. Table 3.2 Work/rest schedules for those wearing chemical resistant suits.

		Air Temperature (°F)				
		75	80	85	90	95
Light work	Full sun	Normal	30/30	15/45	Caution§	Stop work
	Partly cloudy	Normal	Normal	40/20	15/45	Stop work
	No sun†	Normal	Normal	Normal	40/20	14/45
Moderate work	Full sun	Normal	20/40	10/50	Caution§	Stop work
	Partly cloudy	Normal	Normal	25/35	Caution§	Stop work
	No sun†	Normal	Normal	Normal	25/35	Stop work
Heavy work	Full sun	35/25‡	10/50	Caution§	Stop work	Stop work
	Partly cloudy	Normal	40/20	15/45	Caution§	Stop work
	No sun†	Normal	Normal	40/20	15/45	Stop work

* With the assumption that workers are heat-acclimatized, under the age of 40, physically fit, well-rested, fully hydrated, and wearing Tyvek coveralls, gloves, boots, and a respirator. Cooling vests may enable workers to work for longer periods. Adjustments must be made when additional protective gear is worn.

† No shadows are visible or work is in the shade or at night.

‡ 35 minutes work and 25 minutes rest each hour.

§ High levels of heat stress; consider rescheduling activities.

Adapted from EPA [1993]

Table 3.2 above is copied from the following publication; see page 77 in NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N.

Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

4. Acclimatization.

Table 4.1 Acclimatization in workers

Topics	Additional information
<i>Disadvantages of being unacclimatized</i>	<ul style="list-style-type: none"> • <i>Readily show signs of heat stress when exposed to hot environments.</i> • <i>Difficulty replacing all of the water lost in sweat.</i> • <i>Failure to replace the water lost will slow or prevent acclimatization.</i>
<i>Benefits of acclimatization</i>	<ul style="list-style-type: none"> • <i>Increased sweating efficiency (earlier onset of sweating, greater sweat production, and reduced electrolyte loss in sweat).</i> • <i>Stabilization of the circulation.</i> • <i>Work is performed with lower core temperature and heart rate.</i> • <i>Increased skin blood flow at a given core temperature.</i>
<i>Acclimatization plan</i>	<ul style="list-style-type: none"> • <i>Gradually increase exposure time in hot environmental conditions over a period of 7 to 14 days.</i> • <i>For new workers, the schedule should be no more than 20% of the usual duration of work in the hot environment on day 1 and a no more than 20% increase on each additional day.</i> • <i>For workers who have had previous experience with the job, the acclimatization regimen should be no more than 50% of the usual duration of work in the hot environment on day 1, 60% on day 2, 80% on day 3, and 100% on day 4.</i> • <i>The time required for non-physically fit individuals to develop acclimatization is about 50% greater than for the physically fit.</i>
<i>Level of acclimatization</i>	<ul style="list-style-type: none"> • <i>Relative to the initial level of physical fitness and the total heat stress experienced by the individual.</i>
<i>Maintaining acclimatization</i>	<ul style="list-style-type: none"> • <i>Can be maintained for a few days of non-heat exposure.</i> • <i>Absence from work in the heat for a week or more results in a significant loss in the beneficial adaptations leading to an increased likelihood of acute dehydration, illness, or fatigue.</i> • <i>Can be regained in 2 to 3 days upon return to a hot job.</i> • <i>Appears to be better maintained by those who are physically fit.</i> • <i>Seasonal shifts in temperatures may result in difficulties.</i> • <i>Working in hot, humid environments provides adaptive benefits that also apply in hot, desert environments, and vice versa.</i> • <i>Air conditioning will not affect acclimatization.</i>

Adapted from [Moseley 1994; Armstrong and Stoppani 2002; DOD 2003; Casa et al. 2009; ACGIH 2014; OSHA-NIOSH 2011].

Table 4.1 above is copied from the following publication; see page 34. NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

5. *Clothing adjustment factors.*

Table 5.1 Clothing adjustment factors exist for various types of clothing.

Clothing	Clothing adjustment factors (°C-WBGT)	
	Previous	2006
<i>Work clothing (baseline)</i>	0	0
<i>Cloth coveralls</i>	3.5	0
<i>Double-layer cloth clothing</i>	5	3
<i>Spunbound melt-blown synthetic (SMS) coveralls</i>	-	0.5
<i>Polyolefin coveralls</i>	-	1
<i>Limited-use vapor-barrier coveralls</i>	-	11

Adapted from Bernard TE, Threshold Limit Values for Physical Agents Committee, ACGIH [2014].

Table 5.1 above is copied from the following publication; see page 19. NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2016-106.

Historical Notes for Subdivision J

Note: OAR 437, Subdivision 2/J, General Environmental Controls, was adopted by reference by the following OR-OSHA Administrative Orders:

Note: OR-OSHA Admin. Order 2-1990, filed 1/19/90, EFFECTIVE 3/1/90, adopted by reference 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout), with the exception of 1910.147(a)(1)(ii)(A) and (f)(3). This federal standard superseded and replaced Lockout/Tagout rules in Division 2/O, Machinery and Machine Guarding, and Division 75, Pulp, Paper and Paperboard Mills. In Oregon, these rules continue to be applicable to all Oregon industries, and does NOT permit group lockout. Oregon-initiated rule 437-002-0154 requires that all locks be unique.

Amended by OR-OSHA Admin. Order 4-1991, filed 2/25/91, effective 3/15/91.

Note: OR-OSHA Admin. Order 13-1992, filed 12/7/92, EFFECTIVE 2/1/93, adopted by reference the remainder of the federal standards in Division 2/J, with the exception of 1910.142, Temporary Labor Camps, and 1910.141(a)(2)(v) and (d)(3)(iii).

OAR 437-002-0140 is the Oregon-initiated rule which adopts by reference the federal standards. Two more Oregon-initiated rules have been adopted: OAR 437-002-0141 contains rules which have been retained from Division 112, Water and Sanitation; and OAR 437-002-0142 contains the Oregon Labor Camp rules, which have been redesignated and renumbered from Division 147, Labor Camps.

The following five Oregon codes were replaced by rules in Division 2/J, EFFECTIVE 2/1/93:

- a) Division 54, Accident Prevention Signs, Symbols and Tags;
- b) Division 112, Water and Sanitation;
- c) Division 113, Warning Signs, Tags and Labels;
- d) Division 128, Subsurface Sewage and Nonwater Carried Toilet Facilities; and
- e) Division 147, Labor Camps (redesignated and renumbered as OAR 437-002-0142).

Note: OR-OSHA Admin. Order 8-1993, filed 7/1/93, EFFECTIVE 7/1/93, adopted by reference the new federal standard 1910.146, Permit-Required Confined Spaces. This adoption includes corrections made by Federal OSHA which were published in the Federal Register on 6/29/93, vol. 58, no. 123, p. 23844.

Note: OR-OSHA Admin. Order 5-1994, filed 9/30/94, EFFECTIVE 9/30/94, adopted amendments to §1910.146 Appendix E and a correction to §1910.146(k)(3)(ii), made by Federal OSHA, which were published in the Federal Register on 5/19/94, vol. 59, no. 96, pp. 26114-26116.

Note: OR-OSHA Admin. Order 6-1994, filed 9/30/94, EFFECTIVE 9/30/94, redesignated several rules from Division 40, General Provisions, and Division 136, General Occupational Health Regulations. The wording in the rules was not changed from that in Divisions 40 and 136; only the rule numbers have been changed to Division 2 numbers.

Note: OR-OSHA Admin. Order 10-1995, filed 11/29/95, EFFECTIVE 11/29/95, adopted changes to Oregon-initiated rule OAR 437-002-0142, Labor Camps. These changes comply with Senate Bill 705 which the 1995 Oregon Legislature passed into law. This action transfers farm worker camp registration activities from the Bureau of Labor and Industries (BOLI) to Oregon OSHA. (This also affected rules in Division 1, General Administrative Rules.)

Note: Oregon OSHA adopted by reference corrections and technical amendments issued by federal OSHA and published in the Federal Register. Federal OSHA made simple corrections, deleted redundant provisions, and clarified and reorganized various other provisions throughout the standards. OR-OSHA Admin. Order 4-1997, filed 4/2/97, effective 4/2/97.

Note: Federal OSHA made amendments in general industry and construction in both safety and health standards that will revise or eliminate duplicative, inconsistent, or unnecessary regulatory requirements without diminishing employee protections. Changes being made to health standards include reducing the frequency of required chest x-rays and eliminating sputum-cytology examinations for workers covered by the coke oven and inorganic arsenic standards, and changing the emergency-response provisions of the vinyl chloride standard. Changes being made to OSHA safety standards include eliminating the public safety provisions of the temporary labor camp standard, eliminating unnecessary cross-references in the textile industry standards, and others. OR-OSHA Admin. Order 4-1999, filed 4/30/99, effective 4/30/99.

Note: Federal OSHA changed the Permit Required Confined Spaces standard in General Industry (1910.146). Oregon OSHA adopted these amendments by reference into Division 2/J, General Environmental Controls. OR-OSHA Admin. Order 5-1999, filed 5/26/99, effective 5/26/99.

This rule amends the standard on Permit-Required Confined Spaces to provide for enhanced employee participation in the employer's permit space program, to provide authorized permit space entrants or their authorized representatives with the opportunity to observe any testing or monitoring of permit spaces, and to strengthen and clarify the criteria employers must satisfy when preparing for the timely rescue of incapacitated permit space entrants. The revisions made will substantially enhance the protections provided to permit space entrants and will additionally clarify a number of issues that have arisen since the Permit-Required Confined Spaces rule was adopted in 1993.

Note: OR-OSHA Admin. Order 5-2000, filed 5/18/00, effective 6/1/00, adopted changes to OAR 437-002-0142, Labor Camps, in general industry, and similar changes to OAR 437-004-1120, Agricultural Labor Housing and Related Facilities, in Division 4/J.

We regrouped some subjects into more logical categories. Wording or grammar in several rules changed to make the rule easier to follow and/or enforce.

Several definitions changed to reflect current practices or to more closely match the same definitions in other state regulatory documents such as those of the Building Codes Division.

A date (December 15, 1989) is now part of a few rules to make OR-OSHA requirements more synchronous with those of the Building Codes Division (BCD). For certain issues, any housing built or remodeled on or after that date must comply with BCD standards on those issues. Housing built or remodeled before that date must meet standards in effect at the time of the work. For most other issues compliance is based on the particular standard in effect at the time the work was done.

Housing units built or remodeled on or after December 15, 1989 must comply with new OR-OSHA rules and the state building code rules on emergency exits. Those rules give location and design criteria. One-room living areas no longer need a second emergency exit. Older multiroom units must comply with the old OR-OSHA rules.

We added a paragraph to prohibit citations resulting from housekeeping practices of camp occupants.

Recyclable materials like cans and bottles are no longer trash for the purposes of certain rules governing trash and refuse.

Operators must post their street numbers so that responding emergency vehicles can see them from the street.

Requirements for toilets, handwashing and bathing facilities changed to read one unit for each 15 employees or fraction thereof.

Requirements for handling and control of garbage are now restricted to outside of buildings and certain recyclable materials are not considered garbage for that rule.

Based on comments we received, three categories of registration exemptions are eliminated from the new rules. Based on ORS 654.705(7) Oregon OSHA believes these categories are already exempt from registration and need not be repeated in the rules. They are:

Dwellings occupied by the owner or owning family; or

Dwellings occupied year-round by employees who are members of a nuclear family (parents, children, grandparents or siblings); and

The original structure and any remodeling conformed to building codes or manufactured dwelling regulations in effect at the time they were done.

The following changes are proposed to have an effective date of October 1, 2000:

Housing operators must now provide a mattress or pad for any bed or bunk. The bed or bunk must keep the mattress at least 6 inches off the floor.

Each unit must have a working smoke detector at the time of initial occupancy. The operator is not responsible for actions of occupants to defeat or disable the detector.

Tent must be made of or treated with flame-retardant materials.

Note: OR-OSHA Admin. Order 12-2001, filed and effective October 26, 2001. 2/J - All changes in this subdivision are to allow the use of group lockout procedures in all Oregon standards. This change brings us into harmony with the federal OSHA standard.

Note: After meeting with stakeholders, negotiations with Federal OSHA, and giving consideration to comments received at hearings, Oregon OSHA adopts these changes to OAR 437-004-1120, Agricultural Labor Housing (ALH) and Related Facilities, in Division 4/J, Agriculture/Work Environment, to make our rules "as effective" as those of Federal OSHA.

The major changes are:

Beginning on January 1, 2018, the rule will require all agricultural labor housing, where workers cook, live and sleep in the same area, to provide 100 square feet per occupant. Square footage requirements for sleep-only areas will not change.

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.

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.

Ratios of sinks and showers will change starting on April 1, 2009. The rules on laundries and window requirements will also change on April 1, 2009.

Delayed effective dates are to give operators time to secure needed permits from local authorities and to arrange financing for projects that require major work.

Oregon OSHA removed references to tents. Tents are acceptable labor housing when they meet all the criteria in the rule, just like any other style housing.

The rule now requires heat be available in all ALH without regard to the time of year.

The rule now requires 'livestock operations' be at least 500 feet from all ALH unless the employees in the housing are employed to tend or otherwise work with the animals. This does not apply to animals owned by the housing occupants.

OAR 437-002-0142 Temporary Labor Camps in Division 2/J, General Industry/Environmental Controls, is also amended. The entire text of the rule is removed and new language is added stating that OAR 437-004-1120 applies in General Industry, Construction, and Forest Activities as well as Agriculture, except paragraphs (5), (6)(p), and (24).

This is OR-OSHA Administrative Order 4-2008, adopted March 24, 2008 and effective May 1, 2008.

Note: This rule making is to keep Oregon OSHA in harmony with recent changes to Federal OSHA's standards. We are removing several references to consensus standards that have requirements that duplicate, or are comparable to, other OR-OSHA rules; this action includes correcting a paragraph citation in one of these rules. We are also removing a reference to American Welding Society standard A3.0-1969 ("Terms and Definitions") in our general industry welding standards. This rulemaking is part of a continuing effort to update references to consensus and industry standards used throughout our rules.

OR-OSHA adopts the changes in general industry as published in the December 14, 2007 Federal Register. A reference to American National Standard Safety Requirements for Explosive-Actuated Fastening Tools, ANSI A10.3-1995 is removed in Division 4/P, Agriculture/Small Tools.

This is OR-OSHA Administrative Order 7-2008, adopted and effective May 30, 2008.

Note: This rulemaking is to keep Oregon OSHA in harmony with recent changes to Federal OSHA's standards.

Federal OSHA revised its standards in 29 CFR 1915 on general working conditions in shipyard employment. These revisions update existing requirements to reflect advances in industry practices and technology, consolidate some general safety and health requirements into a single subpart, and provide protection from hazards not addressed by existing standards, including the control of hazardous energy.

Oregon OSHA adopted the changes in general industry (1910.145, 1910.147, 1910.177) and maritime activities (1915) as published in the May 2, 2011 Federal Register. This adoption also captures the corrections Federal OSHA published in the July 25, 2011 Federal Register.

Except, in 1910.147 The Control of Hazardous Energy (lockout/tagout), Oregon OSHA did not adopt paragraph (a)(1)(ii)(A) of that rule which exempts construction and agriculture. Oregon OSHA's Division 4, Agriculture has its own Oregon-initiated OAR 437-004-1275 lockout/tagout rule, and in Division 3, Construction there are lockout/tagout rules for specific applications (1926.417, 1926.702) with an Oregon-initiated rule 437-003-0005 which allows moving to other Divisions of OAR 437 when applicable.

Also, Oregon OSHA did not adopt 1910.177 Servicing Multi-piece and Single Piece Rim Wheels, paragraph (a)(2) which exempts construction, agriculture, and longshoring. Oregon OSHA's Division 4, Agriculture has its own Oregon-initiated OAR 437-004-3550 rule on this procedure.

This is Oregon OSHA Administrative Order 3-2011, adopted and effective November 1, 2011.

Note: Oregon OSHA adopted changes to rules in general industry, construction, agriculture, and maritime. Federal OSHA published a number of rule changes in these industries in the June 8, 2011 Federal Register. This is Phase III of the Standards Improvement Project (SIP III), the third in a series of rulemaking by Federal OSHA to improve and streamline the standards. This removes or revises individual requirements within rules that are confusing, outdated, duplicative, or inconsistent.

Oregon OSHA adopted the majority of the federal changes that include:

- Personal Protective Equipment – Division 2/I, remove requirements that employers prepare and maintain written training certification records.
- Respiratory Protection – revise requirements for breathing-gas containers.
- Material Handling/Slings – revise standards in general industry, construction, and maritime standards.
- Commercial Diving Operations – Division 2/T, remove two obsolete recordkeeping requirements.
- General industry and construction – remove requirements in numerous standards for employers to transfer specific records to the National Institute for Occupational Safety and Health (NIOSH).
- Lead – amend trigger levels in general industry and construction.

In connection with rule changes in the SIP III rulemaking process, Oregon OSHA adopted additional changes to the subdivisions and rules opened during this rulemaking activity. We also made reference changes to Underground Installations in Division 3/P.

Oregon OSHA repealed all of Division 2/I rules with the exception of 1910.134 Respiratory Protection, 1910.137 Electrical Protective Equipment, 437-002-0138 Additional Oregon Rule for Electrical Protective Equipment, 437-002-0139 Working Underway on Water, and 437-002-1139 Working Over or In Water.

To replace them, we adopted new Oregon-initiated rule, 437-002-0134 Personal Protective Equipment, that includes sections covering scope/application, hazard assessment, equipment, training, payment, fall protection, clothing, high visibility garments, eye, head, foot, leg, hand and skin protection.

The change in format simplifies the existing text while making little change to the overall rule requirements with the following exceptions:

- Modifies the hazard assessment requirement to clarify that employers must identify hazards to the entire body, including the torso and extremities, when performing the assessment. The assessment is currently limited to head, hands, eyes and face and foot protection. 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.
- Change the fall protection component criteria to align with the systems criteria found in 1926.502 of the construction standards. The training requirement in this rule would also cover those parts not previously covered, such as fall protection.

Definition of “potable water”:

Previously, Oregon OSHA did not adopt 1910.141(a)(1), so the SIP-III changes to the definition of potable water must be addressed through Oregon-initiated rules. We will maintain the current definition of potable water in Division 2/J, 437-002-0141(1)(a), Sanitation and Division 4/J, 437-004-1105(1)(b), Sanitation. However, for consistency, we changed the definition of potable water in Division 4/J, 437-004-1110, Field Sanitation for Hand Labor Work, and Division 3/D, 437-003-0015 Drinking Water to the same definition.

MOCA -- 4,4'-Methylene bis (2-chloroaniline):

As a logical extension of the Federal OSHA SIP-III changes to 29 CFR 1910.1003, 13 Carcinogens, we amended the Oregon Rules for MOCA (4,4'-Methylene bis (2-chloroaniline)) at Division 2/Z, 437-002-0364. The requirements for respiratory protection are updated and the requirements for transfer of records is simplified. Most transfer of medical records to NIOSH is eliminated with the SIP III rulemaking. The employer is required to follow the requirements of the Respiratory Protection rule and select appropriate respirators based on the selection criteria in 1910.134(d). (The type of respirator to use is no longer specified.) We will also remove and reserve 437-002-0364(6)(a) which had a reporting requirement end date of December 1974.

This is Oregon OSHA Administrative Order 4-2011, adopted and effective December 8, 2011.

Note: Oregon OSHA adopts new rule, OAR 437-002-0146 Confined Spaces, which replaces 1910.146 Permit-Required Confined Spaces, in Division 2/J General Environmental Controls. This expands the scope of the new rule to include the construction industry.

During the 2011 proposal, several issues were discovered that needed to be resolved. We reconvened our stakeholder groups to resolve those issues and addressed any other areas for clarification. The identified issues include: revising and including several definitions, language for closing permits, ensuring employee access to written materials, ensuring all actions required by the permit are followed, and clarifying when alternate entry cannot be used.

Other areas amended for clarification include:

Permit Space Program.

- Changed the requirement to catalog all confined spaces to catalog all permit spaces.
- If the permit program needs to be revised, the language was changed that prohibiting entry into any space; to any space that is affected by that revision until the revision is complete.

Evacuation. Added language on what to do if entrants need to evacuate a permit space.

Decontamination. There was language requiring patient decontamination. The group consensus was to move this language to the appendix on rescue. In its place, language was added requiring MSDSs and providing them to the medical providers.

Rescue.

- For non-entry rescue – modified the language to include a rescue person, as the rescue “team” may only consist of the attendant retrieving the entrant from the space.
- For entry rescue – language change from ensuring the rescue team can proficiently perform rescues to ensuring rescue teams can efficiently perform rescues.
- Added language requiring that, if a third-party rescue service is used, that the agreement is in writing.

Alternate Entry.

- Changed the language in the exception for alternate entry.
- Added language to specify which parts of the rule don't apply when one uses alternate entry.

- Added a condition on when the space must be evacuated during alternate entry (new hazard or conditions change).

Training. Moved the awareness training piece to the bottom of the training section to avoid confusion and clarified that it is only for employees who work around permit spaces.

Records. Modified the record retention section to refer back to the rule that requires a review of the permit program.

The requirements of this standard are similar to the requirements of the existing general industry standard, but are written to clarify employer obligations and eliminate confusing requirements.

This rulemaking amends Oregon-initiated rules OAR 437-002-0182, 437-002-0256, and 437-002-0312 to update the rule reference to the new Oregon rule 437-002-0146 Confined Spaces. Also amended to reflect the new Confined Spaces rules are 1910.120 Appendix E, and 1910.269 that currently refer the reader to 1910.146. We also repealed 1926.21(b)(6) in Division 3/C and placed a note referring the reader to Division 2/J, 437-002-0146 Confined Spaces.

This is Oregon OSHA Administrative Order 6-2012, adopted September 28, 2012, and effective April 1, 2013.

Note: Oregon OSHA amends standards in Division 2, general industry, and Division 3, construction, to reflect federal OSHA updates published in the June 13, 2013 Federal Register. Also included in this rulemaking are minor corrections from federal OSHA of the June 13, 2013 Federal Register with the November 6, 2013 Federal Register. Corrections are to addresses and reference clarification for graphics. Federal OSHA updated its general industry and construction signage rules by adding references to the latest version of the American National Standards Institute ("ANSI") standards on accident prevention signs and tags, ANSI Z535.1-2006 (R2011), Z535.2-2011 and Z535.5-2011. OSHA retained references to the earlier ANSI signage standards, ANSI Z53.1-1967, Z35.1-1968 and Z35.2-1968. This rulemaking provides employers the option to comply with either the earlier or updated standards.

Federal OSHA amended 1926.201 and 1926.202 concerning the Manual on Uniform Traffic Control Devices (MUTCD). Oregon repealed these two standards and has Oregon-initiated rule 437-003-0420 Traffic Control, instead. OAR 437-003-0420 currently references the most current editions, therefore we did not amend with this Federal Register publication.

Federal OSHA amended 1910.261 with updated ANSI standards. In Oregon we have Oregon-initiated rule 437-002-0312 Oregon Rules for Pulp, Paper and Paperboard Mills, which we also amended to reflect the newer ANSI references.

This is Oregon OSHA Administrative Order 7-2013, adopted and effective December 12, 2013.

Note: Oregon OSHA in consultation with stakeholders, developed a rule proposal to amend our current general industry/construction standard OAR 437-002-0146 Confined Spaces, to clarify certain areas of concern in the state-initiated rule adopted in 2012. These amendments were proposed in July with one hearing held in August 2014.

Changes from the proposed rule to the adopted rule include:

The proposed rule contained requirements that employers identify all confined spaces. The final rule requires only that employers identify their permit-required confined spaces.

There was a typo in the proposed rule regarding the exemption for excavation work. The final rule reflects that excavation work is exempt from the confined space rules except when workers must bodily enter a sewer space.

An exemption was added for power generation work regulated by the newly adopted federal OSHA rules on power generation in the construction industry. While Oregon OSHA has yet to adopt these rules, it is highly unlikely that the referenced rule will change dramatically.

Language was added to clarify that, when energy isolation is used to isolate the hazards of a permit space, employers must follow all of the provisions of 1910.147 The Control of Hazardous Energy (Lockout/Tagout). A note was added in the section regarding alternate entry that tagout alone does not eliminate a hazard.

A written agreement with third party entry rescue service providers is no longer required. A note was added to remind employers who plan on using an off-site rescue service that they need to contact that service and coordinate the evaluations required by the rule, and that simply posting a phone number or relying on emergency services is not adequate.

Language was added to clarify that retraining is necessary when previously unidentified hazards are discovered.

These rule amendments are adopted and will become effective for general industry on January 1, 2015, and for construction on March 1, 2015.

This is Oregon OSHA Administrative Order 5-2014, adopted October 20, 2014, and effective January 1, 2015 (construction industry: effective March 1, 2015).

Note: In November 2014, Oregon OSHA proposed to adopt Federal OSHA final rules for Electric Power Generation, Transmission, and Distribution, that were published in the April 11, 2014 Federal Register. The proposal included Oregon-initiated changes to the federal rule. Three public hearings were held during November and December of 2014 resulting in several written comments and oral testimony before the comment period closed on December 12, 2014. Most of the comments received concerned the two worker rule exceptions. As a result of the comments received, Oregon OSHA decided not to adopt the rule as proposed in 2014, but to consider an alternative approach.

Two stakeholder meetings were conducted in the first half of 2015 to discuss comments along with potential changes to the 2014 proposal. Oregon OSHA received input and support from stakeholders to combine the Electric Power Generation, Transmission, and Distribution standards in Divisions 2/R and 3/V into one rule. Oregon OSHA merged 1910.269, in Division 2/R General Industry, and Division 3/V in Construction, standards into the new Division 2/RR. Unifying language and Oregon-unique rules for Power Generation, Transmission and Distribution for General Industry and Construction were incorporated into one standard.

In July, 2015 Oregon OSHA reposed rules for Electric Power Generation, Transmission, and Distribution. Three public hearings were held during August and September 2015. Most of the oral and written comments received concerned: the duties of a Safety Watch, the exception to the two-worker rule, and helicopters. Changes to the final rule include:

Safety Watch: Safety Watch text was added to the final rule 437-002-2311(13).

Operating switches: 437-002-2311(2)(b)(B) was changed to clarify that 437-002-2311(2)(b)(E) must be followed for routine switching of load break elbows.

Helicopters: Paragraphs were removed which were already addressed by, or were in conflict with, other regulatory agencies; or were unnecessarily restrictive based upon accepted industry practices.

On October 5, 2015 Federal OSHA published in the Federal Register, minor language clarifications in rules related to Line Clearance Tree Trimming as well as correcting errors in Table R-6 (Alternative Minimum Approach Distances.) The note for enclosed spaces was removed from Appendix A-3 and placed in Appendix A-5. These corrections have been incorporated in Oregon OSHA's final rules.

This is Oregon OSHA Administrative Order 3-2015, adopted October 9, 2015, and effective January 1, 2016.

Note: Oregon-initiated rules appear in italics in this codebook in proximity to related federal rules.

Note: Oregon OSHA adopted these permanent rules to prevent heat illness when employees are exposed to high ambient temperatures. Without specific rule requirements, Oregon OSHA recognized that both employers and workers may not clearly understand expectations of what must be done to prevent work-related heat illness. The deadly heat wave of June 2021, which contributed to multiple workplace hospitalizations and fatalities, underscored the need for such rules to protect workers against the serious risk of work-related heat illness.

On March 10, 2020, Governor Brown issued Executive Order 20-04 (EO 20-04) which directed certain state agencies to reduce greenhouse gas emissions and mitigate the impacts of climate change. EO 20-04 included a directive to the Oregon Health Authority (OHA) and Oregon OSHA to jointly develop a proposal for standards to protect employees from workplace exposures to excessive heat and wildfire smoke. In response to EO 20-04, Oregon OSHA, in collaboration with the OHA, a rulemaking advisory committee, and stakeholders, developed these rules to protect employees from the serious risk of work-related heat illness.

Beginning in March 2021, Oregon OSHA convened nine virtual Rules Advisory Committee (RAC) meetings over an 8-month period, engaging over 100 stakeholders representing labor and business interests. Oregon OSHA presented multiple rule drafts and a fiscal impact survey for stakeholder comment. In addition, Oregon OSHA hosted four virtual listening sessions with Spanish translators, held in May and September 2021, to provide an opportunity for workers and other stakeholders to share their experience on the challenges of heat in the workplace, in addition to hearing about how Oregon OSHA's temporary rule affected their workplaces.

Given the unprecedented heat event of June 2021, while the formal rulemaking process was underway, Oregon OSHA adopted a temporary heat rule: Administrative Order 6-2021: Temporary Rules to Address Employee Exposure to High Ambient Temperatures in effect from July 8, 2021 through January 3, 2022.

On January 28, 2022, Oregon OSHA proposed permanent rules to address employee and labor housing occupant exposure to high ambient temperatures. Three public hearings were held in February 2022 to hear oral testimony, including one held primarily in Spanish. Additionally, interested persons were provided the ability to submit public comment by email, letter, fax and by voicemail message. The formal public comment period closed March 18, 2022.

During the public comment period of the proposed heat rules, the agency received over 300 comments. Oregon OSHA considered all comments received. Oregon OSHA, based on comments received, made minor adjustments, as follows. The exemption language in section (1) was clarified and the word “feasibility” was removed from the definitions section (2). Language was updated in section (5) to make the heat illness prevention schedule options clearer; additionally, two notes that were in the proposed rules were modified into rule requirements, a note was added, and lastly the location of option A was moved below the required considerations. In section (6), which addresses the Emergency Medical Plan, applicable standards outside of this rule were added for ease to the reader. As adopted, the remainder of the sections remained largely unchanged from the proposed rule. The full summary of comments and agency decisions, available on Oregon OSHA’s website, provides additional details on the agency decision-making and modifications made prior to adoption.

As adopted, OAR 437-002-0156 offers multiple exemptions for certain conditions. Workplaces and operations exempt from these rules include incidental heat exposures where an employee is not required to perform work activities for more than 15 minutes in any sixty-minute period; exposures to heat generated from the work process – such as occurs in bakeries; all emergency operations that are directly involved in the protection of life or property, or the restoration of essential services, such as evacuation, rescue, medical, structural firefighting, law enforcement, utilities, and communications; and lastly buildings and structures that have a mechanical ventilation system that keeps the heat index below 80 degrees Fahrenheit.

Other workplaces have partial exemptions, including employers whose employees perform either “rest” or “light” workloads (as defined in the rule); associated support activities for wildland firefighters such as fire camp services and fire management; and, employees who work from home are subject only to training and documentation requirements.

Overall, the adopted requirements of OAR 437-002-0156 address the following: access to shade; drinking water; high heat practices, including the development of heat illness prevention break schedules for certain temperature thresholds; emergency medical and actions plans; acclimatization plan; heat illness prevention plan; supervisor and employee training; and training documentation.

This is Oregon OSHA Administrative Order 3-2022, adopted May 9, 2022, and effective June 15, 2022.