

Oregon OSHA – Proposed Changes

Confined Spaces in General Industry and Construction

August 2011

Text proposed to be removed is in [~~brackets with line through~~].

Text proposed to be added is in **bold and underlined**.

SUBDIVISION J – GENERAL ENVIRONMENTAL CONTROLS

437-002-0140

Adoption by Reference. In addition to ~~2~~ and not in lieu of ~~1~~, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal **regulations** [~~rules as~~] printed [~~in~~] **as part of** the Code of Federal Regulations, [~~29 CFR 1910, revised as of 7/1/98, and any subsequent amendments published~~] in the Federal Register [~~as listed below~~]:

(1) 29 CFR 1910.141 Sanitation, published [~~6/27/74, Federal Register, vol. 39, p. 23502; amended 4/28/75, FR vol. 40, p. 18446; 5/28/75, FR vol. 40, p. 23073; 10/24/78, FR vol. 43, p. 49748;~~] 6/18/98, FR vol. 63, no. 117, p. 33467.

(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 [~~6/27/74, Federal Register, vol. 39, p. 23502; amended 10/24/78, FR vol. 43, p. 49749; 2/10/84, FR vol. 49, p. 5322; 3/7/96, FR vol. 61, no. 46, p. 9239;~~] 12/14/07, FR vol. 72, no. 240, p. 71061.

(5) 29 CFR 1910.145 Specifications for accident prevention signs and tags, published [~~6/27/74, Federal Register, vol. 39, p. 23502; amended 10/24/78, FR vol. 43, p. 49749; 11/7/78, FR vol. 43, p. 51759; 2/10/84, FR vol. 49, p. 5322; 9/19/86, FR vol. 51, p. 33260;~~] 3/7/96, FR vol. 61, no. 46, p. 9239.

(6) 29 CFR 1910.146 Permit-required confined spaces [~~, published 1/14/93, Federal Register, vol. 58, no. 9, pp. 4549-4563; corrections published 6/29/93, FR vol. 58, no. 123, p. 34844; amended 5/19/94, FR vol. 59, no. 96, pp. 26411-26116; 12/1/98, FR vol. 63, no. 230, p. 66038; 1/4/99, FR vol. 64, no. 1, p. 204.~~] **Repealed with AO X-2011, f. and ef. XX/XX/11. In Oregon, OAR 437-002-0146 applies.**

(7) 29 CFR 1910.147 The control of hazardous energy, (lockout/tagout); published [9/1/89, Federal Register, vol. 54, no. 169, pp. 36687-36696; amended (extension of effective date) 11/6/89, FR vol. 54, no. 213, p. 46610; amended] 9/20/90, FR vol. 55, no. 183, pp. 38685-38687; amended with AO 12-2001, add (f)(3), f. and ef. 10/26/01.

(8) 29 CFR 1910.148 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

(9) 29 CFR 1910.149 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

(10) 29 CFR 1910.150 Removed. Published 3/7/96, Federal Register, vol. 61, no. 46, p. 9239.

These federal standards are on file with the Oregon Occupational Safety and Health Division, Department of Consumer and Business Services and the United States Government Printing Office.

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

Stats. Implemented: ORS 654.001 through 654.295.

***** 1910.146 Permit-Required Confined Spaces, and Appendices A – F are repealed in their entirety. New OAR 437-002-0146 Confined Spaces will apply in Oregon. *****

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 OAR 437-003, Division 3/P Excavations, except for sewers.
 - (b) Construction work regulated by OAR 437-003, Division 3/S Underground Construction, Caissons, Cofferdams and Compressed Air, except for sewers.
 - (c) Enclosed spaces regulated by OAR 437-002-1910.269 in Division 2/R Electric Power Generation, Transmission And Distribution, except when that standard requires compliance with this standard.
 - (d) Welding in confined spaces regulated by OAR 437-002, Division 2/Q Welding, Cutting & Brazing, when the only hazards are related to the welding process.
 - (e) Except for (a) through (d) 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.

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.

Atmospheric hazard (see the definition of hazardous atmosphere).

Authorized – Approved by the employer or controlling contractor.

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.

Atmospheric testing – see “Testing.”

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

Barrier - A physical obstruction that blocks or limits access.

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: This 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” is a 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.**

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. Control also refers to the engineering methods used for this purpose. Personal protective equipment is not a control.

Controlling contractor - The employer that has overall responsibility for construction at a worksite.

Note: If the controlling contractor owns or manages the property, then it is both a controlling employer and a host employer.

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 owner of a permit-required confined space to enter a 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 - A physical hazard or hazardous atmosphere.

Hazardous atmosphere - An existing or potential atmosphere consisting of at least one 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(m) 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.
- An atmosphere that presents an immediate danger to life or health (IDLH).

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

Mobile worker – An employee who performs their 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 self-rescue.

Note: A fall hazard, when that is the only hazard associated with a confined space, does not constitute a hazard that would make a confined space a permit-required confined space.

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 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.

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 a hazardous atmosphere using continuous forced-air mechanical systems.

You – The employer.

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

Requirements for Confined Spaces									
For spaces that are	The requirements in the following sections apply								
	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Evaluation	programs entry space contained	Equipment	Personnel	Rescue	Alternate entry	Training	Multi- employer work-sites	Records
<u>Confined spaces</u>	X								
<u>Permit-required confined spaces</u>	X	X	X	X	X		X	X	X
<u>Never entered</u>	X								
<u>If you only:</u>									
<u>Use alternate entry procedures</u>	X		X			X	X		X
<u>Have other employers enter your space</u>	X							X	X
<u>Are a rescue service provider</u>		X	X	X	X		X		X

(4) Evaluation.

(a) Evaluate the workplace to determine if there are any confined spaces.

(A) Exceptions:

(i) Employers of mobile workers where the employer or controlling contractor is not the property owner are not

required to perform this evaluation, but must follow the requirements of (4)(c) through (4)(e).

(ii) On sites where confined spaces are being built, the host employer or controlling contractor is not responsible for performing this evaluation unless:

(I) Any of their employees must enter that space.

(II) An agent of the employer must enter that space.

(III) Employees of a contractor responsible to that controlling contractor or host employer must enter that space.

(IV) They assume control over that space.

(B) When a host employer or controlling contractor has information listed below, they must provide it to the contractor for the contractor's evaluation before entry into a confined space

(b) This evaluation must include:

(A) The location of each confined space.

(B) For each of these spaces:

(i) Any known or anticipated hazard that affects the space.

(ii) The classification of the space if previously classified.

(iii) Any precautions and procedures previously implemented for entering the space.

(c) At workplaces with mobile workers, determine if there are confined spaces and if these spaces are subject to any hazards, using the following procedures:

(A) Without entering the space, consider information, if any, from the host employer and controlling contractor to evaluate the space to:

(i) Determine if the space meets the definition of a confined space.

(ii) Identify any physical and atmospheric hazards.

(d) When a space has hazards that make it a permit space:

(A) Develop and implement a means so employees can identify that space. Signs, labels, or tags are methods that can be used to accomplish this.

(B) Allow employees or their representatives to observe the evaluation or re-evaluation of the space.

(C) When conditions within a confined space or a permit space change, re-evaluate it.

(D) Take all necessary measures to prevent unauthorized employees from entering permit spaces.

(e) Treat unevaluated confined spaces as permit spaces until they are fully evaluated.

(5) Permit-Required Confined Space Entry Program and Permits.

(a) Develop and implement a written program that describes the means, practices, and procedures to safely enter permit spaces. This program must include:

(A) Documentation of entry permit procedures.

(B) Measures taken to prohibit unauthorized persons from entering permit spaces.

(C) Designation of employee roles, such as entrants, attendants, entry supervisors, rescuers, or those who test or monitor the atmosphere in a permit space.

(D) Identification of designated employee duties.

(E) Training on your 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.

(b) On fixed sites, this program must also include:

(A) The location of all confined spaces.

(B) The reason for the classification of each permit space or each type of permit space.

Note: Where you control or enter multiple confined spaces of the same type that have the same hazards, such as sewers, water vaults, or valve pits, you do not need to identify the exact location of each space so long as you provide enough information so that employees can readily identify each type of space and its hazards at each location.

(C) Exception: The location and classification of confined 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.

(c) Develop and implement procedures for issuing permits. These procedures must include how to:

(A) Evaluate the hazards of the space.

(B) Evaluate hazards of the work to be performed.

(d) Allow entrants or their representatives the opportunity to observe monitoring, testing, and all other actions taken to eliminate or control the hazards of the space.

(e) Entry permits must include the following information:

(A) The space to be entered.

(B) The purpose of the entry.

(C) The date, start, and stop times of the permit.

(D) The hazards of the space.

(E) Acceptable entry conditions.

(F) Results of initial tests and periodic monitoring performed to evaluate and identify the hazards and conditions of the space, or the period for continuous monitoring, accompanied by the names or initials of the testers and by an indication of when the tests were performed.

(G) Appropriate measures used before entry to isolate the space and eliminate or control hazards.

Examples of appropriate measures include the de-energizing and lockout or tagging of equipment, and procedures for purging, inerting, ventilating, and flushing permit spaces.

(H) Names of entrants and current attendants.

- (I) The signature of the original supervisor authorizing entry.
 - (J) The current entry supervisor.
 - (K) Communication procedures for entrants and attendants to maintain contact during the entry.
 - (L) Equipment provided for safe entry, such as:
 - (i) Personal protective equipment (PPE)
 - (ii) Testing and monitoring equipment
 - (iii) Communications equipment
 - (iv) Alarm systems
 - (v) Rescue equipment
 - (M) Rescue services available, and how to contact them.
 - (N) Other information needed for safety in the particular permit space
 - (O) Additional permits issued for work in the space, such as for hot work.
- (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) A previously unrecognized hazard is discovered.
 - (iii) A condition prohibited by the permit or permit program exists.
 - (iv) An injury or near-miss occurs during entry.
 - (v) A change occurs with the space.
 - (vi) An employee reports concerns about the effectiveness of the program.
 - (vii) Any other condition that affects employee safety or health.
 - (B) When revising the permit program to correct hazard-related deficiencies, do not allow entries to be made until the revisions are complete.

(C) Ensure employees and their representatives have access to the revised permit program.

(g) Review permits within one year of their expiration to evaluate:

(A) The permit program.

(B) The protection provided to employees entering permit spaces.

(6) Equipment.

(a) When employees enter permit spaces, provide the following equipment to employees as necessary:

(A) Testing and monitoring equipment.

(B) Ventilating equipment, when needed, used to obtain and maintain acceptable entry conditions.

(C) Communication equipment for effective communication between the attendant and all entrants, and to initiate rescue when necessary.

(D) Lighting equipment needed to ensure employees can see well enough to work safely and exit the space quickly in the event of an emergency.

(E) Barriers or shields to protect entrants from external hazards, such as pedestrians and vehicles.

(F) Ladders or other equipment to safely enter and exit the space.

(G) Rescue and emergency equipment necessary to safely and effectively rescue entrants.

(H) Any other equipment necessary to safely enter and exit the space.

(I) Personal protective equipment as mandated by any applicable Oregon OSHA standard.

(b) Provide all necessary equipment at no cost to employees.

(c) Ensure all equipment is maintained and used in accordance with the instructions from the manufacturer.

(d) Ensure all employees who use equipment are trained in the use of that equipment.

(7) Personnel.

(a) Before employees enter permit spaces, designate entrants, attendants, and entry supervisors.

Note: The entry supervisor can also be either the attendant or entrant.

(b) Entrants must:

(A) Know the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.

(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 mode, signs or symptoms, and consequences of the exposure.

(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 orders 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.

(I) Perform nonentry 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.

(8) Rescue.

(a) When employees enter permit spaces under an entry permit, develop and follow procedures to remove entrants in the event of an emergency or when they are unable to self-rescue. These procedures must include:

(A) The process for summoning rescue services.

(B) The process for summoning emergency medical services or transporting injured entrants to a medical facility.

(C) Patient decontamination, prior to being transported to a medical facility, where necessary.

(b) Where feasible, use non-entry retrieval systems or methods whenever an authorized entrant enters a permit space, unless the retrieval equipment would harm the entrant or would not contribute to the rescue of the entrant.

(A) Non-entry Rescue.

(i) 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.

(ii) Designate a rescue team to perform rescues in a timely manner.

Note: The response time is based on the hazards of the space. For example, IDLH hazards require an immediate response, and responders would need to be available on-site during the duration of the entry.

(iii) Ensure all rescue team members are trained in basic first aid and cardiopulmonary resuscitation (CPR). At least one member must be certified in first aid and CPR.

(iv) Rescue teams must practice performing permit space rescues at least once every 12 months.

(I) The practice rescue must include every type of space in which the rescue team may perform rescues.

(II) The practice rescue must include removing persons, dummies, or manikins from the actual permit spaces or representative spaces that have the same opening size, configuration, and accessibility issues as the actual permit spaces where rescue may be performed.

(v) Exception: The rescue team does not need to perform annual practice rescues when mobile workers enter a permit space when, prior to beginning entry operations, the employees designated to perform non-entry rescue (including attendants, if applicable) have

(I) Access to the permit space to be entered or to a simulated permit space; and

(II) Develop appropriate rescue plans; and

(III) Conduct practice rescue operations in accordance with (8)(b)(A)(iv)(b).

(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 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.

(II) Can proficiently rescue employees from permit spaces.

(III) 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) Use and maintain all equipment according to the instructions from the manufacturer.

(vii) Rescue teams must practice performing permit space rescues at least once every 12 months.

(I) The practice rescue must include the different kinds of spaces in which the rescue team may perform rescues.

(II) The practice rescue must include removing persons, dummies, or manikins from the actual permit spaces or representative spaces that have the same opening size, configuration, and accessibility issues as the actual permit spaces where rescue may be performed.

(viii) Exception: The rescue team does not need to perform annual practice rescues when mobile workers enter a permit space when, prior to beginning entry operations, the employees designated to perform entry:

(I) Have access to the permit space to be entered or to a simulated permit space; and

(II) Develop appropriate rescue plans; and

(III) Conduct practice rescue operations in accordance with (8)(b)(B)(vii)(b).

(ix) Rescue team personnel must have the same training and proficiencies as a permit space entrant, attendant, and/or entry supervisor.

(x) Ensure all rescue team members are trained 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.

(xi) When a third-party rescue service is used, ensure that the service is:

(I) Aware that they are so designated and agree to it.

(II) Capable of performing all required rescue operations.

(III) Trained in first aid and CPR, and at least one member is certified in first aid and CPR.

(C) Third-party entry rescue providers.

(i) In addition to the requirements of this rule, employers that provide entry rescue services must:

(I) Obtain information required by paragraph (4) regarding every permit space in which entry rescue by your employees may be necessary.

(II) Be familiar with the policies and procedures as described in paragraph (8)(a).

(ii) When activated to perform a rescue, without entering the space and using the entry permit, evaluate the space to:

(I) Evaluate all physical and atmospheric hazards.

(II) Determine the precautions and procedures to follow for entry into the space.

(III) At the conclusion of entry operations, inform the controlling contractor and/or host employer about any hazards that were present or that developed during entry operations.

(9) 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 forced-air ventilation.

Note: For purposes of this rule, “hazard elimination” means that specific measures are taken to ensure that hazards cannot exist within the space.

Note: Continuous forced-air ventilation does not eliminate atmospheric hazards. It only controls the hazards.

(b) Develop and implement procedures for each space that can be entered with alternate entry procedures. These procedures must address:

(A) The hazards of the space.

(B) The methods used to eliminate hazards.

(C) The methods used to ensure that the hazards have been eliminated.

(D) The methods used to test the atmosphere within the space, where applicable, for all atmospheric hazards.

(E) The methods used to determine if unsafe conditions arise before or during entry.

(F) The criteria and conditions for evacuating the space during entry.

(G) The methods for training employees in these procedures.

(H) The methods for ensuring employees follow these procedures.

(c) When using ventilation to control atmospheric hazards:

- (A) Use only properly calibrated direct-reading meters to test the atmosphere.
- (B) Ensure direct-reading instruments are used and tested according to the instructions and recommendations from the instrument manufacturer.
- (C) Test the atmosphere for all identified atmospheric hazards before entering the space.
- (D) Only enter after atmospheric testing verifies that all atmospheric hazards are adequately controlled by the ventilation.
- (E) Perform continuous atmospheric monitoring for all atmospheric hazards during the entry.
- (F) Immediately evacuate the space:
 - (i) When the atmospheric monitoring indicates the return of atmospheric hazards
 - (ii) Upon any failure with the direct-reading instrument.
 - (iii) Upon any failure with the ventilation.
- (d) Ensure all employees or their representatives who will conduct the entry have the opportunity to observe all pre-entry activities used to comply with this section.
- (e) Ensure all employees who conduct entry have 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.
- (f) When a space is evacuated, it must be treated as a permit space unless:
 - (A) The conditions that necessitated the evacuation are corrected; and
 - (B) The re-entry is treated and documented as a new entry.
- (g) 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, including the date of calibration.

- (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.

(h) Maintain this documentation for the duration of the entry at the location of the entry.

(10) Training.

(a) Provide awareness training to all employees to explain:

- (A) The permit space program
- (B) The entry permit system
- (C) The alternate entry procedures, if used
- (D) How to recognize permit spaces in their work areas

(b) 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.

(c) Provide training:

- (A) For all new employees
- (B) Before an employee is assigned permit space duties
- (C) Before there is a change in an employee's assigned duties
- (D) When there is a hazard for which the employee hasn't already been trained
- (E) When there are changes to the permit program
- (F) When the annual permit audit shows deficiencies
- (G) Whenever there is a deviation from the established procedures or employee knowledge of the procedures is inadequate

(d) Document employee training. Ensure the documentation:

(A) Contains the employee's name, the name and signature of the trainer, and the date of training.

(B) Contains the responsibilities for which they were trained.

(C) Is available for inspection by employees and their authorized representative.

(e) Ensure each employee is proficient in their assigned duties.

(11) Multi-employer worksites.

(a) Unless you fall within an exemption under paragraph (4)(A)(a), when 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 contractor will be working

(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.

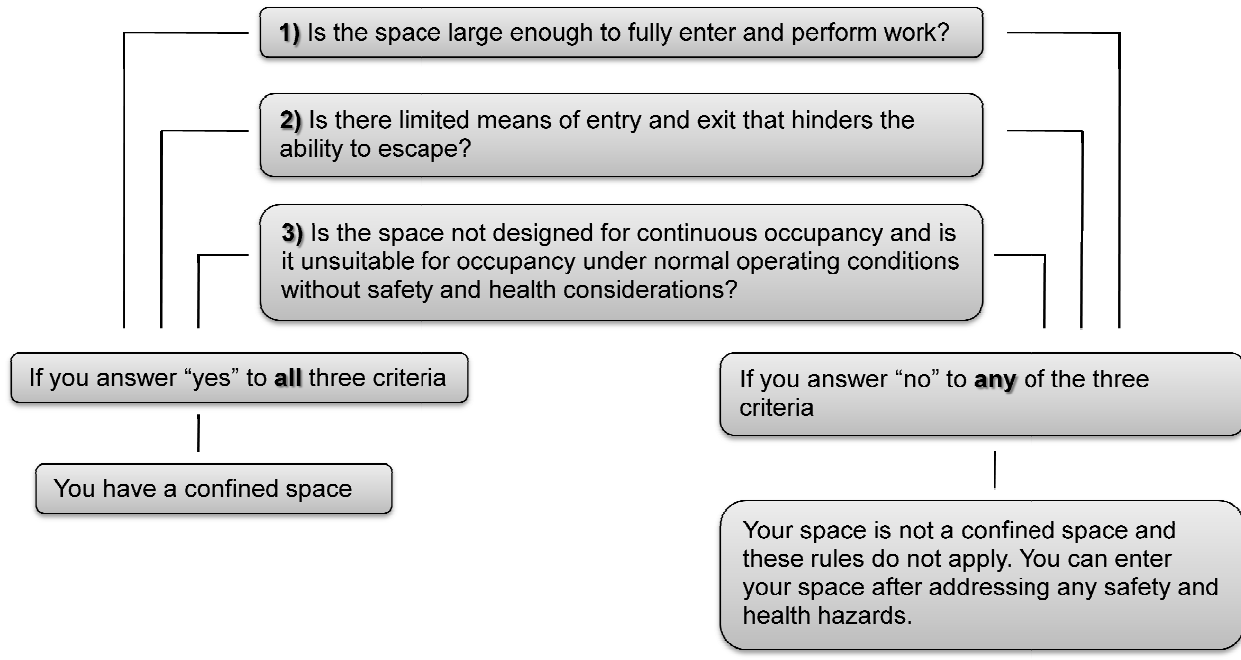
(12) Records. Keep cancelled permits for at least one year from the date the permit expires.

Note: Additional record retention requirements may apply under OAR 437-002-1910.1020. "Access to Employee Medical and Exposure Records."

Non-Mandatory Appendix A

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.

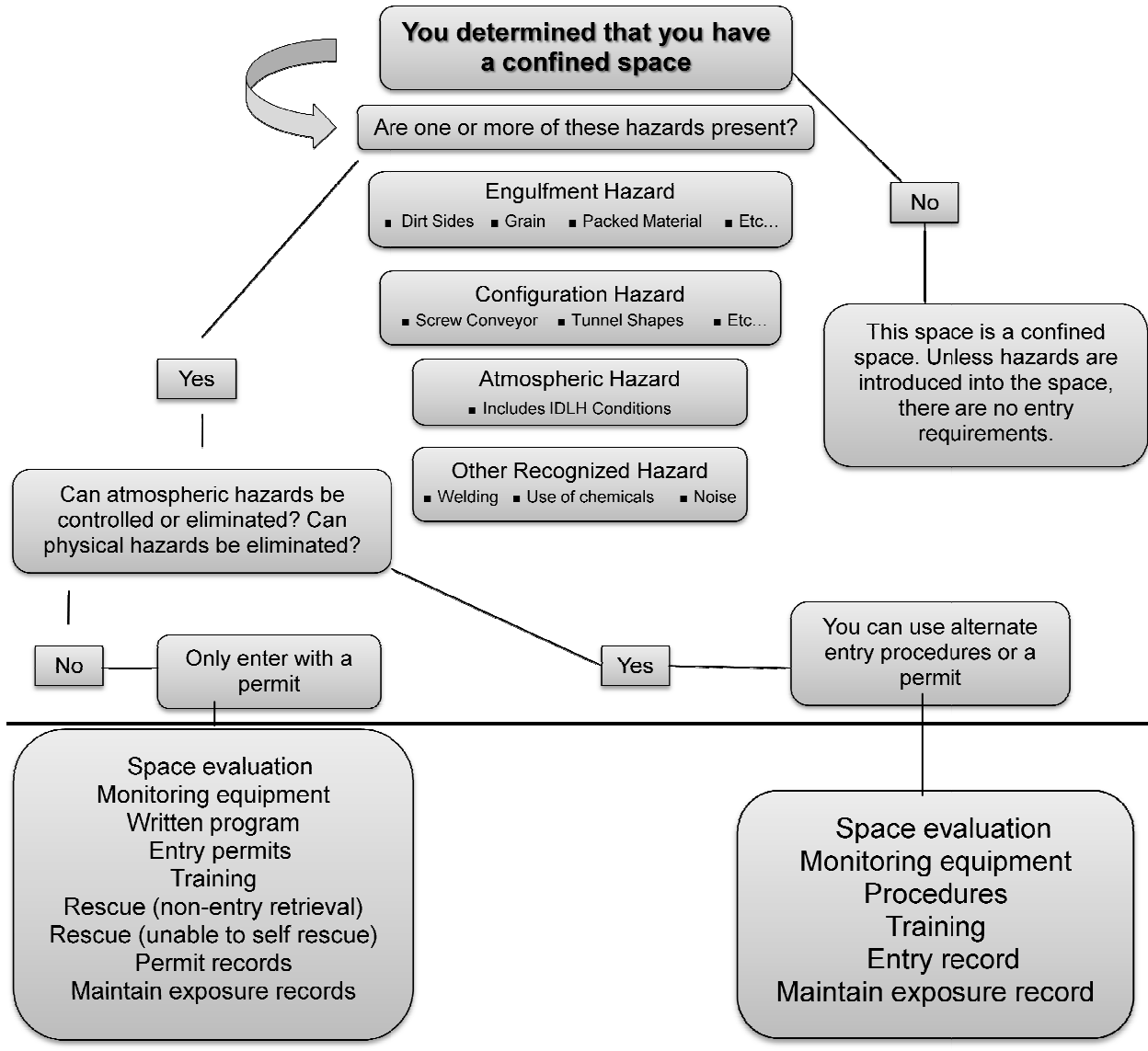
Second, it must have a limited means for entry and exit. Typically, if you must contort your body to enter a space it may be limited means of entry and exit. Examples of this include having to climb through a porthole, climb up a ladder, or crawling through a tunnel in order to exit. Another way of measuring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

PART II: Determine if you have a permit-required 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.

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 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 an 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 using lockout/tagout in 1910.147, where applicable, still apply. Any hazards that still remain after applying lockout/tagout must still be addressed.

Non-Mandatory Appendix B

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 (5 feet or more)

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**

Non-Mandatory Appendix C
Part I: Sample Permit

(In Development)

Part II: Sample Alternate Entry Documentation

(In Development)

Non-Mandatory Appendix D
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. OR-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(8). 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 paragraph (8)(b)(C) 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 (8)(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. 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?
8. 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?
9. Does the rescue service have the necessary skills in medical evaluation, patient packaging and emergency response?
10. 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 (8)(b)(B)(vii) of the standard to practice rescues at least once every 12 months, 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 MSDSs?
- 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.**
 - b. Nonelevated – a permit space with the entrance portal located less than 4 feet above grade. This type of space will allow the rescue team to transport an injured employee normally.**
- 3. Portal size.**
 - a. Restricted – A portal of 24 inches or less in the least dimension. Portals of this size are too small to allow a rescuer to simply enter the space while using SCBA. The portal size is also too small to allow normal spinal immobilization of an injured employee.**
 - b. Unrestricted – A portal of greater than 24 inches in the least dimension. These portals allow relatively free movement into and out of the permit space.**
- 4. Space access.**
 - a. Horizontal – The portal is located on the side of the permit space. Use of retrieval lines could be difficult.**
 - b. Vertical – The portal is located on the top of the permit space, so that rescuers must climb down, or the bottom of the permit space, so that rescuers must climb up to enter the space. Vertical portals may require knowledge of rope techniques, or special patient packaging to safely retrieve a downed entrant.**

437-002-0182 Oregon Rules for Fire Fighters.

(1) Scope and Application.

(a) These rules apply to all activities, operations and equipment of employers and employees providing fire protection services, emergency first response, and related activities that are subject to the provisions of the Oregon Safe Employment Act. These rules do not apply to the following exempted fire fighting activities:

- (A) Aircraft fire fighting and rescue;
- (B) Forest and uncultivated, wildland fire fighting;
- (C) Private industry fire brigades.
- (D) Marine Fire Fighting and rescue.

EXCEPTION: When a public fire department elects to participate in one or more of the exempted fire fighting activities, that fire department must comply with all of the provisions of OAR 437-002-0182.

(b) The provisions of OAR 437-002-0182 must be supplemented by the provisions of other applicable safety and health rules of Oregon OSHA.

(2) Definitions.

Aerial device: An aerial ladder, elevating platform, aerial ladder platform, or water tower that is designed to position personnel, handle materials, provide egress and discharge water.

Afterflame: The time a test specimen continues to flame after the flame source has been removed.

ANSI: American National Standards Institute.

Apparatus: A mobile piece of fire fighting equipment such as pumper, water tender, etc.

Confined space means a space that:

- (1) Is large enough and so configured that a person can bodily enter and perform assigned work; and
- (2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and
- (3) Is not designed for continuous occupancy.

Drill tower: A structure, which may or may not be attached to the station that is over two stories high and primarily used for nonclassroom training of the fire fighters in fire service techniques.

Emergency incident: Any situation where the fire department delivers emergency services, rescue, fire suppression, medical treatment, and other forms of hazard control and mitigation.

Emergency scene: The site where the suppression of a fire or the emergency exists.

Fire chief: An employer representative responsible for managing the fire department's operation.

Fire fighter:

(1) A person involved in performing fire department duties and responsibilities, including fire suppression.

(2) A fire fighter may be a career or volunteer member of a fire department and may occupy any position or rank within the fire department.

Fire retardant: A material to reduce, stop or prevent flame spread.

Fire training: Training received by fire fighters to maintain proficiency in performing their assigned duties.

Flame-resistance: The property of materials, or combinations of component materials, to retard ignition and restrict the spread of flame.

Hazardous material incident: The accidental release of hazardous materials from their containers.

Helmet: A head protective device consisting of a rigid shell, energy absorption system, and chin strap intended to protect the head against impact, flying or falling objects, electric shock, penetration, heat, and flame.

Hose tower: A vertical structure where a hose is hung to dry.

IFSTA: International Fire Service Training Association.

Immediately dangerous to life or health (IDLH): Any condition that poses a threat to life, could cause irreversible adverse health effects, or could interfere with an individual's ability to escape unaided from a confined space.

Lifeline: The rope that secures employees when in extremely hazardous areas.

Live fire training: Any fire set within a structure, tank, pipe, pan, etc., under controlled conditions to facilitate the training of fire fighters under actual fire conditions.

MSHA: Mine Safety and Health Administration.

NFPA: National Fire Protection Association.

Nondestructive testing: A test to determine the characteristics or properties of a material or substance that does not involve its destruction or deterioration.

Private Industry Fire Brigades: A group of employees within an industry who are required to fight interior structural fires at their place of employment.

Protective clothing: The clothing or equipment worn to protect the head, body, and extremities from chemical, physical, and health hazards.

Rescue saw (Cutoff saw): A powered saw with a large circular cutting blade covered in part by a movable guard used to cut metal, wood, or concrete enclosures.

Respirators:

(1) Atmosphere-supplying respirator is a respirator that supplies the respirator user with air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARS) and self-contained breathing apparatus (SCBA) units.

(2) Air-purifying respirator is a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.

(3) Positive Pressure demand respirator is a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.

(4) Pressure demand respirator is a positive pressure atmosphere-supplying respirator that admits air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

(5) SCBA is a self-contained breathing apparatus designed to provide the wearer with a supply of respirable air carried in and generated by the breathing apparatus. This apparatus requires no intake of oxygen from the outside atmosphere, and can be designed to be a demand or pressure demand type respirator.

(6) Supplied-air respirator (SAR) or airline respirator is an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.

Responding: Answering an emergency call or other alarm.

Scabbard: A guard that prevents injury and covers the blade and pick of an axe or other sharp instrument when worn by the fire fighter.

Station (Fire station): Structure to house the fire service apparatus and personnel.

Tailboard: Standing space at rear of an engine or pumper apparatus where fire fighters ride.

Training: Instruction with hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used and in the performance of assigned duties.

Warning light: A flashing or rotating light.

GENERAL REQUIREMENTS

(3) Organizational statement. The employer must prepare and maintain a statement or written policy that includes basic organizational structure and functions of the organization, in addition to the type, amount, and frequency of training to be provided to fire fighters. This statement must be made available for inspection by the administrator and by employees or their designated representatives.

(4) Personnel.

(a) The employer must review and evaluate the physical capability of each employee annually to determine their ability to perform duties that may be assigned. The review and evaluation will be accomplished through physical examination, stress testing, or satisfactory performance demonstrated during the performance of their assigned duties.

(b) The employer must not permit an employee with known medical condition that would significantly impair their ability to engage in fire suppression activities at the emergency scene unless a physician's certificate of the employees' fitness to participate in such activities is provided. This will not limit the employer's ability to assign personnel to support activities (versus fire suppression activities).

(5) Employer's Responsibility.

(a) Each employer must comply with the provisions of this division to protect the life, safety, and health of employees.

(b) It is the responsibility of the employer to establish and supervise:

(A) A safe and healthful working environment, as it applies to nonemergency conditions or to emergency conditions at the scene after the incident has been terminated, as determined by the officer in charge.

(B) Programs for training employees in the fundamentals of accident prevention.

(C) A safe and healthful working environment as it applies to live fire training exercises.

(c) The employer must maintain all equipment in a safe condition.

(d) The employer must see that employees who participate in exempted fire fighting activities listed in OAR 437-002-0182(1) are properly trained, protected, clothed, and equipped for the known hazards of that particular emergency operation.

The following note refers to the Respiratory Protection Standard, 1910.134(g)(3) and (4), Procedures for Interior Structural Fire Fighting (“two-in/two-out rule”) adopted in Oregon on July 7, 1998.

NOTE: If, upon arriving at the scene, members find an imminent life threatening situation where immediate action may prevent the loss of life or serious injury, the requirements for personnel in the outside standby mode may be suspended, when notification is given by radio to incoming companies that they must provide necessary support and backup upon their arrival.

(6) Employee’s Responsibility.

- (a) Each fire fighter must comply with the sections of OAR 437-002-0182 that are applicable to their own actions and conduct in the course of their employment.
- (b) Fire fighters must notify the appropriate employer or safety committee representative of unsafe practices, equipment, or workplaces.
- (c) All fire fighters, at regularly scheduled times, must attend required training and orientation programs designed to increase their competency in occupational safety and health.
- (d) Fire fighters and other employees must apply the principles of accident prevention in their work. They must use all required safety devices and protective equipment.
- (e) Each fire fighter must take proper care of their protective equipment.
- (f) Fire fighters who are expected to perform fire fighting operations must notify their employer when health conditions arise that will limit their capability of performing those duties.

(7) Safety Committee.

- (a) Fire departments must have a separate safety committee or hold safety meetings according to the requirements of OAR 437-001-0765 in Division 1, General Administrative Rules.
- (b) When applicable, the representation on the safety committee must include both career and volunteer fire fighters.

(8) Incident Management. An incident management system that meets the requirements of NFPA standard 1561, on Fire Department Incident Management, must be established with written standard operating procedures, applying to all members involved in emergency operations. All members involved in emergency operations must be familiar with the system.

(9) Accountability.

- (a) The fire department must establish written standard operating procedures for a personnel accountability system according to Section 2-6, 1995 of NFPA 1561, standard

on Fire Department Incident Management System, that provides for the tracking and inventory of all members operating at an emergency incident.

(b) It is the responsibility of all members operating at an emergency incident to actively participate in the personnel accountability system.

(10) Fire Fighting Training and Education.

(a) The employer or employer representative must establish and implement a policy for educating and training throughout the fire fighting classifications (ranks). Such education and training must be provided to fire fighters before they perform assigned duties on a continuing basis.

(b) Before fire fighters participate in structural fire fighting activities, or in live fire training in a structure, they must meet the training levels prescribed by the Department of Public Safety Standards and Training's (DPSST) 'Entry-level Firefighter' or have equivalent training.

(c) When live fire training occurs, it must be conducted under the direction of the fire department training officer, or employer authorized representative. All live fire training must be conducted following the requirements of Appendix C of this standard.

(d) During live fire training, fire fighters must wear the protective equipment normally required for that type of fire fighting.

(e) When rope rescue training occurs, it must be conducted under the direction of the fire department training officer or department-designated authority according to the equipment manufacturers' recommendations. The training officer must keep records of the manufacturers' training requirements, and must comply with all such requirements.

(f) All fire hoses used by fire departments for training and fire combat must meet the service testing requirements noted in Chapter 5 of NFPA 1962, 1993 edition.

(g) The employer must provide training for the purpose, proper selection, fitting, and limitations of personal protective equipment.

(h) The employer must ensure that each employee is informed of the procedure of reporting unsafe work conditions or equipment.

(11) General Requirements for Protective Clothing.

(a) The employer must provide employees all required protective clothing, except that an employee may opt to supply protective clothing. The employer must provide the protective clothing at no cost to employees. The protective clothing must meet the requirements in OAR 437-002-0182(11) through (16), whether supplied by the employer or employee.

(b) The employer must ensure that new protective clothing intended for structural fire fighting that is ordered, used or purchased after the effective date of this division, meets the requirements contained in OAR 437-002-0182(11) through (16). The employer must ensure that fire fighters wear this clothing when performing structural fire fighting.

(c) In situations other than structural fire fighting, the employer must ensure that protective clothing appropriate for the known hazards of that particular emergency operation is worn.

(d) The employer must ensure that appropriate protective clothing protects the head, body, and extremities. It must consist of at least the following components: foot and leg protection, hand protection, body protection, and eye, face, and head protection.

(12) Body Protection. To ensure full body protection for the wearer, coats and trousers used by structural fire fighters shall be at least equivalent to the National Fire Protection Association (NFPA) standard, No. 1971, 1991 edition, entitled "Protective Clothing for Structural Fire Fighting." (See also Appendix A.)

(13) Head Protection.

(a) Head protection must consist of a protective head device, ear protection, flaps, and chin strap, which meet the requirements of NFPA Standard 1971-2000, Protective Ensemble for Structural Fire Fighting.

(b) Use, care, alterations, and maintenance instructions for protective headgear must be supplied for each helmet.

(c) Care, maintenance, and alteration of helmets must conform to the manufacturer's recommendations.

(d) During structural fire fighting helmet accessories designed to provide or maintain protection from health and safety hazards must be worn in the manufacturer's recommended position. (See also Appendix A.)

(e) A flame-resistant protective hood that will not adversely affect the seal of a respirator facepiece and meeting the requirements of NFPA Standard 1971, 1996 edition, must be worn during interior structural fire fighting operations to protect the sides of the face and hair.

(14) Hand Protection. Hand protection for fire fighting activities must consist of protective gloves or glove system that will provide protection against cut, puncture, and heat penetration. Gloves or glove system must meet the requirements of NFPA Standard 1973, 1988 edition, titled "Gloves for Structural Fire Fighting."

(15) Foot and Leg Protection.

(a) Foot and leg protection must meet the requirements of OAR 437-002-0182(15)(a)(A) and (B) and may be achieved by either of the following methods:

(A) Fully extended boots, which provide protection for the legs; or

(B) Protective shoes or boots worn in combination with protective trousers that meet the requirements of OAR 437-002-0182(12).

(b) Protective footwear must meet the requirements of NAPA Standard 1971, 1996 edition, titled "Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting."

(c) Fire fighters' boots may be resoled but must meet the requirements of this rule.

(16) Eye and Face Protection. Eye and face protection worn by fire fighters at the fire ground must comply with the following regulations:

(a) General requirements. Face protection must be required where there is a reasonable probability of injury that can be prevented by such protection. When such face protection does not protect the eyes from foreign objects, additional eye protection must be provided.

(b) When self-contained respiratory equipment is being used by fire fighters, additional eye and face protection will not be required. Employers must make conveniently available a type of protection suitable for the work performed, and employees must use such protectors. Protectors must meet the following minimum requirements.

(A) They must provide adequate protection against the particular hazards for which they are designed.

(B) They must be reasonably comfortable when worn under the designated conditions.

(C) They must be durable.

(D) They must be capable of being disinfected.

(E) They must be easy to clean.

(F) Protectors that can be worn over corrective lenses must be available for those who need them, and should be kept clean and in good repair.

(c) Face shields.

(A) Face shields must be clear transparent or colored transparent.

(B) Disinfection. When a person is assigned protective equipment, this equipment must be cleaned and disinfected regularly.

(C) Face shields must be an integral part of the fire helmet and may be installed in a fixed position or hinged allowing adjustment of the shields.

(D) In the event a breathing apparatus within a face mask is being used, the face mask will be considered an acceptable face shield.

(d) Goggles, flexible, or cushioned fitting. Goggles must consist of a fully flexible frame, a lens holder or a rigid frame with integral lens or lenses, and a separate cushioned fitting surface on the full periphery of the facial contact area.

(A) Materials used must be chemical-resistant, nontoxic, nonirritating and slow-burning.

(B) There must be support on the face, such as an adjustable headband of suitable material or other appropriate support to hold the frame comfortably and snugly in front of the eyes.

(e) Design, construction, testing, and use of eye and face protection must be according to ANSI Z87.1, Occupational Eye and Face Protection (1979).

NOTE: Fire fighters must be protected from noise that exceeds the levels deemed safe in OAR 437, Division 2/G, 1910.95, Occupational Noise Exposure.

(17) Requirements for Respiratory Protection. See OAR 437, Division 2/I, 1910.134, Respiratory Protection.

(18) Criteria for Approved Self-Contained Breathing Apparatus.

(a) All compressed air cylinders used with self-contained breathing apparatus must meet DOT and NIOSH criteria. In emergency and lifesaving situations, approved self-contained compressed-air breathing apparatus may be used with approved cylinders from other approved self-contained compressed-air breathing apparatus provided that such cylinders are of the same capacity and pressure rating. Once the emergency is over, return SCBA's to their original approved condition.

(b) Self-contained breathing apparatus must be provided with an indicator that automatically sounds an alarm when the remaining air supply of the apparatus is reduced to within a range of 20 to 25 percent of its rated service time.

(19) (Reserved)

(20) Personal Alert Safety System (PASS). Each member involved in rescue, fire suppression, or other hazardous duties, must be provided with and must use a PASS device in the hazardous area when self-contained breathing apparatus is in use. PASS devices must meet the requirements of NFPA 1982, Standard on Personal Alert Safety Systems for Fire Fighters. Each PASS device must be tested at least monthly and must be maintained according to the manufacturer's instructions.

(21) (Reserved)

(22) (Reserved)

(23) (Reserved)

(24) Breathing Air Compressors and Cylinders. In addition to the requirements contained in 1910.134(i), air samples must be taken every six months from the compressor and analyzed by the employer or an independent laboratory for Grade D breathing air. Air samples must also be tested when the system is installed or repaired. Analysis must be conducted according to ANSI/CGA Standard G7.1-1989 edition, Commodity Specification for Air.

(25) Identification of Hazardous Material Locations.

(a) A means must be provided for identifying nonresidential premises where hazardous materials are stored, as defined in the Uniform Fire Code, 1991 edition, Articles 4 and 80, and in quantities as set forth in the hazardous material permit required by Article 4 of the Uniform Fire Code.

(b) Hazardous chemicals required to be identified defined in Article 9, Section 9.110, and Article 80, Section 80.101 of the Uniform Fire Code.

(26) Hazardous Material Response Plan.

(a) Fire departments that expect or plan to respond to hazardous material incidents must develop a written response plan.

(b) The written response plan must contain the policies and procedures on:

(A) Pre-emergency planning and coordination with outside parties,

(B) Personnel roles, lines of authority, training, and communication,

(C) Emergency recognition and prevention,

(D) Safe distances,

(E) Scene security and control,

(F) Evacuation procedures,

(G) Decontamination,

(H) Emergency medical treatment and first aid,

(I) Personnel withdrawal procedures,

(J) Critique of response and follow-up,

(K) Personal protective equipment and emergency equipment and response procedures.

(c) The incident commander must be responsible for:

(A) Identifying of the hazardous substance and condition,

(B) Implementing emergency operations,

(C) Ensuring personal protective equipment is worn,

(D) Limiting access of hot zone to those with a specific mission assignment,

(E) Implementing decontamination procedures,

- (F) Designating a safety officer,
- (G) Using appropriately trained personnel,
- (H) Providing on-scene medical surveillance for emergency responders.

FIRE FIGHTING APPARATUS

(27) Fire Apparatus Area.

- (a) Walkways around apparatus must be kept free of obstructions.
- (b) The station's apparatus floors must be kept free of grease, oil, and tripping hazards.
- (c) Class I or II flammable liquids must not be used to remove grease or dirt from apparatus.
- (d) Exhaust gases from diesel or gasoline apparatus within buildings must be maintained within the limits of OAR 437, Division 2/Z, OAR 437-002-0382, Oregon Air Contaminant Rules.

(28) Design and Construction of Fire Apparatus.

- (a) All fire apparatus with the exception of specialized apparatus must conform to OAR 437, Division 2/N, Oregon Rules for Commercial and Industrial Vehicles.
- (b) Employers who have purchased used fire apparatus or used military equipment prior to the effective date of this division are not required to bring them under a more stringent code than the one in force at the time the apparatus was manufactured. The exception to this rule is regarding seat belts and communication systems between the tailboard and driver compartment as required by OAR 437-002-0182(29) (Automotive Fire Apparatus Equipment) and roll bars on all open top off-road vehicles as required by OAR 437-002-0182(28)(f).
- (c) Fire fighters' vehicle tailboards must not project outboard of the vehicle sides or fenders and must be designed to provide safe footing.
- (d) Exhaust systems must be installed and properly maintained and must be designed as to minimize the exposure of exhaust gases by the fire fighter.
- (e) The loaded gross weight and empty height of the vehicle must be posted in the vehicle such that it can be clearly read by the driver.
- (f) Roll bars must be in place on all open top off-road vehicles for rollover protection.

(29) Automotive Fire Apparatus Equipment.

- (a) All equipment on a vehicle must be adequately secured when the vehicle is in motion.

(b) Workers being transported by fire department vehicles must ride only in designated secure positions. Safety restraints must be provided for fire fighters riding the tailboard. (See also OAR 437, Division 2/N, Oregon Rules for Commercial and Industrial Vehicles.)

(c) Vehicles with obstructed view to the rear of the vehicle when backing, must be equipped with:

(A) An automatic back-up alarm that must sound when backing; or

(B) A fire fighter, who is visible in the driver's left-side mirror, must stand to the rear of the truck to guide the driver while backing.

(d) Fire fighting vehicles must come to a full stop before workers disembark.

(e) If workers are required to ride the tailboard, an electrical signal system or voice communication system must be installed between the tailboard and the driver's compartment. A code of signals must be used for controlling the movement of the vehicle.

(f) When traffic flow is inhibited, vehicles equipped with emergency warning lights must be used to control traffic at emergency scenes. The use of traffic cones, fire department personnel, police, or other traffic control measures must be used as soon as practical.

(30) Automotive Apparatus Maintenance and Repair. Each employer must establish written records and procedures whereby apparatus has:

(a) A scheduled monthly maintenance check; or

(b) A maintenance check each time the apparatus is returned to the station following an emergency response, drill, or test drive.

(31) Tires. Tires that are excessively worn, cracked, deteriorated or damaged in any way must not be used. All tires must have a minimum tread depth of 2/32-inch.

(32) Aerial Devices.

(a) Aerial devices used for fire fighting must be inspected and tested by a person competent in performing such tests and inspections according to the recommendations of NFPA Standard 1914, 1991 edition, at least annually.

(b) Where defects are found in critical components of an aerial device, the repairs must be tested and certified according to NFPA Standard 1914, 1991 edition, by a registered professional engineer or manufacturer of the apparatus or an American Welding Society (AWS) Certified Welding Inspector. A permanent record of such tests and repairs shall be maintained for each unit.

HOSE DRYING AND DRILL TOWERS

(33) Hose Drying Towers.

(a) Floor openings on hose tower platforms must be equipped with a guardrail meeting the requirements of OAR 437, Division 2/D, 1910.23, Guarding Floor and Wall Openings and Holes.

(b) The toeboard requirements for elevated work platforms in hose drying towers must not apply unless hand tools or objects other than hoses are carried onto the platforms.

(c) The requirements for ladders must meet the requirements of OAR 437, Division 2/D, 437-002-0027, Fixed Ladders.

(d) Ropes used to hoist hose in the hose towers must have a breaking strength to safe load strength (rated working load) ratio of 3 to 1.

(34) Drill Towers. Permanent fixed ladders on the outside of drill towers and drill buildings are exempt from the requirements of offset platform landings and ladder cage guards.

FIRE SERVICE EQUIPMENT

(35) Testing, Maintenance and Inspection of Fire Service Equipment. The employer must maintain and inspect fire service equipment at least annually and perform any tests recommended by the manufacturers at the date of manufacture, or the recommendations of NFPA or IFSTA.

(36) Confined space rescue.

(a) Employers subject to this section must comply with [~~1910.146~~] **437-002-0146** for their own confined spaces.

(b) Employers subject to this section must comply with [~~1910.146(k)(2)~~] **437-002-0146** when they agree to serve as a designated rescue service provider.

(c) Employers subject to this section that will respond to emergency calls for rescue from confined spaces must:

(A) Train responders to recognize inherent confined space hazards before assigning or attempting any related duties in confined space rescues.

(i) Provide responders with understanding, knowledge, and skills necessary for safe performance of confined space rescues.

(ii) Practice a confined space rescue operation at least once every year from a real or simulated confined space.

(B) Certify responders in writing to Department of Public Safety Standards and Training (DPSST) Fire Fighter 1 levels or equivalent.

(C) Use the Incident Management System during confined space rescue incidents that meet the requirements of the NFPA Standard 1561, Fire Department Incident Management.

(D) Assess the situation and determine if it qualifies as a confined space incident.

(i) Classify the operation as a rescue or body recovery.

(ii) Assess and secure physical hazards related to the incident or rescue.

(iii) Assess atmospheric hazards.

(I) Use calibrated direct-reading instruments to test the atmosphere in confined spaces for oxygen content, flammable gases and vapors, and toxic air contaminants.

(II) When calibrated direct-reading instruments are not available, the Incident Commander must assume the situation is immediately dangerous to life and health (IDLH) and assure that responders who enter are equipped with appropriate respiratory protective equipment.

(iv) Determine if the space should be ventilated.

(E) Provide the appropriate rescue, emergency, and personal protective equipment for safe entry into and rescue from confined spaces.

(F) Provide necessary equipment to facilitate non-entry retrieval for responders, unless the retrieval equipment would increase the overall risk or would not contribute to the rescue operations.

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 14-1993, f. 8/27/93, ef. 11/1/93.
OR-OSHA Admin. Order 2-1998, f. 3/11/98, ef. 3/11/98.
OR-OSHA Admin. Order 2-2000, f. 1/28/00, ef. 1/28/00.
OR-OSHA Admin. Order 12-2001, f. 10/26/01, ef. 10/26/01.
OR-OSHA Admin. Order 3-2005, f. 6/10/05, ef. 6/10/05.
OR-OSHA Admin. Order 9-2008, f. 9/19/08, ef. 1/1/09.
OR-OSHA Admin. Order 8-2009, f. 7/9/09, ef. 10/1/09.

437-002-0256 Stationary Compactors, Self-Contained Compactors, and Balers.

This applies to all stationary compactors, self-contained compactors, and balers.

You must comply with:

Subdivision 2/D Walking/Working Surfaces, for ladders, stairs and other walking/working surfaces.

Subdivision 2/J 1910.147, Control of Hazardous Energy, for maintenance, servicing, and repair activities.

Subdivision 2/J [~~1910.146, Permit Required~~] **437-002-0146** Confined Spaces for confined space hazards.

Subdivision 2/O Machine Guarding for any guarding hazard not covered in these rules.

YOUR RESPONSIBILITY:

To protect employees from hazards associated with stationary compactors, self-contained compactors, and balers.

Operators and other employees

(1) You must:

- Train and supervise equipment operators. Training must include information from the operation manual, when available, and these rules.
- Document the name(s) of the trainer and trainees along with the date of the training.
- Provide supervision to ensure employees follow correct operating procedures.
- Instruct all employees how to identify and report exposure to hazards.
- Prohibit wearing loose clothing, jewelry, or long loose hair that can become entangled in the equipment.

Installation, inspection and maintenance

(2) You must:

- Install the equipment according to the manufacturer's instructions.
- Keep the equipment in safe working order.
- Maintain the equipment according to manufacturer's recommendations when available.
- Follow the manufacturer's recommendations for inspecting and testing. If there are no manufacturer's recommendations available, inspect and test annually.
- Keep a record of inspections for a minimum of two years.
- Make sure that modifications do not diminish the original level of safety.
- Add safety precautions, resulting from modifications, to the operation manual, when available, and to the training information.
- Not allow the use of damaged, malfunctioning, or defective equipment.
- Ensure only qualified employees, trained and authorized by your management, or authorized service technicians are allowed to maintain and repair the equipment. Qualified employees must demonstrate a proficiency in maintaining and repairing the equipment.

Guard moving parts

(3) You must:

- Have guards that prevent body parts from getting caught by moving parts during the equipment's cycle.
- Use sustained manual pressure controls when not using point of operation guarding.
- Make certain the point of operation is visible to the operator when using sustained manual pressure controls.
- Make sure the equipment manufactured with interlocks will not function with the gate or door open.

Controls

(4) You must:

- Clearly label the function of each control.
- Make sure controls are not subject to unintentional activation.
- Have stop controls that are red, a different size than other controls, and not recessed.
- Keep emergency stop controls readily accessible to the operator, or within 3 feet of the operating feed area or chute opening at equipment location.
- Provide a way to stop the complete operation of the baler or compactor at any point in the cycle.
- Require horizontal balers equipped with an automatic start, to have a minimum 5-second audible and visual warning when the startup control is activated. Before the main motor starts, there must be visual warning lasting for not less than 10 additional seconds.
 - No alarm or delay is required when the horizontal baler is restarting from sleep mode.

Access points for Maintenance or Repairs

(5) You must:

- Make sure access covers
 - Have functional interlocks or locks that require hand tools for removal.
- Have warning signs on compactors that read:
 - Restricted Area, Authorized Employees Only,
 - Warning – Stand Clear When Tailgate or Container is in Motion and During Loading and Unloading,
 - Warning – This Compactor Starts Automatically,
 - Warning – Gate Must Be Closed Before Operating This Compactor.
- Have warning signs on balers that read:
 - CAUTION – Stand clear When Bale is Ejected,
 - WARNING – This Baler Starts Automatically,
 - DANGER – High Voltage,
 - DANGER – Disconnect and Lock Out Power Before Opening This Panel
- Replace missing or defaced signs.

Note: Additional sign requirements are in ANSI Z245-2-1997 7.10 compactors and ANSI Z245.5 –1997 5.1.6. balers.

Immediate work area

(6) You must:

- Not allow clutter or waste material that causes a safety hazard or obstructs safe operation to accumulate around the operator station.
- Include warning signs at all loading points and the point of operation on automatic cycling equipment indicating that the baler or compactor starts automatically.

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: APD Admin. Order 22-1988, f. 12/30/88, ef. 1/1/89.

OR-OSHA Admin. Order 7-2009, f. 7/7/09, ef. 7/21/09.

437-002-0312 Oregon Rules for Pulp, Paper and Paperboard Mills.

(1) General Requirements.

(a) Application. This section applies to establishments where pulp, paper, and paperboard are manufactured or converted. This section does not apply to logging and the transportation of logs to pulp, paper, and paperboard mills.

(b) Standards incorporated by reference. Standards covering issues of occupational safety and health which have general application without regard to any specific industry are incorporated by reference in sections (2) through (14) of this rule and in subsections (c) and (d) of this rule and made applicable under this rule. Such standards shall be construed according to the rules set forth in §1910.5, Applicability of Standards, in Subdivision A.

(c) General incorporation of standards. Establishments subject to this section shall comply with the following standards of the American National Standards Institute:

(A) Safety Requirements for Floor and Wall Openings, Railings, and Toeboards, A10.18-1983.

(B) Scheme for the Identification of Piping Systems, A13.1-1981 (R1993).

(C) Safety Code for Portable Wood Ladders, A14.1-1990.

(D) Safety Code for Portable Metal Ladders, A14.2-1990.

(E) Safety Code for Fixed Ladders, A14.3-1990.

(F) Safety Code for Cranes, Derricks, and Hoists, B30.2-1990.

(G) Overhead and Gantry Cranes, B30.17-1992.

(H) Crawler, Locomotive, and Truck Cranes, B30.8-1993.

- (I) Safety Code for Woodworking Machinery, ANSI O1.1-1992.
- (J) Method of Measurement of Real-Ear Protection of Hearing Protectors – Physical Attenuation of Ear Muffs, ANSI S3.19-1974 (R1990).
- (K) Practice for Occupational and Educational Eye and Face Protection, ANSI Z87.1-1989.
- (L) Requirements for Sanitation in Places of Employment, ANSI Z4.1-1986.
- (M) Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1979 (R 1991).
- (N) Practices for Respiratory Protection, ANSI Z88.2-1992.
- (O) Safety Requirements for Industrial Head Protection, ANSI Z89.1-1986.
- (P) Safety Color Code, ANSI Z535.1-1991.
- (Q) Practice for the Inspection of Elevators (Inspector’s Manual), ANSI/ASME A17.2-1988.
- (R) Safety Code for Elevators, Dumbwaiters, and Moving Walks, ANSI/ASME A17.1-1990.
- (S) Safety Code for Mechanical Power-Transmission Apparatus, ANSI/ASME B15.1-1992.
- (T) Safety Code for Conveyors, Cableways, and Related Equipment, ANSI/ASME B20.1-1993.
- (U) Power Piping, ANSI/ASME B31.1-1992.
- (V) Safety Code for Powered Industrial Trucks, ANSI/ASME B56.1.
- (W) Practice for Industrial Lighting, ANSI/IES RP-990.
- (X) Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, ANSI/NFPA 91-1992.
- (Y) Fire Department Self-Contained Breathing Apparatus Program, ANSI/NFPA 1404-1989.
- (Z) Safety Code for Ventilation and Operation of Open-Surface Tanks, ANSI/UL 641-1985.

(d) Other standards. The following standards shall be considered standards under this section:

- (A) ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels 1992, including addenda.
- (B) Building Exits Code for Life Safety from Fire, NFPA 101-1991.

(C) NFPA Code for Prevention of Sulfur Fires and Explosions, NFPA 655-1993.

(D) Safety in the Transportation, Storage, Handling and Use of Explosives, IME Pamphlet No. 17, March 1987, Institute of Makers of Explosives.

(2) Employee Training.

(a) Employees shall not be permitted to operate any machine or equipment until they have received proper training and are familiar with safe operating procedures.

(b) Employees shall be trained in proper lifting or moving techniques and methods. Mechanical devices should be used or employees should ask for assistance in lifting or moving heavy objects.

(c) In each area where hazardous substances may be encountered, personnel shall be trained to cope with emergencies arising from breaks, ruptures, or spills which would create a hazardous condition.

(d) Any faulty equipment or hazardous condition shall be promptly reported to the person in charge.

(e) When an employee is assigned to work alone in a remote or isolated area, a system shall be instituted whereby such employee reports to someone or a designated person shall check on his or her safety. The procedure shall designate the method of contact and the frequency. All persons will be trained on the procedures.

(3) Safe Practices.

(a) Guards. All driving mechanisms, power transmission apparatus, and prime movers shall be constructed, guarded, and used in conformity with Subdivision O, Machinery and Machine Guarding.

(b) Inspection of controls and safety devices. Brakes, back stops, antirunaway devices, overload releases, and other safety devices shall be inspected and tested frequently to insure that all are operative and maintained in good repair.

(c) Personal protective clothing and equipment. Personal protective clothing and equipment shall be provided and worn in accordance with Subdivision I, Personal Protective Equipment. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(d) Floors and platforms. Floors, platforms, and work surfaces shall be guarded and maintained in accordance with §1910.23, in Subdivision D, Walking-Working Surfaces.

(e) Lockouts. Lockout/tagout shall be in accordance with the requirements of §1910.147, in Subdivision J, with the exception that:

(A) There will be no tagouts allowed in lieu of lockout for that which can be locked out. Tags are provided for identification and information purposes only.

(B) Persons engaged in repair, inspection, maintenance, or clean-up shall lockout the affected equipment, retain possession of the keys to the locks, and personally remove the lock and tag upon completion of the work.

(C) Group lockout. (See Appendices A and B.)

(i) When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout device.

(ii) Group lockout devices shall be used in accordance with the procedures required by §1910.147(c)(4) including, but not necessarily limited to, the following specific requirements.

(I) Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout device (such as an operations lock);

(II) Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout of the machine or equipment; and

(III) When more than one crew, craft, department, etc. is involved, assignment or overall job-associated lockout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and

(IV) Each authorized employee shall affix a personal lockout device to the group lock-out device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained; and

(V) Any person involved in the lockout process shall have the right to place their own lock at each lockout location where group lockout procedures have been allowed.

(f) Confined space entry. Confined space entry shall be in accordance with ~~§1910.146, Permit-Required~~ **437-002-0146** Confined Spaces, in Subdivision J.

(g) Industrial power trucks.

(A) All industrial power trucks and operations shall conform to §1910.178, Powered Industrial Trucks, Subdivision N, Material Handling and Storage. All forklift trucks shall be provided with overhead guards. Design requirements shall provide protection for the liquid petroleum gas tank. All guards shall be designed in compliance with §1910.178, Powered Industrial Trucks, in Subdivision N.

(B) Mirrors or other methods to ensure visibility shall be installed at blind corners or intersections which will allow operators to observe oncoming traffic.

(C) Every power truck operated from an end platform or standing position shall be equipped with a platform extending beyond the operator's position, strong enough to withstand a compression load equal to the weight of the loaded vehicle applied along the longitudinal axis of the truck with the outermost projection of the platform against the flat vertical surface.

(D) Pushing of vehicles or rail cars with the forks or clamps of a lift truck is prohibited.

(h) Emergency lighting.

(A) Emergency lighting shall be provided wherever it is necessary for employees to remain at their machines or stations to shut down equipment in case of power failure. Emergency lighting shall be provided at stairways and passageways or aiseways used by employees for emergency exit in case of power failure. Emergency lighting shall be provided in all plant first aid and medical facilities.

(B) Emergency lighting shall be maintained in accordance with the manufacturer or engineering specifications, and shall be checked at least every 30 days for defects.

(i) Electrical equipment. All electrical installations and electrical utilization equipment shall comply with the National Electrical Code requirements and the provisions of Subdivision S, Electrical.

(37) Handling and Storage of Pulpwood and Pulp Chips.

(a) Handling pulpwood with forklift trucks. Where large forklift trucks, or lift trucks with clam-jaws, are used in the yard, the operator's enclosed cab shall be provided with an escape hatch, whenever the hydraulic arm blocks escape through the side doors.

(b) Handling pulpwood with cranes or stackers.

(A) Where locomotive cranes are used for loading or unloading pulpwood, the pulpwood shall be piled so as to allow a clearance of not less than 24 inches between the pile and the end of the cab of any locomotive crane in use, when the cab is turned in any working position.

(B) The minimum distance of the pulpwood pile from the centerline of a standard-gage track shall be maintained at not less than 8-1/2 feet.

(C) Logs shall be piled in an orderly and stable manner, with no projection into walkways or roadways.

(D) Rail cars shall not be spotted on tracks adjacent to the locomotive cranes unless a 24-inch clearance is maintained, as required in section (4)(b)(A) of this rule.

(E) The handling and storage of other materials shall conform to sections (4)(b)(A) and (B) of this rule with respect to clearance.

(F) Equipment and practices shall conform to American National Standards B30.2-1990 and B30.2.0-1967.

(G) Personal protective equipment for such uses as foot, head, and eye protection shall be required for workers on a job basis.

(H) No person shall be permitted to walk beneath a suspended load, bucket, or hook.

(c) Pulpwood storage and handling.

(A) Unauthorized vehicles and unauthorized foot traffic shall not be allowed in any active sorting, storing, loading, or unloading areas.

(B) Unloading lines shall be so arranged that it is not necessary for the workers to attach them on the pond or dump side of the load.

(C) Jackets or vests of fluorescent or other high visibility material shall be worn by persons working on dry land log storage.

(D) Wire rope doglines used for towing or rafting shall not be used when:

(i) They acquire jiggers to the extent that they present a hazard to the workers handling them; or

(ii) When they are weakened to the extent that they are hazardous.

(E) Boom sticks shall be capable of safely supporting the weight imposed upon them.

(F) Stiff booms shall be made by fastening not less than two boom sticks together. The width of the stiff boom shall be not less than 36 inches measured from outside to outside of the outer logs. The boom sticks shall be fastened together with not less than 4-inch by 6-inch cross ties or cable lashing properly recessed into notches in the boom sticks and secured.

(G) Pike poles shall be kept in good repair. Conductive pike poles shall not be used where it is possible that they may come in contact with electrical conductors.

(H) All log dumps shall be periodically cleared of bark and other debris.

(I) When cutting bands on bundled logs, workers shall position themselves in a safe location. Double-bitted axes shall not be used for cutting bands. Caution shall be used to prevent being struck by ends of bands being cut and, if needed, personal protective equipment shall be worn.

(J) Storing or sorting on water, or any boom work other than boom boat operations, shall require a minimum of two persons.

(d) Handling pulpwood from ships.

(A) Ladders and gangplanks with railings to boat docks shall meet the requirements of American National Standards A10.18-1983, A14.1-1990, A14.2-1990, and A14.3-1990, and shall be securely fastened in place.

(B) The hatch tender shall be required to signal the hoisting engineer to move the load only after the employees working in the hold are in the clear.

(C) The air in the ship's hold, tanks, or closed vessels shall be tested for oxygen deficiency and for toxic, explosive and combustible gases and vapors.

(e) Handling pulpwood from flatcars and all other rail cars.

(A) Railroad flatcars for the conveyance of pulpwood loaded parallel to the length of the car shall be equipped with safety-stake pockets.

(B) Where pulpwood is loaded crosswise on a flatcar sufficient stakes of sizes not smaller than 4 by 4 inches shall be used to prevent the load from shifting.

(C) When it is necessary to cut stakes, those on the unloading side should be partially cut through first, and then the binder wires cut on the opposite side. Wire cutters equipped with long extension handles shall be used. No person shall be permitted along the dumping side of the car after the stakes have been cut.

(D) When steel straps without stakes are used, the steel straps shall be cut from a safe area to prevent employees from being struck by the falling logs.

(E) Flatcars and all other cars shall be chocked during unloading. Where equipment is not provided with hand brakes, rail clamping chocks shall be used.

(F) A derail shall be used to prevent movement of other rail equipment into cars where persons are working.

(f) Handling pulpwood from trucks.

(A) Cutting of stakes and binder wires shall be done in accordance with section (4)(e)(C) of this rule.

(B) Where binder chain and steel stakes are used, the binder chains shall be released and the stakes tripped from the opposite side of the load spillage.

(C) Where binder chains and crane slings are used, the crane slings shall be attached and taut before the binder chains are released. The hooker shall see that the helper is clear before signaling for the movement of the load.

(D) The truck driver shall leave the truck cab and be in the clear, in a designated area, and shall be in clear view of the unloading equipment operator while the unloader is approaching the loaded truck.

(E) The truck driver shall remain outside the cab and clear of the load while logs are being unloaded except that, after a complete load is lifted as a unit and held stationary, the driver may enter the cab and drive forward from under the suspended load.

(F) Log unloaders shall not be moved about the premises with loads raised higher than absolutely necessary.

(g) Handling pulp chips from rail cars.

(A) All cars shall be securely fastened in place and all employees in the clear before dumping is started.

(B) Personal protective equipment for such uses as foot, head, and eye protection shall be provided, and employees shall wear the equipment when working in the woodyard. Ear protection shall be provided when the noise level may be harmful.

(C) When a rollover-type unloading device is used for removing chips from cars, the cars shall be properly secured in place, and all employees shall be in the clear before dumping operation is started.

- (h) Handling pulp chips and hog fuel from trucks and trailers.
 - (A) All trucks and trailers shall be secure and all employees in the clear before dumping is started.
 - (B) Personal protective equipment necessary to protect workers from hazards shall be provided and worn.
 - (C) Elevating platform-type or cable-lift type unloading devices shall have adequate back bumper stops.
 - (D) Side rails or other positive means to prevent the truck and/or trailer from falling shall be used while unloading the single trailer units.
 - (E) All persons shall be clear of all hoisting or elevating mechanisms before dumping commences.
 - (F) No person shall remain in any truck while the truck is being elevated.
 - (G) A safe area and suitable device shall be provided for the chip tester to use while taking chip samples.
 - (H) Rolled chip nets shall not be positioned where they cover the ladders on rail cars or trucks.
 - (I) Chip and hog fuel storage.
 - (i) When mobile equipment is used on top of hog fuel or chip piles, a roll-over protection system shall be installed on the equipment. If the cab is of the enclosed type, windshield wipers shall be installed.
 - (ii) Hog fuel bins shall be provided with standard railed platform or walkways near the top or other equally effective means shall be provided for use by employees engaged in dislodging hog fuel.
 - (iii) Extreme care shall be taken to prevent chips or hog fuel from creating an overhang or bridging.
 - (iv) Employees shall be prohibited from working under overhangs or bridges.
 - (J) Chip and sawdust bins. Steam or compressed-air lances, or other facilities, shall be used for breaking down the arches caused by jamming in chip lofts. No worker shall be permitted to enter a bin unless done in accordance with [~~§1910.146, Permit-Required~~] **437-002-0146** Confined Spaces, in Subdivision J.
- (i) Crane operations.
 - (A) Crane boom and load capacities as specified by the manufacturer shall be posted in the cab of the crane in accordance with §1910.180, Crawler, Locomotive and Truck Cranes, in Subdivision N, Material Handling and Storage.

(B) A safety device such as a heavy chain or cable at least equal in strength to the lifting cables shall be fastened to the boom and to the frame of the boom crane (if it is other than locomotive) at the base. Alternatively, a telescoping safety device shall be fastened to the boom and to the cab frame, so as to prevent the boom from snapping back over the cab in the event of lifting cable breakage.

(C) A crane shall not be operated where any part thereof may come within 10 feet of overhead powerlines (or other overhead obstructions) unless the powerlines have been de-energized, or clearances are maintained as specified in §1910.303, General Requirements, in Subdivision S, Electrical.

(D) Standard signals for the operation of cranes shall be established for all movements of the crane, in accordance with American National Standards B30.2-1990 and B30.8-1988.

(E) Only one member of the crew shall be authorized to give signals to the crane operator.

(F) All cranes shall be equipped with a suitable warning device such as a horn or whistle.

(G) A sheave guard shall be provided beneath the head sheave of the boom.

(H) Grapples, tongs, and buckets shall not be left suspended when not in use.

(j) Traffic warning signs or signals.

(A) A flagger shall direct the movement of cranes or locomotives being moved across railroad tracks or roads, and at any points where the vision of the operator is restricted. The flagger must always remain in sight of the operator when the crane or locomotive is in motion. The blue flag policy shall be used to mark stationary cars day and night. This policy shall include marking the track in advance of the spotted cars (flag for daytime, light for darkness).

(B) After cars are spotted for loading or unloading, warning flags or signs shall be placed in the center of the track at least 50 feet away from the cars and a derail set to protect workers in or on the car.

(k) Rail car operations and railroad warning devices.

(A) On a dead end spur, a blue signal may be displayed adjacent to the switch opening while cars are being loaded or unloaded. When such warning devices are displayed, the equipment shall not be coupled to or moved.

(B) Equipment which would obscure the blue signal shall not be placed on the track.

(C) Each maintenance crew shall display and remove its own set of blue signals.

(D) A flashing warning light or other device shall be installed near any opening which leads to a passageway crossing railroad tracks adjacent to the building. Such light or device shall be activated prior to any switching or movement of railroad equipment to warn workers of the dangerous condition in the area.

(E) Workers shall not crawl under or pass between coupled rail cars to cross tracks.

(F) An audible whistle, horn, or bell shall be sounded by the locomotive engineer to give adequate warning prior to switching across any road crossing.

(G) When switching railroad equipment in congested areas or across roadways or walkways, "flying switches" shall be prohibited.

(H) All freight car doors shall be inspected before workers open or close them. A safe method shall be used to open or close the door.

(I) Illumination. Artificial illumination shall be provided when loading or unloading is performed after dark, in accordance with American National Standard ANSI/IES-RP-1990, Practice for Industrial Lighting.

(m) Bridge or dock plates.

(A) The construction and use of bridge or dock plates shall conform to requirements of §1910.30(a), Walking-Working Surfaces, in Subdivision D.

(B) The sides of bridge or dock plates shall have an upturn or lip of at least 4 inches covering the area between the edge of the loading dock and edge of car or truck floor whenever the distance exceeds 18 inches to prevent wheeled equipment from running off the sides.

(C) Bridge or dock plates shall have at least 6 inches bearing surface on the loading dock.

(D) Bridge or dock plates intended to be moved by mechanized equipment shall be designed for this purpose or attachments for safe handling shall be used.

(n) Hand tools. Handles of wood hooks shall be locked to the shank to prevent them from rotating.

(o) Removal of pulpwood.

(A) The ends of a woodpile shall be properly sloped and cross-tiered into the pile. Upright poles shall not be used at the ends of woodpiles. To knock down wood from the woodpile, mechanical equipment shall be used to permit employees to keep in the clear of loosened wood.

(B) If dynamite is used to loosen the pile, only authorized personnel shall be permitted to handle and discharge the explosive. An electric detonator is preferable for firing; if a fuse is used, it shall be an approved safety fuse with a burning rate of not less than 120 seconds per yard and a minimum length of 3 feet, in accordance with "Safety in the Transportation, Storage, Handling and Use of Explosives", IME Pamphlet No. 17, March 1987.

(p) Log hauls, slips and carriages.

(A) Controls shall be arranged to operate from a position where the operator will at all times be in the clear of logs, machinery, lines, and rigging.

(B) Controls shall be marked to indicate their function.

- (C) An effective method of disengaging the head rig saws from the power unit shall be installed on all head rigs where the power unit is not directly controlled by the sawyer. The saws shall be disengaged from the source of power which shall be locked out before repairs or changes are made.
- (D) When needed for protection of personnel, an automatic stop or interlocking device shall be installed on log hauls or slips.
- (E) A barricade or other positive stop of adequate strength shall be provided to protect the sawyer from rolling logs.
- (F) A guard shall be provided to prevent logs from rolling off the log deck into the well.
- (G) The sawyer shall be safeguarded either by his or her location or by use of substantial screens or approved safety glass.
- (H) A substantial stop or bumper shall be installed at each end of the carriage run.
- (I) Canting gear or other equipment shall not be allowed to hang over the log deck in such a manner as to endanger employees.
- (J) Canting gear controls shall be marked to indicate their function.
- (K) The sawyer shall be primarily responsible for the safety of the carriage crew and off-bearers. He or she shall exercise due care in the operation of the carriage and log turning devices.
- (L) A control device shall be provided so that the sawyer may stop the head rig section of the mill without leaving his or her stand.
- (M) The feed control lever of friction or belt-driven carriage feed works shall be designed to operate away from the saws or carriage track.
- (N) Feed works and log turning control levers shall be so arranged that they may be secured when not in use and shall be adequately guarded against accidental activation.
- (O) Carriages upon which persons are required to work shall be solidly decked over and the employees properly protected.
- (P) Substantial sweeps shall be installed in front of each carriage wheel. Such sweeps shall extend to within 1/4 inch of the rails.
- (Q) Where power-operated log turners are used, carriage knees shall be provided with goosenecks or other substantial means of protecting the carriage crew.
- (q) Belt conveyors.
- (A) The sides of the conveyor shall be constructed so that the pulpwood will not fall off.

(B) Where conveyors cross passageways or roadways, a horizontal platform shall be provided under the conveyor extending out from the sides of the conveyor a distance equal to 1-1/2 times the length of the wood handled. The platform shall extend the width of the road plus 2 feet on each side and shall be kept free of wood and rubbish. The edges of the platform shall be provided with toeboards or other protection to prevent wood from falling, in accordance with American National Standard A10.18-1983.

(C) All conveyors for pulpwood shall have the in-running nips between chain and sprockets guarded; also, turning drums shall be guarded.

(D) Every belt conveyor shall have an emergency stop cable extending the length of the conveyor so that it may be stopped from any location along the line, or conveniently located stop buttons within 10 feet of each work station, in accordance with American National Standard ANSI/ASME B20.1-1993.

(r) Signs. Where conveyors cross walkways or roadways in the yards, signs reading "Danger – Overhead Conveyor" or an equivalent warning shall be erected, in accordance with American National Standard for Safety Color Code, ANSI Z535.1-1991.

(5) Handling and Storage of Raw Materials Other Than Pulpwood or Pulp Chips.

(a) Personal protective equipment.

(A) Whenever possible, all dust, fumes, and gases incident to handling materials shall be controlled at the source, in accordance with OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z. Where control at the source is not possible, respirators with goggles or protective masks shall be provided, and employees shall wear them when handling alum, clay, soda ash, lime, bleach powder, sulfur, chlorine, and similar materials, and when opening rag bales.

(B) When handling liquid acid or alkali, workers shall be provided with approved eye and face protection and protective clothing, in accordance with Subdivision I, Personal Protective Equipment.

(b) Clearance.

(A) When materials are being piled inside a building and upon platforms, an aisle clearance at least 3 feet greater than the widest truck in use shall be provided.

(B) Baled paper and rags stored inside a building shall not be piled closer than 18 inches to walls, partitions, or sprinkler heads.

(c) Piling and unpling pulp.

(A) Piles of wet lap pulp (unless palletized) shall be stepped back one-half the width of the sheet for each 8 feet of pile height. Sheets of pulp shall be interlapped to make the pile secure. Pulp shall not be piled over pipelines to jeopardize pipes, or so as to cause overloading of floors, or to within 18 inches below sprinkler heads.

(B) Piles of pulp shall not be undermined when being unplied.

(C) Floor capacities shall be clearly marked on all floors.

(d) Chocking rolls.

(A) Where rolls are pyramided two or more high, chocks shall be installed between each roll on the floor and at every row. Where pulp and paper rolls are stored on smooth floors in processing areas, rubber chocks with wooden core shall be used.

(B) When rolls are decked two or more high, the bottom rolls shall be chocked on each side to prevent shifting in either direction.

(6) Preparing Pulpwood.

(a) Gang and slasher saws. A guard shall be provided in front of all gang and slasher saws to protect workers from wood thrown by saws. A guard shall be placed over tail sprockets.

(b) Slasher tables. Saws shall be stopped and power switches shall be locked out and tagged whenever it is necessary for any person to be on the slasher table.

(c) Slasher drive belts, pulleys, and shafts. All belts, pulleys, and shafts shall be guarded in accordance with American National Standard ANSI/ASME B15.1-1992.

(d) Runway to the jack ladder. The runway from the pond or unloading dock to the table shall be protected with standard handrails and toeboards. Inclined portions shall have cleats or equivalent nonslip surfacing, in accordance with Subdivision D, Walking-Working Surfaces. Protective equipment shall be provided for persons working over water.

(e) Guards below table. Where not protected by the frame of the machine, the underside of the slasher saws shall be enclosed with guards.

(f) Conveyors. The requirements of section (4)(q) of this rule shall apply.

(g) Circular saws (not slasher saws). Saws shall be provided with standard guards, in accordance with American National Standard ANSI O1.1-1992.

(h) Fixed chain saws, circular cut-off saws, drag and swing saws.

(A) Saws shall be so arranged that they will not project into any passageway when in an idle or working position. When existing conditions do not leave clear passage the saws shall be fenced off in order to make it impossible for anyone to walk into them.

(B) Drag saws and fixed chain saws shall be equipped with a device that will safely lock them in an "UP" position.

(C) All persons shall be in the clear before starting operations of a drag, chain, or swing saw.

(D) Log decks shall be equipped with a device to hold the material stable while being cut.

(i) Barker feed. Each barker shall be equipped with a feed and turnover device which will make it unnecessary for the operator to hold a bolt or log by hand during the barking operation. Eye, ear, and head protection shall be provided for the operator, in accordance with section (3)(c) of this rule.

- (j) Guards. A guard shall be installed around barkers to confine flying particles, in accordance with ANSI/ASME B15.1-1992.
- (k) Stops. All control devices shall be locked out and tagged when knives are being changed.
- (l) Speed governor. Water wheels, when directly connected to barker disks or grinders, shall be provided with speed governors, if operated with gate wide open.
- (m) Continuous barking drums.
- (A) When platforms or floors allow access to the sides of the drums, a standard railing shall be constructed around the drums. When two or more drums are arranged side by side, proper walkways with standard handrails shall be provided between each set, in accordance with section (3)(d) of this rule.
 - (B) Sprockets and chains, gears, and trunnions shall have standard guards, in accordance with section (3)(a) of this rule.
 - (C) Whenever it becomes necessary for a worker to go within a drum, the driving mechanism shall be locked and tagged, at the main disconnect switch, in accordance with section (3)(e) of this rule.
 - (D) This subsection (m) also applies to barking drums employed in the yard.
- (n) Intermittent barking drums. In addition to motor switch, clutch, belt shifter, or other power disconnecting device, intermittent barking drums shall be equipped with a device which may be locked to prevent the drum from moving while it is being emptied or filled.
- (o) Hydraulic barkers.
- (A) Hydraulic barkers shall be enclosed with strong baffles at the inlet and the outlet. The operator shall be protected by at least five-ply laminated glass.
 - (B) The high pressure hoses of hydraulic barkers shall be secured in such a manner that the hose connection ends will be restrained if a hose connection fails.
- (p) Splitter block. The block upon or against which the wood is rested shall have a corrugated surface or other means provided that the wood will not slip. Wood to be split, and also the splitting block, shall be free of ice, snow, or chips. The operator shall be provided with eye and foot protection. A clear and unobstructed view shall be maintained between equipment and workers around the block and the workers' help area.
- (q) Power control. Power for the operation of the splitter shall be controlled by a clutch or equivalent device.
- (r) Knot cleaners. The operators of knot cleaners of the woodpecker type shall wear eye protection equipment.

(s) Chipper spout. The feed system to the chipper spout shall be arranged in such a way that the operator does not stand in a direct line with the chipper spout. All chipper spouts shall be enclosed to a height of at least 42 inches from the floor or operator's platform. When other protection is not sufficient, the operator shall be protected from falling into the chipper by the use of a safety belt and lanyard. Ear protection equipment shall be worn by the operator and others in the immediate area if there is any possibility that the noise level may be harmful (see §1910.95, Occupational Noise Exposure, in Subdivision G).

(t) Feeding material/clearing jams in machines. Appropriate safety belts and lanyards and face protection shall be used by employees who manually feed material or clear jams in machines unless other provisions are made which will protect the employees.

(u) Carriers for knives. Carriers shall be provided and used for transportation of knives.

(7) Rag and Old Paper Preparation.

(a) Ripping and trimming tools.

(A) Hand knives and scissors shall have blunt points, shall be fastened to the table with chain or thong, and shall not be carried on the person but placed safely in racks or sheaths when not in use.

(B) Hand knives and sharpening steels shall be provided with guards at the junction of the handle and the blade. Utility knives with blade exposure of 2-1/2 inches or less are exempted from this requirement.

(b) Shredders, cutters, and dusters.

(A) Rotating heads or cylinders shall be completely enclosed except for an opening at the feed side sufficient to permit only the entry of stock. The enclosure shall extend over the top of the feed rolls. It shall be constructed either of solid material or with mesh or openings not exceeding 1/2-inch and substantial enough to contain flying particles and prevent accidental contact with moving parts. The enclosure shall be bolted or locked into place.

(B) A smooth-pivoted idler roll resting on the stock or feed table shall be provided in front of feed rolls except when arrangements prevent the operator from standing closer than 36 inches to any part of the feed rolls.

(C) Any manually fed cutter, shredder, or duster shall be provided with an idler roll as per section (7)(b)(B) of this rule or the operator shall use special hand-feeding tools.

(D) Hoods of cutters, shredders, and dusters shall have exhaust ventilation, in accordance with §1910.94, Ventilation, in Subdivision G.

(c) Blowers.

(A) Blowers used for transporting rags shall be provided with feed hoppers having outer edges located not less than 48 inches from the fan.

(B) The arrangement of the blower discharge outlets and work areas shall be such as to prevent material from falling on workers.

(d) Conveyors. Conveyors and conveyor drive belts and pulleys shall be fully enclosed or, if open and within 7 feet of the floor, shall be constructed and guarded in accordance with section (4)(q) of this rule, and Subdivision N, Material Handling and Storage.

(e) Guarding requirements.

(A) Traveling sections of conveyors and other equipment with wheels which run on rails or guides shall be guarded by sweep guards, installed in front of the traveling wheels in all areas where workers may be exposed to contact. Sweep guards shall have not greater than 1/4 inch clearance above the rail or guide.

(B) When using mechanical equipment to elevate the front end of the chip containers for dumping into a hopper, the shear area between the floor and the elevated section shall be safeguarded.

(f) Dust. Measures for the control of dust shall be provided, in accordance with American National Standard ANSI/NFPA 91-1992 and Subdivision I, Personal Protective Equipment.

(g) Rag cookers.

(A) When cleaning, inspection, or other work requires that persons enter rag cookers, all steam and water valves, or other control devices, shall be locked and tagged in the closed or "off" position. Blank flanging of pipelines is acceptable in place of closed and locked valves.

(B) When cleaning, inspection, or other work requires that persons must enter the cooker, one person shall be stationed outside in a position to observe and assist in case of emergency, in accordance with section (3)(f) of this rule.

(C) Rag cookers shall be provided with safety valves in accordance with the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels – 1992.

(8) Chemical Processes of Making Pulp.

(a) Industrial kiln guns and ammunition. Management shall develop written instructions, including safety procedures, for storing and operating industrial kiln guns and ammunition. All persons working with this equipment shall be instructed in these procedures and shall follow them.

(b) Sulfur burners.

(A) Sulfur-burner houses shall be safely and adequately ventilated, and every precaution shall be taken to guard against dust explosion hazards and fires, in accordance with American National Standard Z9.2-1979 (R1991), and NFPA 655-1993.

(B) Nonsparking tools and equipment shall be used in handling dry sulfur.

(C) Sulfur storage bins shall be kept free of sulfur dust accumulation, in accordance with American National Standard ANSI Z9.2-1979 (R1991).

(D) Electric equipment shall be of the explosion-proof type, in accordance with the requirements of Subdivision S, Electrical.

(E) Sulfur-melting equipment shall not be located in the burner room.

(c) Protection for employees (acid plants).

(A) Gas masks, fitted with canisters containing absorbents for the particular acids, gases, or mists involved, shall be provided for employees of the acid department.

(B) Supplied air respirators shall be strategically located for emergency and rescue use.

(C) During inspection, repairs, or maintenance of acid towers, the worker shall be provided with eye protection, a supplied air respirator, a safety belt, and an attached lifeline. The line shall be extended to an attendant stationed outside the tower opening.

(d) Acid tower structure. Outside elevators shall be inspected daily during winter months when ice materially affects safety. Elevators, runways, stairs, etc., for the acid tower shall be inspected monthly for defects that may occur because of exposure to acid or corrosive gases.

(e) Tanks (acid). Entering acid tanks shall be in accordance with [~~§1910.146, Permit-Required~~] **437-002-0146** Confined Spaces, in Subdivision J.

(f) Clothing. Where lime slaking takes place, employees shall be provided with rubber boots, rubber gloves, protective aprons, and eye protection. A deluge shower and eye fountain shall be provided to flush the skin and eyes to counteract lime or acid burns.

(g) Lead burning. When lead burning is being done within tanks, fresh air shall be forced into the tanks so that fresh air will reach the face of the worker first and the direction of the current will never be from the source of the fumes toward the face of the workers. Supplied air respirators (constant-flow type) shall be provided.

NOTE: (For specifics refer to Subdivision Q, Welding, Cutting and Brazing; and §1910.1025, Lead, in Subdivision Z.)

(h) Hoops for acid storage tanks. Hoops of tanks shall be made of rods rather than flat strips and shall be safely maintained by scheduled inspections.

(i) Quicklime stoppages. Water shall not be used to unplug quicklime stops or plugs in pipes or confined spaces.

(j) Digester building exits. At least one unobstructed exit at each end of the room shall be provided on each floor of a digester building.

(k) Digester building escape respirators. Escape respirators shall be available for escape purposes only. These respirators shall meet the requirements of §1910.134 in Subdivision I, including the requirement to be inspected at frequent intervals, not to exceed one month.

(l) Elevators.

(A) Elevators shall be constructed in accordance with American National Standard A17.1-1990.

(B) Elevators shall be equipped with escape respirators for the maximum number of passengers.

- (C) Elevators shall be equipped with an alarm system to advise of failure.
- (m) Blowoff valves and piping.
- (A) The blowoff valve of a digester shall be arranged so as to be operated from another room, remote from safety valves.
- (B) All fasteners used to secure digester piping shall conform to ANSI/ASME B31.1-1992.
- (C) Digester blow valves shall be pinned or locked in closed position throughout the entire cooking period. This rule applies only to manually operated valves in batch digestors.
- (n) Blow lines.
- (A) When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank being inspected or repaired shall be locked and tagged out, or the line shall be disconnected and blocked off.
- (B) Test holes in piping systems. Test holes in blow lines of piping systems shall not be covered with insulation or other materials.
- (o) Inspection and repair of tanks. All piping leading to tanks shall be blanked off or valved and locked in accordance with §1910.147, Lockout/Tagout, in Subdivision J.
- (p) Blow pits and blow tanks.
- (A) Blow-pit openings shall be preferably on the side of the pit instead of on top. When located on top, openings shall be as small as possible and shall be provided with railings, in accordance with Subdivision D, Walking-Working Surfaces.
- (B) Entrance into blow pits must be done in accordance with ~~§1910.146~~ **437-002-0146**, Subdivision J.
- (C) A signaling device shall be installed in the digester and blow-pit rooms and chip bins to be operated as a warning before and while digesters are being blown.
- (D) Blow-pit hoops shall be maintained in a safe condition.
- (q) Blowing batch digester.
- (A) Blowoff valves shall be opened slowly.
- (B) After the digester has started to be blown, the blowoff valve shall be left open, and the hand plate shall not be removed until the digester cook signals the blowpit person that the blow is completed. Whenever it becomes necessary to remove the hand plate to clear stock, operators shall wear eye protection equipment and protective clothing to guard against burns from hot stock.
- (C) Means shall be provided whereby the digester cook shall signal the person in the chip bin before starting to load the digester.

(r) Inspecting and repairing digester.

(A) Valves controlling lines leading into a digester shall be locked out and tagged in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(B) Sources of energy associated with a digester shall be isolated in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(C) Entry into the digester shall be in accordance with [~~§1910.146, Permit Required~~] **437-002-0146** Confined Spaces, in Subdivision J.

(D) The concentration of lead in the air shall not exceed the limits specified in §1910.1025, Lead, Subdivision Z.

(E) All employees entering digesters for inspection or repair work shall be provided with protective headgear.

(F) Eye protection and dust respirators shall be provided to workers while the old brick lining is being removed, in accordance with Subdivision I, Personal Protective Equipment.

(G) Sanitary facilities shall be provided as specified in §1910.141, Sanitation, in Subdivision J.

(s) Pressure tanks-accumulators (acid).

(A) Safety regulations governing inspection and repairing of pressure tanks-accumulators (acid) shall be the same as those specified in section (8)(t) of this rule.

(B) The pressure tanks-accumulators shall be inspected twice annually and more frequently if required by the manufacturer or engineer's recommendations. (Refer to Boiler and Pressure Vessel Safety Laws of the State Building Codes Division, Department of Consumer and Business Services.)

(t) Pressure vessels (safety devices).

(A) Each unfired pressure vessel shall have a pressure relieving device or devices installed and operated in accordance with ASME Boiler and Pressure Vessel Code, Section VIII (Unfired Pressure Vessels – 1992). In the case of batch digesters with safety pressure relieving devices installed directly to the pressure vessel, means shall be devised to verify regularly that the safety devices have not become plugged or corroded to the point of being inoperative.

(B) All safety devices shall conform to Paragraph U-2 in the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels – 1992.

(u) Miscellaneous. Insofar as the processes of the sulfate and soda operations are similar to those of the sulfite processes, sections (8)(a) through (t) of this rule shall apply.

(A) Quick operating showers, bubblers, etc., shall be available for emergency use in case of caustic soda burns.

(B) Rotary tenders, smelter operators, and those cleaning smelt spouts shall be provided with eye protection equipment (fitted with lenses that filter out the harmful rays emanating from the light source) when actively engaged in their duties, in accordance with §1910.132, in Subdivision I.

(C) Piping, valves and fittings between the digester, blowpit, and blow tanks shall be in accordance with ANSI/ASME B31.1-1992. These shall be inspected at least semi-annually to determine the degree of deterioration and repaired or replaced when necessary, in accordance with American National Standards ANSI/ASME B31.1-1992.

(v) Welding. Welding on blow tanks, accumulator tanks, or any other vessels where turpentine vapor or other combustible vapor could gather shall be done only after the vessel has been completely purged of fumes. Fresh air shall be supplied workers inside of vessels.

NOTE: See Subdivision Q, Welding, Cutting and Brazing, for additional welding requirements.

(w) Turpentine systems and storage tanks. Nonsparking tools and ground hose shall be used when pumping out the tank. The tank shall be surrounded by a berm or moat.

(x) Recovery furnace area.

(A) An audible warning system shall be installed in kraft and soda base sulfite recovery furnace areas and shall be activated whenever an emergency exists.

(B) All personnel working in recovery furnace areas shall be instructed on procedures to be followed when emergency warning systems are activated.

(C) Emergency warning systems in the recovery furnace areas shall be kept in proper working condition and shall be tested or checked weekly.

(D) Workers shall stand to the side while opening a furnace or boiler firebox door.

(E) Smelt-dissolving tanks shall be covered and the cover kept closed, except when samples are being taken.

(F) Smelt tanks shall be provided with vent stacks and explosion doors, in accordance with American National Standard ANSI/UL 641-1985.

(G) An emergency shutdown procedure as currently recommended by the boiler manufacturer shall be implemented and used when an emergency shutdown is required. Both normal and emergency shutdown procedures shall be posted.

(H) Recovery furnaces and power boilers are to be constructed, maintained, and serviced as required by the State Building Codes Division of the Department of Consumer and Business Services.

(I) Open pipes shall not be used as punch bars if the use would create a hazard.

(J) Furnace room. Exhaust ventilation shall be provided where niter cake is fed into a rotary furnace and shall be so designed and maintained as to keep the concentration of hydrogen sulfide gas below the limits listed in OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z.

(9) Bleaching.

(a) Bleaching containers. Bleaching containers, such as cells, towers (bleaching engines), etc., except the Bellmer type, shall be completely covered on the top, with the exception of one small opening large enough to allow filling but too small to admit a person. Platforms leading from one engine to another shall have standard guardrails, in accordance with Subdivision D, Walking-Working Surfaces.

(b) Bleach plant alarm system. An audible alarm system shall be installed and it shall be activated whenever a serious leak or break develops in the bleach plant area which creates a health or fire hazard.

(c) Bleach mixing rooms.

(A) Areas where dry bleach powder is mixed shall be provided with adequate exhaust ventilation, located at the floor level, in accordance with ANSI/UL 641-1985.

(B) Respiratory protection shall be provided for emergency use, in accordance with American National Standards ANSI/NFPA 1404- 1989, and Z88.2-1980. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(C) For emergency and rescue work, self-contained air masks or supplied air equipment shall be provided in accordance with American National Standards Z88.2-1980. Respiratory protection must conform to the requirements of §1910.134 of Subdivision I.

(d) Liquid chlorine.

(A) Tanks of liquid chlorine shall be stored in an adequately ventilated unoccupied room, where their possible leakage cannot affect workers.

(B) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

(C) For emergency and rescue work, independent self-contained breathing apparatus or supplied air equipment shall be provided.

(D) At least two exits, remote from each other, shall be provided for all rooms in which chlorine is stored.

(E) Spur tracks upon which tank cars containing chlorine and caustic are spotted and connected to pipelines shall be protected by means of a derail in front of the cars.

(F) All chlorine, caustic, and acid lines shall be marked for positive identification, in accordance with American National Standard A13.1-1981 (R 1985).

(e) Handling chlorine dioxide.

(A) Chlorine dioxide generating and storage facilities shall be placed in areas which are adequately ventilated and are easily kept clean of wood, paper, pulp, etc., to avoid contamination which might cause a reaction. This can be accomplished by placing these facilities in a separate room or in a designated outside space.

(B) Safety showers and/or jump tanks and eyewash fountains shall be provided for persons working around sodium chlorate and the other hazardous chemicals involved in this process.

(C) Water hoses for flushing spills shall be adequate in size and located where needed.

(D) The generating area shall have signs in accordance with Subdivision J, General Environmental Controls, warning of the hazard and restricting entrance to authorized personnel only.

(E) Facilities handling sodium chlorate and chlorine dioxide shall be declared "No Smoking" areas and shall have signs posted accordingly.

(F) All equipment involved in the chlorine dioxide process where pressure may be generated shall be provided with adequate pressure relief devices.

(G) Respiratory protective equipment approved for use in exposures to chlorine and chlorine dioxide gases shall be provided.

(H) Management shall be responsible for developing written instructions including safety procedures for operating and maintaining the generator and associated equipment. All personnel working on this equipment shall be thoroughly trained in these procedures and shall follow them.

(I) Only authorized personnel shall be allowed in close proximity to the chlorine dioxide generating equipment.

(J) When reasonably possible, the sample station should be located on the outside of the generating room. Goggles must be worn when taking samples.

(K) Welding or burning shall not be performed on the generator system while it is operating. Immediately before maintenance can be performed on the inside of any of this equipment, it shall be thoroughly flushed with water and purged of hazardous gases.

(L) Chlorine and chlorine dioxide gas shall be carried away from the work place and breathing area by an exhaust system. The gas shall be rendered neutral or harmless before being discharged into the atmosphere. The requirements of American National Standard Z9.2-1979 (R1991) shall apply to this subdivision.

(f) Handling sodium chlorate.

(A) Workers handling and working with sodium chlorate shall be thoroughly trained in precautions to be used in handling and special work habits.

(B) Workers exposed to direct contact with sodium chlorate shall wear appropriate personal protective equipment.

(C) Facilities for storage and handling of sodium chlorate shall be constructed so as to eliminate possible contact of dry or evaporated sodium chlorate with wood or other material which could cause a fire or explosion.

(D) Chlorine gas shall be carried away from the work place and breathing area by an exhaust system. The gas shall be rendered neutral or harmless before being discharged into the atmosphere. The requirements of American National Standard Z9.2-1979 (R1991) shall apply to this subdivision.

(E) Sodium chlorate facilities shall be constructed with a minimum of packing glands, stuffing boxes, etc.

(g) Bagged or drummed chemicals. Bagged or drummed chemicals require efficient handling to prevent damage and spillage. Certain oxidizing chemicals used in bleaching pulp and also in some sanitizing work require added precautions for safety in storage and handling. In storage, these chemicals shall be isolated from combustible materials and other chemicals with which they will react such as acids. They shall also be kept dry, clean and uncontaminated.

(10) Mechanical Pulp Process.

(a) Pulp grinders.

(A) Water wheels directly connected to pulp grinders shall be provided with speed governors limiting the peripheral speed of the grinder to that recommended by the manufacturer.

(B) Doors of pocket grinders shall be arranged so as to keep them from closing accidentally.

(b) Butting saws. Hood guards shall be provided on butting saws, in accordance with American National Standard ANSI O1.1-1992.

(c) Floors and platforms. The requirements of section (3)(d) of this rule shall apply.

(d) Personal protection. Persons exposed to falling material shall wear eye, head, foot, and shin protection equipment, in accordance with Subdivision I, Personal Protective Equipment.

(11) Stock Preparation.

(a) Pulp shredders.

(A) Cutting heads shall be completely enclosed except for an opening at the feed side sufficient to permit only entry of stock. The enclosure shall be bolted or locked in place. The enclosure shall be of solid material or with mesh or other openings not exceeding 1/2-inch.

(B) Either a slanting feed table with its outer edge not less than 36 inches from the cutting head or an automatic feeding device shall be provided.

(C) Repairs for cleaning of blockage shall be done only when the shredder is shutdown and control devices locked.

(D) All power-driven mechanisms shall be guarded in accordance with section (3)(a) of this rule.

(b) Pulp conveyors. Pulp conveyors and conveyor drive belts and pulleys shall be fully enclosed, or if open and within 7 feet of the floor, shall be constructed and guarded in accordance with Subdivision N, Material Handling and Storage, and Subdivision O, Machinery and Machine Guarding.

(c) Floors, steps, and platforms. The requirements of section (3)(d) of this rule shall apply.

(d) Beaters.

(A) Beater rolls shall be provided with covers.

(B) Guardrails 42 inches high shall be provided around beaters where tub tops are less than 42 inches from the floor, in accordance with section (3)(d) of this rule and Subdivision D, Walking-Working Surfaces.

(C) When cleaning, inspecting, or other work requires that persons enter the beaters, all control devices shall be locked and tagged out, in accordance with §1910.147, Lockout, in Subdivision J.

(D) When beaters are fed from the floor above, the chute opening, if less than 42 inches from the floor, shall be provided with a complete rail or other enclosure. Openings for manual feeding shall be sufficient only for entry of stock and shall be provided with at least two permanently secured crossrails, in accordance with Subdivision D, Walking-Working Surfaces.

(E) Floors around beaters shall be provided with sufficient drainage to remove wastes.

(e) Pulpers.

(A) All pulpers having the top or any other opening of the vessel less than 42 inches from the floor or work platform shall have such openings guarded by railed or other enclosures. For manual charging, openings shall be sufficient only to permit the entry of stock and shall be provided with at least two permanently secured crossrails, in accordance with §1910.23, Guarding Floor and Wall Openings and Holes, in Subdivision D.

(B) When cleaning, inspecting or other work requires persons to enter the pulpers it shall be in accordance with ~~§1910.146, Permit Required~~ **437-002-0146** Confined Spaces, in Subdivision J. All power mechanisms shall be guarded as required in Subdivision O, Machinery and Machine Guarding.

(C) Cleaning or inspecting pulpers or other work, including work above the pulper in a dangerous position, shall be in accordance with §1910.147, Lockout, in Subdivision J.

(D) All power mechanisms shall be guarded in accordance with Subdivision O, Machinery and Machine Guarding.

(f) Pulping devices. ~~[(A)]~~ Emergency stop controls shall be provided at the feed point when pulping devices are fed manually from the floor above.

(g) Guillotine-type roll splitters. Rolls shall be centered and in a horizontal position directly below the guillotine-type blade while being split. No part of the body shall be under the guillotine-type blade.

(h) Stock chests and tanks.

(A) All control devices shall be locked when persons enter stock chests, in accordance with §1910.147, Lockout/Tagout, in Subdivision J.

(B) All power mechanisms shall be guarded in accordance with Subdivision O, Machinery and Machine Guarding.

(C) When cleaning, inspecting, or other work requires that persons enter stock chests, they shall be provided with a low-voltage extension light.

(12) Machine Room.

(a) Controls and safety devices.

(A) Electrically or manually operated power disconnecting devices for all power-operated equipment shall be provided within easy reach of the operator while in his or her normal operating position. If necessary for safety of the operation, the machine shall be so equipped that retarding or braking action can be applied at the time of or after the source of power is deactivated.

(B) Pulp and paper machines shall be equipped with stopping devices. The devices shall be located where they can be used readily to stop the machines or sections of the machine. Power disconnect devices and retarding or braking controls provided for in section (12)(a)(A) of this rule are required for the safe operation of a pulp and paper machine.

(C) Brakes, back stops, antirunaway devices, overload releases, and other safety devices shall be inspected and tested frequently to insure that all are operative and maintained in good repair.

(D) An audible alarm shall be sounded prior to starting up any section of a pulp or paper machine. Sufficient time shall be allowed between activation of the alarm system and start-up of the equipment to allow any persons to clear the hazardous area.

(E) In starting up a dryer section, dryers shall be preheated and steam for heating the drums shall be introduced slowly, while the drums are revolving.

(F) Employees shall not attempt to remove a broken carrier rope from a dryer while the section is running at operating speed.

(G) Employees shall not feed a stack with any hand-held device which is capable of going through the nip.

(H) Employees shall stop dryer to remove a wrap except in cases where it can be safely removed by using air or other safe means.

(I) Special protective gloves shall be provided and shall be worn by employees when filing or handling sharp-edged doctor blades.

(J) Employees shall not place their hands between the sharp edge of an unloaded doctor blade and the roll while cleaning the doctor blade.

(K) The crane operator shall ascertain that reels are properly seated at winder stand or at reel arms before he or she disengages the hooks.

(L) Shaftless winders shall be provided with a barrier guard of sufficient strength and size to confine the rolls in the event they become dislodged while running.

(M) Employees shall keep clear of hazardous areas around the lowerator, especially all lowerator openings in a floor and where roll is being discharged.

(N) If a powered roll ejector is used it should be interlocked to prevent accidental actuation until the receiving platform or roll lowering table is in position to receive the roll.

(O) Provision shall be made to hold the rider roll when in a raised position unless counter-balancing eliminates the hazard.

(b) Drives.

(A) All drives, pulleys, couplings, and shafts on equipment requiring service while operating shall have standard guards in accordance with section (3)(a) of this rule.

(B) All drives shall be provided with lockout devices at the power switch which interrupts the flow of current to the unit.

(C) All ends of rotating shafts including dryer drum shafts shall be completely guarded.

(D) All accessible disengaged doctor blades should be covered.

(E) All exposed shafts shall be guarded. Crossovers shall be provided.

(F) Oil cups and grease fittings shall be placed in a safe area remote from nip and heat hazards.

(c) Protective equipment. Face shields, aprons and rubber gloves shall be provided for workers handling acids in accordance with sections (3)(c) and (5)(a) of this rule.

(d) Walkways. Steps and footwalks along the fourdrinier and press section shall have nonslip surfacing and be complete with standard handrails, when practical, in accordance with §1910.23, in Subdivision D, Walking-Working Surfaces.

(e) Steps. Steps of uniform rise and tread with nonslip surfaces shall be provided at each press in accordance with Subdivision D, Walking-Working Surfaces.

(f) Plank walkways. A removable plank shall be provided along each press, with standard guardrails installed. The planks shall have nonslip surfaces in accordance with Subdivision D, Walking-Working Surfaces.

(g) Dryer lubrication. If a gear bearing must be oiled while the machine is in operation, an automatic oiling device to protect the oiler shall be provided, or oil cups and grease fittings shall be placed along the walkways out of reach of hot pipes and dryer gears.

(h) Levers. All levers carrying weights shall be constructed so that weights will not slip or fall off.

- (i) First dryer. Either a permanent guardrail or apron guard or both shall be installed in front of the first dryer in each section in accordance with Subdivision O, Machinery and Machine Guarding.
- (j) Steam and hot-water pipes. All exposed steam and hot-water pipes within 7 feet of the floor or working platform or within 15 inches measured horizontally from stairways, ramps, or fixed ladders shall be covered with an insulating material, or guarded in such manner as to prevent contact.
- (k) Dryer gears. Dryer gears shall be guarded except where the oilers' walkway is removed out of reach of the gears' nips and spokes and hot pipes in accordance with Subdivision O, Machinery and Machine Guarding.
- (l) Broke hole.
- (A) A guardrail shall be provided at broke holes in accordance with Subdivision D, Walking-Working Surfaces.
- (B) Where pulpers are located directly below the broke hole on a paper machine and where the broke hole opening is large enough to permit a worker to fall through, any employee pushing broke down the hole shall wear a safety belt and lanyard. The lanyard shall be fastened in such a manner that it is impossible for the person to fall into the pulper.
- (C) An alarm bell or a flashing light shall be actuated before dropping material through the broke hole.
- (m) Feeder belt. A feeder belt or other effective device shall be provided for starting paper through the calender stack.
- (n) Steps. Steps or ladders of uniform rise and tread with nonslip surfaces shall be provided at each calender stack. Handrails and hand grips shall be provided at each calender stack in accordance with Subdivision D, Walking-Working Surfaces.
- (o) Grounding. All calender stacks and spreader bars shall be grounded in accordance with Subdivision S, Electrical, as protection against shock induced by static electricity.
- (p) Sole plates. All exposed sole plates between dryers, calenders, reels, and rewinders shall have a nonskid surface.
- (q) Nip points. The hazard of the nip points on all calender rolls shall be eliminated or minimized by means of an effective barrier device, or by feeding the paper into the rolls by means of a rope carrier, air jets, or hand feeding devices.
- (r) Scrapers. Alloy steel scrapers with pullthrough blades approximately 3 by 5 inches in size shall be used to remove "scabs" from calender rolls.
- (s) Illumination. Permanent lighting shall be installed in all areas where employees are required to make machine adjustments and sheet transfers in accordance with American National Standard ANSI/IES RP-1990.
- (t) Control panels. All control panel handles and buttons shall be protected from accidental contact.

(u) Lifting reels.

(A) The reels shall stop rotating before being lifted from bearings.

(B) All lifting equipment (clamps, cables, and slings) shall be maintained in a safe condition and inspected regularly.

(C) Reel shafts with square block ends shall be guarded.

(v) Feeder belts. Feeder belts, carrier ropes, air carriage, or other equally effective means shall be provided for starting paper into the nip or drum-type reels.

(w) In-running nip.

(A) Where the nipping points of all drum winders and rewinders is on the operator's side, it shall be guarded by barrier guards interlocked with the drive mechanism.

(B) A zero speed switch or locking device shall be installed to prevent the guard from being raised, lowered, or removed while the roll is turning.

(x) Core collars. Set screws for securing core collars to winding and unwinding shafts shall not protrude above the face of the collar. All edges of the collar with which an operator's hand comes in contact shall be beveled to remove all sharp corners.

(y) Slitter knives. Slitter knives shall be guarded so as to prevent accidental contact. Carriers shall be provided and used for transportation of slitter knives.

(z) Winder shaft. The winder shall have a guide rail to align the shaft for easy entrance into the opened rewind shaft bearing housings.

(aa) Handling rolls, winders and core shafts. Mechanical handling equipment shall be provided for handling rolls, winder shafts, and core shafts that are too heavy for safe manual handling based on the NIOSH Work Practice Guide for Manual Lifting – 1981.

(bb) Winder area. A nonskid surface shall be provided in front of the winder to prevent accidental slipping.

(cc) Radiation. Special standards regarding the use of radiation equipment shall be posted and followed as required by §1910.1096, Ionizing Radiation, in Subdivision Z.

(13) Finishing Room.

(a) Cleaning rolls. Rolls shall be cleaned only on the outrunning side.

(b) Emergency stops. Electrically or manually operated quick power disconnecting devices, interlocked with braking action, shall be provided on all operating sides of the machine within easy reach of all employees. These devices shall be tested by making use of them when stopping the machine.

(c) Core collars. The requirements of section (12)(x) of this rule, and the requirements in Subdivision O, Machinery and Machine Guarding, shall apply.

(d) Elevators. These shall be in accordance with American National Standard ANSI/ASME A17.1-1990.

(e) Control panels. The requirements of section (12)(t) of this rule shall apply.

(f) Guillotine-type cutters.

(A) Each guillotine-type cutter shall be equipped with a control which requires the operator and helper, if any, to use both hands to engage the clutch when operated from within reach of blade.

(B) Each guillotine-type cutter shall be equipped with a nonrepeat device.

(C) Carriers shall be provided and used for transportation of guillotine-type cutter knives.

(g) Rotary cutter.

(A) On single-knife machines a guard shall be provided at a point of contact to the knife.

(B) On duplex cutters the protection required for single-knife machines shall be provided for the first knife, and a hood shall be provided for the second knife.

(C) Safe access shall be provided to the knives of a rotary cutter by means of catwalks with nonslip surfaces, railings, and toeboards in accordance with Subdivision D, Walking-Working Surfaces.

(D) A guard shall be provided for the spreader or squeeze roll at the nip side on sheet cutters.

(E) Electrically or manually operated quick power disconnecting devices with adequate braking action shall be provided on all operating sides of the machine within easy reach of all operators.

(F) The outside slitters shall be guarded.

(h) Platers.

(A) A guard shall be arranged across the face of the rolls to serve as a warning that the operator's hand is approaching the danger zone.

(B) A quick power disconnecting device shall be installed on each machine within easy reach of the operator.

(i) Finishing room rewinders.

(A) The nipping points of all drum winders and rewinders located on the operator's side shall be guarded by either automatic or manually operated barrier guards of sufficient height to protect fully anyone working around them. The barrier guard shall be interlocked with the drive mechanism to prevent operating above jog speed without the guard in place. A zero speed switch should be installed to prevent the guard from being raised while the roll is turning.

(B) A nonskid surface shall be provided in front of the rewinder to prevent an employee from slipping in accordance with section (3)(d) of this rule.

(C) Mechanical lifting devices shall be provided for placing and removing rolls from the machine.

(j) Control panels. The requirements of section (12)(t) of this rule shall apply.

(k) Roll-type embosser. The nipping point located on the operator's side shall be guarded by either automatic or manually operated barrier guards interlocked with the drive.

(l) Converting machines.

(A) When using a crane or hoist to place rolls into a backstand and the operator cannot see both ends of the backstand, appropriate means will be implemented to eliminate hazards involved. The operator shall ascertain that rolls are properly seated at winder stand or at roll arms before he or she disengages the hooks.

(B) All power closing sections shall be equipped with an audible warning system which will be activated when closing the sections.

(C) Slitters, slotters, and scorers not in use shall be properly stored so as not to create a hazard.

(D) Mechanical handling equipment shall be provided for handling rolls or devices that are too heavy for safe manual handling based on the NIOSH Work Practice Guide for Manual Lifting – 1981.

(E) Sheer and pinch points. Sheer and pinch points at the feed mechanism shall be color-coded orange and/or identified by signs in accordance with Subdivision J, General Environmental Controls.

(m) Sorting and counting tables.

(A) Tables shall be smooth and free from splinters, with edges and corners rounded.

(B) Paddles shall be smooth and free from splinters.

(n) Roll splitters. The nip point and cutter knife shall be guarded by either automatic or manually operated barrier guards.

(o) Corrugators.

(A) Rails of rail-mounted devices such as roll stands shall be flush with the adjacent floor, and so installed to provide a minimum of 18 inches clearance between the equipment and walls or other fixed objects.

(B) All corrugating and pressure rolls shall be equipped with appropriately designed and installed threading guides so as to prevent contact with the infeed nip of the various rolls by the operator.

(C) Lower elevating conveyor belt rolls on the single facer bridge shall have a minimum nip clearance of 4 inches.

(D) Web shears at the discharge end of the double facer shall be equipped with barrier-type guards.

(E) Slitter stations not in use shall be disconnected from the power source by positive means.

(F) The adhesive system shall be so designed and installed as to keep fumes and airborne dust within limits in accordance with OAR 437-002-0382, Oregon Rules for Air Contaminants, in Subdivision Z.

(14) Materials Handling.

(a) Hand trucks. No person shall be permitted to ride on a powered hand truck unless it is so designed by the manufacturer. A limit switch shall be on operating handle – 30° each way from a 45° angle up and down.

(b) Power trucks. Power trucks shall comply with Subdivision N, Material Handling and Storage. Adequate ventilation shall be provided and the trucks properly maintained, so that dangerous concentrations of carbon monoxide cannot be generated, especially in warehouses or other isolated areas of a plant.

(c) Carton-stitching machine. The carton-stitching machine shall be guarded to prevent the operator from coming in contact with the stitching head.

(d) Banding of skids, cartons, cases, etc. Banders and helpers shall wear eye protection equipment in accordance with section (3)(c) of this rule.

(e) Unloading cars or trucks.

(A) Loading and unloading materials. Platforms with ladders or stairways shall be installed or alternative methods made available when needed so that workers may safely gain access to and perform work on the top of rail cars or trucks when ladders are not installed on such equipment.

(B) Where steel bands or wires are used in boxcars or trucks, all loaders and helpers shall wear eye protection in accordance with Subdivision I, Personal Protective Equipment.

(C) The construction and use of bridge or dock plates shall conform to the requirements of American National Standard B56.1-1988.

(D) Flag signals, derails, or other protective devices shall be used to protect workers during switching operations. The blue flag policy shall be invoked according to section (4)(j) of this rule.

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

Stats. Implemented: ORS 654.001 to 654.295.

Hist: OR-OSHA Admin. Order 7-1994, f. 11/4/94, ef. 1/3/95.

OR-OSHA Admin. Order 3-1998, f. 7/7/98, ef. 7/7/98.

OR-OSHA Admin. Order 2-2001, f. 2/5/01, ef. 2/5/01.

Notes to be added to Division 2, General Industry standards:

Division 2/H, 1910.120 Hazardous waste operations and emergency response; Appendix E

Division 2/R, 1910.269 Electric power generation, transmission and distribution; (e), (e)(6), (x), and Appendix A.

Notes to read:

NOTE: Oregon OSHA repealed 1910.146 with AO X-2011, f. XX/XX/11, ef. XX/XX/11. In Oregon 437-002-0146 Confined Spaces in Division 2/J applies.

DIVISION 3, CONSTRUCTION

437-003-0001

Adoption by Reference. In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, in the Federal Register:

(1) Subdivision A – GENERAL

- (a) 29 CFR 1926.1 Purpose and Scope, published 4/6/79, FR vol. 44, p. 20940.
- (b) 29 CFR 1926.2 Variances from safety and health standards, published 4/6/79, FR vol. 44, p. 20940.
- (c) 29 CFR 1926.3 Inspections – right of entry, published 4/6/79, FR vol. 44, p. 20940.
- (d) 29 CFR 1926.4 Rules of practice for administrative adjudications for enforcement of safety and health standards, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.6 Incorporation by reference, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

(2) Subdivision B – GENERAL INTERPRETATIONS

- (a) 29 CFR 1926.10 Scope of subpart, published 4/6/79, FR vol. 44, p. 20940.
- (b) 29 CFR 1926.11 Coverage under section 103 of the act distinguished, published 4/6/79, FR vol. 44, p. 20940.
- (c) 29 CFR 1926.12 Reorganization plan No. 14 of 1950, published 4/6/79, FR vol. 44, p. 20940.
- (d) 29 CFR 1926.13 Interpretation of statutory terms, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.14 Federal contracts for 'mixed' types of performance, published 4/6/79, FR vol. 44, p. 20940.
- (f) 29 CFR 1926.15 Relationship to the service contract act; Walsh-Healey Public Contracts Act, published 4/6/79, FR vol. 44, p. 20940.

(g) 29 CFR 1926.16 Rules of construction, published 4/6/79, FR vol. 44, p. 20940.

(3) Subdivision C – GENERAL SAFETY AND HEALTH PROVISIONS

- (a) 29 CFR 1926.20 General safety and health provisions, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
- (b) 29 CFR 1926.21 Safety training and education, published 4/6/79, FR vol. 44, p. 20940; **amended with AO X-2011, repealed (b)(6), f. XX/XX/11, ef. XX/XX/11.**
- (c) 29 CFR 1926.22 Recording and reporting of injuries (Reserved)
- (d) 29 CFR 1926.23 First aid and medical attention, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.24 Fire protection and prevention, published 4/6/79, FR vol. 44, p. 20940.
- (f) 29 CFR 1926.25 Housekeeping, published 4/6/79, FR vol. 44, p. 20940.
- (g) 29 CFR 1926.26 Illumination, published 4/6/79, FR vol. 44, p. 20940.
- (h) 29 CFR 1926.27 Sanitation, published 4/6/79, FR vol. 44, p. 20940.
- (i) 29 CFR 1926.28 Personal protective equipment, published 4/6/79, FR vol. 44, p. 20940.
- (j) 29 CFR 1926.29 Acceptable certifications, published 4/6/79, FR vol. 44, p. 20940.
- (k) 29 CFR 1926.30 Shipbuilding and ship repairing, published 3/7/96, FR vol. 61, no. 46, p. 9249.
- (l) 29 CFR 1926.31 (Reserved).
- (m) 29 CFR 1926.32 Definitions, published 6/30/93, FR vol. 58, no. 124, p. 35078.
- (n) 29 CFR 1926.33 Access to employee exposure and medical records, published 6/20/96, FR vol. 61, no. 46, p. 31427.
- (o) 29 CFR 1926.34 Means of egress, published 6/30/93, Federal Register, vol. 58, no. 124, p. 35083.

(4) Subdivision D – OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS

- (a) 29 CFR 1926.50 Medical services and first aid, published 6/18/98, FR vol. 63, no. 117, p. 33469.
 - (b) 29 CFR 1926.51 Sanitation, published 6/30/93, FR vol. 58, no. 124, p. 35084.
 - (c) 29 CFR 1926.52 Occupational noise exposure, published 4/6/79, FR vol. 44, p. 20940.
 - (d) 29 CFR 1926.53 Ionizing radiation, published 4/6/79, FR vol. 44, p. 20940.
 - (e) 29 CFR 1926.54 Nonionizing radiation, published 4/6/79, FR vol. 44, p. 20940.
 - (f) 29 CFR 1926.55 Gases, vapors, fumes, dusts, and mists, published 1/10/97, FR vol. 62, no. 7, p. 1619.
 - (g) 29 CFR 1926.56 Illumination, published 4/6/79, FR vol. 44, p. 20940.
 - (h) 29 CFR 1926.57 Ventilation, published 1/8/98, FR vol. 63, no. 5, p. 1295.
 - (i) 29 CFR 1926.58 Reserved, §1926.58, Asbestos, tremolite, anthophyllite and actinolite is redesignated as §1926.1101, Asbestos, and §1926.58 is reserved (8/10/94, FR vol. 59, no. 153, pp. 41131-62).
 - (j) 29 CFR 1926.59 Hazard Communication, published 6/20/96, FR vol. 61, p. 31427.
 - (k) 29 CFR 1926.60 Methylenedianiline (MDA), published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
 - (l) 29 CFR 1926.61 Retention of DOT markings, placards and labels, published 6/20/96, FR vol. 61, p. 31427.
 - (m) 29 CFR 1926.62 Lead, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
NOTE: Cadmium has been redesignated as §1926.1127.
 - (n) 29 CFR 1926.65 Hazardous Waste Operations and Emergency Response
NOTE: Division 2/H, 1910.120, Hazardous Waste Operations and Emergency Response, applies to Construction.
- (5) Subdivision E – PERSONAL PROTECTIVE AND LIFE SAVING EQUIPMENT
- (a) 29 CFR 1926.95 Criteria for personal protective equipment, published 11/15/07, FR vol. 72, no. 220, p. 64342.
 - (b) 29 CFR 1926.100 Head protection, published 4/6/79, FR vol. 44, p. 20940.
 - (c) 29 CFR 1926.101 Hearing protection, published 4/6/79, FR vol. 44, p. 20940.
 - (d) 29 CFR 1926.102 Eye and face protection, published 6/30/93, FR vol. 58, no. 124, p. 35160.
 - (e) 29 CFR 1926.103 Respiratory protection, published 1/8/98, FR vol. 63, no. 5, p. 1297.
NOTE: 29 CFR 1926.104 Removed, 8/9/94, FR vol. 59, no. 152, p. 40729.
 - (f) 29 CFR 1926.105 Reserved, 8/9/94, FR vol. 59, no. 152, p. 40729.
 - (g) 29 CFR 1926.106 Working over or near water, published 4/6/79, FR vol. 44, p. 20940.
 - (h) 29 CFR 1926.107 Definitions applicable to this subpart, published 8/9/94, FR vol. 59, no. 152, p. 40729.
- (6) Subdivision F – FIRE PROTECTION AND PREVENTION
- (a) 29 CFR 1926.150 Fire protection, published 4/6/79, FR vol. 44, p. 20940.
 - (b) 29 CFR 1926.151 Fire prevention, published 7/11/86, FR vol. 51, p. 25318.
 - (c) 29 CFR 1926.152 Flammable and combustible liquids, published 6/30/93, FR vol. 58, no. 124, p. 35162.
 - (d) 29 CFR 1926.153 Liquefied petroleum gas (LP-Gas), published 6/30/93, FR vol. 58, no. 124, p. 35170.
 - (e) 29 CFR 1926.154 Temporary heating devices, published 4/6/79, FR vol. 44, p. 20940.
 - (f) 29 CFR 1926.155 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
- (7) Subdivision G – SIGNS, SIGNALS, AND BARRICADES
- (a) 29 CFR 1926.200 Accident prevention signs and tags, published 6/30/93, FR vol. 58, no. 124, p. 35173; amended with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.
 - (b) 29 CFR 1926.201 Signaling, REPEALED with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.

- (c) 29 CFR 1926.202 Barricades, REPEALED with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.
- (d) 29 CFR 1926.203 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940; amended with OR-OSHA Admin. Order 2-2003, f. 1/30/03, ef. 1/30/03.
- (8) Subdivision H – MATERIALS HANDLING, STORAGE, USE AND DISPOSAL
 - (a) 29 CFR 1926.250 General requirements for storage, published 6/30/93, FR vol. 58, no. 124, p. 35173.
 - (b) 29 CFR 1926.251 Rigging equipment for material handling, published 6/30/93, FR vol. 58, no. 124, p. 35173.
 - (c) 29 CFR 1926.252 Disposal of waste materials, published 4/6/79, FR vol. 44, p. 20940.
- (9) Subdivision I – TOOLS – HAND AND POWER
 - (a) 29 CFR 1926.300 General requirements, published 3/7/96, FR vol. 61, no. 46, p. 9250.
 - (b) 29 CFR 1926.301 Hand tools, published 4/6/79, FR vol. 44, p. 20940.
 - (c) 29 CFR 1926.302 Power operated hand tools, published 6/30/93, FR vol. 58, no. 124, p. 35175.
 - (d) 29 CFR 1926.303 Abrasive wheels and tools, published 6/30/93, FR vol. 58, no. 124, p. 35175.
 - (e) 29 CFR 1926.304 Woodworking tools, published 3/7/96, FR vol. 61, no. 46, p. 9251.
 - (f) 29 CFR 1926.305 Jacks - lever and ratchet, screw, and hydraulic, published Federal Register vol. 58, no. 124, p. 35176.
- (10) Subdivision J – WELDING AND CUTTING
 - (a) 29 CFR 1926.350 Gas welding and cutting, published 6/30/93, FR vol. 58, no. 124, p. 35179.
 - (b) 29 CFR 1926.351 Arc welding and cutting, published 7/11/86, FR vol. 51, p. 25318.
 - (c) 29 CFR 1926.352 Fire prevention, published 4/6/79, FR vol. 44, p. 20940.
 - (d) 29 CFR 1926.353 Ventilation and protection in welding, cutting, and heating, published 6/30/93, FR vol. 58, no. 124, p. 35179.
 - (e) 29 CFR 1926.354 Welding, cutting, and heating in way of preservative coatings, published 4/6/79, FR vol. 44, p. 20940.
- (11) Subdivision K – ELECTRICAL
 - (a) 29 CFR 1926.400 Introduction, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (b) 29 CFR 1926.401 (Reserved)
 - (c) 29 CFR 1926.402 Applicability, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (d) 29 CFR 1926.403 General requirements, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (e) 29 CFR 1926.404 Wiring design and protection, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335; amended with AO 5-2002, repeal (b)(1), f. 6/28/02, ef. 10/1/03.
 - (f) 29 CFR 1926.405 Wiring methods, components, and equipment for general use, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (g) 29 CFR 1926.406 Specific purpose equipment and installations, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (h) 29 CFR 1926.407 Hazardous (classified) locations, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (i) 29 CFR 1926.408 Special systems, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
 - (j) 29 CFR 1926.409 (Reserved)
 - (k) 29 CFR 1926.415 (Reserved)
 - (l) 29 CFR 1926.416 General requirements, published 8/12/96, FR vol. 61, no. 156, p. 41738.
 - (m) 29 CFR 1926.417 Lockout and tagging of circuits, published 8/12/96, FR vol. 61, no. 156, p. 41739.
 - (n) 29 CFR 1926.418 (Reserved)
 - (o) 29 CFR 1926.430 (Reserved)

- (p) 29 CFR 1926.431 Maintenance of equipment, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (q) 29 CFR 1926.432 Environmental deterioration of equipment, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (r) 29 CFR 1926.433 - 29 CFR 1926.440 (Reserved)
- (s) 29 CFR 1926.441 Battery locations and battery charging, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (t) 29 CFR 1926.442 - 29 CFR 1926.448 (Reserved)
- (u) 29 CFR 1926.449 Definitions applicable to this subpart, published 7/11/86, FR vol. 51, no. 133, pp. 25294-25335.
- (12) Subdivision L – SCAFFOLDING
 - (a) 29 CFR 1926.450 Scope, application and definitions applicable to this subpart, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (b) 29 CFR 1926.451 General requirements, published 11/25/96, FR vol. 61, no. 228, p. 59831.
 - (c) 29 CFR 1926.452 Additional requirements applicable to specific types of scaffolds, published 8/30/96, FR vol. 61, no. 170, p. 46113.
 - (d) 29 CFR 1926.453 Aerial lifts, published 11/25/96, FR vol. 61, no. 228, p. 59832.
 - (e) 29 CFR 1926.454 Training, published 8/30/96, FR vol. 61, no. 170, p. 46117.
 - (f) Appendix A to Subpart L Scaffold Specifications, published 8/30/96, FR vol. 61, no. 170, p. 46117.
 - (g) Appendix B to Subpart L Criteria for determining the feasibility of providing safe access and fall protection for scaffold erectors and dismantlers (Reserved), published 8/30/96, FR vol. 61, no. 170, p. 46122.
 - (h) Appendix C to Subpart L List of National Consensus Standards, published 8/30/96, FR vol. 61, no. 170, p. 46122.
 - (i) Appendix D to Subpart L List of training topics for scaffold erectors and dismantlers, published 8/30/96, FR vol. 61, no. 170, p. 46122.
 - (j) Appendix E to Subpart L Drawing and illustrations, published 11/25/96, FR vol. 61, no. 228, p. 59832.
- (13) Subdivision M – FALL PROTECTION
 - (a) 29 CFR 1926.500 Scope, application, and definitions applicable to this subpart, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (b) 29 CFR 1926.501 Duty to have fall protection, published 8/9/94, FR vol. 59, no. 152, p. 40732-40733; amended with AO 6-2002, f. and ef. 7/19/02.
 - (c) 29 CFR 1926.502 Fall protection systems criteria and practices, published 8/9/94, FR vol. 59, no. 152, p. 40733-40738; amended with AO 6-2002, f. and ef. 7/19/02.
 - (d) 29 CFR 1926.503 Training requirements. REPEALED with AO 6-2002, f. and ef. 7/19/02, replaced with OI.
 - (e) Appendix A to Subpart M Determining Roof Widths, published 8/9/94, FR vol. 59, no. 152, p. 40738-40742.
 - (f) Appendix B to Subpart M Guardrail Systems, published 8/9/94, FR vol. 59, no. 152, p. 40743.
 - (g) Appendix C to Subpart M Personal Fall Arrest Systems, published 8/9/94, FR vol. 59, no. 152, p. 40743-40746.
 - (h) Appendix D to Subpart M Positioning Device Systems, published 8/9/94, FR vol. 59, no. 152, p. 40746.
- (14) Subdivision N – HELICOPTERS, HOISTS, ELEVATORS, AND CONVEYORS
 - (a) 29 CFR 1926.550 (Reserved).
 - (b) 29 CFR 1926.551 Helicopters, published 4/6/79, FR vol. 44, p. 20940.
 - (c) 29 CFR 1926.552 Material hoists, personnel hoists, and elevators, published 4/6/79, FR vol. 44, p. 20940.

- (d) 29 CFR 1926.553 Base-mounted drum hoist, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (e) 29 CFR 1926.554 Overhead hoists, published 4/6/79, FR vol. 44, p. 20940.
- (f) 29 CFR 1926.555 Conveyors, published 4/6/79, FR vol. 44, p. 20940.
- (15) Subdivision O – MOTOR VEHICLES, MECHANIZED EQUIPMENT, AND MARINE OPERATIONS
 - (a) 29 CFR 1926.600 Equipment, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (b) 29 CFR 1926.601 Motor vehicles, REPEALED by OR-OSHA Admin. Order 6-2007, f. 9/26/07, ef. 9/26/07.
 - (c) 29 CFR 1926.602 Material handling equipment, published 12/1/98, FR vol. 63, no. 230, p. 66274; amended by AO 7-2003, f. 12/5/03, ef. 12/5/03.
 - (d) 29 CFR 1926.603 Pile driving equipment, published 4/6/79, FR vol. 44, p. 20940.
 - (e) 29 CFR 1926.604 Site clearing, published 7/22/77, FR vol. 42, p. 37674.
 - (f) 29 CFR 1926.605 Marine operations and equipment, published 4/6/79, FR vol. 44, p. 20940.
 - (g) 29 CFR 1926.606 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
- (16) Subdivision P – EXCAVATIONS
 - (a) 29 CFR 1926.650 Scope, application, and definitions applicable to this subdivision, published 10/31/89, FR vol. 54, no. 209, pp. 45959-45961.
 - (b) 29 CFR 1926.651 General requirements, published 8/9/94, FR vol. 59, no. 152, p. 40730.
 - (c) 29 CFR 1926.652 Requirements for protective systems, published 10/31/89, FR vol. 54, no. 209, pp. 45961-45962.
 - (d) Appendices A-F to Subdivision P, Excavations, published 10/31/89, FR vol. 54, no. 209, pp. 45962-45991.
- (17) Subdivision Q – CONCRETE AND MASONRY CONSTRUCTION
 - (a) 29 CFR 1926.700 Scope, application and definitions applicable to this subpart, published 10/18/90, FR vol. 55, no. 202, p. 42326.
 - (b) 29 CFR 1926.701 General requirements, published 8/9/94, FR vol. 59, no. 152, p. 40730.
 - (c) 29 CFR 1926.702 Requirements for equipment and tools, published 6/16/88, FR vol. 53, p. 22612.
 - (d) 29 CFR 1926.703 Requirements for cast-in-place concrete, published 6/16/88, FR vol. 53, p. 22612.
 - (e) 29 CFR 1926.704 Requirements for precast concrete, published 10/5/89, FR vol. 54, no. 192, p. 41088.
 - (f) 29 CFR 1926.705 Requirements for lift-slab construction operations, published 10/18/90, FR vol. 55, no. 202, p. 42326.
 - (g) Appendix A to 1926.705 Lift-slab operations, published 10/18/90, FR vol. 55, no. 202, p. 42326.
 - (h) 29 CFR 1926.706 Requirements for masonry construction, published 6/16/88, FR vol. 53, p. 22612; amended with OR-OSHA Admin. Order 1-2003, f. 1/30/03, ef. 4/30/03.
- (18) Subdivision R – STEEL ERECTION
 - (a) 29 CFR 1926.750 Scope, published 7/17/01, FR vol. 66, no. 137, p. 37137.
 - (b) 29 CFR 1926.751 Definitions, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
 - (c) 29 CFR 1926.752 Site layout, site-specific erection plan and construction sequence, published 7/17/01, FR vol. 66, no. 137, p. 37137.
 - (d) 29 CFR 1926.753 Hoisting and rigging, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (e) 29 CFR 1926.754 Structural steel assembly, published 4/3/06, FR vol. 71, no. 63, p. 16669.
 - (f) 29 CFR 1926.755 Column anchorage, published 7/17/01, FR vol. 66, no. 137, p. 37137.
 - (g) 29 CFR 1926.756 Beams and columns, published 7/17/01, FR vol. 66, no. 137, p. 37137.

- (h) 29 CFR 1926.757 Open web steel joists, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
- (i) 29 CFR 1926.758 Systems-engineered metal buildings, published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (j) 29 CFR 1926.759 Falling object protection, published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (k) 29 CFR 1926.760 Fall protection, published 7/17/01, FR vol. 66, no. 137, p. 37137; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
- (l) 29 CFR 1926.761 Training, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
- (m) Appendix A to Subpart R Guidelines for establishing the components of a site-specific erection plan: Nonmandatory Guidelines for Complying with §1926.752(e), published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (n) Appendix B to Subpart R Reserved.
- (o) Appendix C to Subpart R Illustrations of bridging terminus points: Nonmandatory Guidelines for Complying with §1926.757(a)(10) and §1926.757(c)(5), published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (p) Appendix D to Subpart R Illustration of the use of control lines to demarcate controlled decking zones (CDZs): Nonmandatory Guidelines for Complying with §1926.760(c)(3), REPEALED with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
- (q) Appendix E to Subpart R Training: Nonmandatory Guidelines for Complying with §1926.761, published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (r) Appendix F to Subpart R Perimeter columns: Nonmandatory Guidelines for Complying with §1926.756(e) to Protect the Unprotected Side or Edge of a Walking/Working Surface, published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (s) Appendix G to Subpart R Fall protection systems criteria and practices from §1926.502: Nonmandatory Guidelines for Complying with Complying with §1926.760(d), REPEALED with AO 6-2002, f. and ef. 7/19/02; amended with AO 8-2003, f. 12/30/03, ef. 1/1/04.
- (t) Appendix H to Subpart R Double connections: Illustration of a clipped end connection and a staggered connection: Non-Mandatory Guidelines for Complying with Complying with §1926.756(c)(1), published 7/17/01, FR vol. 66, no. 137, p. 37137.
- (19) Subdivision S – UNDERGROUND CONSTRUCTION, CAISSONS, COFFERDAMS, AND COMPRESSED AIR
 - (a) 29 CFR 1926.800 Tunnels and shafts, published 8/9/10, FR vol. 75, no. 152, pp.47906-48177.
 - (b) 29 CFR 1926.801 Caissons, published 4/6/79, FR vol. 44, p. 20940.
 - (c) 29 CFR 1926.802 Cofferdams, published 4/6/79, FR vol. 44, p. 20940.
 - (d) 29 CFR 1926.803 Compressed air, published 7/11/86, FR vol. 51, p. 25318.
 - (e) 29 CFR 1926.804 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
 - (f) Appendix A to Subpart S Decompression Tables, published 4/6/79, FR vol. 44, p. 20940.
- (20) Subdivision T – DEMOLITION
 - (a) 29 CFR 1926.850 Preparatory operations, published 4/6/79, FR vol. 44, p. 20940.
 - (b) 29 CFR 1926.851 Stairs, passageways, and ladders, published 4/6/79, FR vol. 44, p. 20940.
 - (c) 29 CFR 1926.852 Chutes, published 4/6/79, FR vol. 44, p. 20940.
 - (d) 29 CFR 1926.853 Removal of materials through floor openings, published 4/6/79, FR vol. 44, p. 20940.
 - (e) 29 CFR 1926.854 Removal of walls, masonry sections, and chimneys, published 4/6/79, FR vol. 44, p. 20940.
 - (f) 29 CFR 1926.855 Manual removal of floors, published 4/6/79, FR vol. 44, p. 20940.
 - (g) 29 CFR 1926.856 Removal of walls, floors, and materials with equipment, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

- (h) 29 CFR 1926.857 Storage, published 4/6/79, FR vol. 44, p. 20940.
- (i) 29 CFR 1926.858 Removal of steel construction, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (j) 29 CFR 1926.859 Mechanical demolition, published 4/6/79, FR vol. 44, p. 20940.
- (k) 29 CFR 1926.860 Selective demolition by explosives, published 4/6/79, FR vol. 44, p. 20940.
- (21) Subdivision U – BLASTING AND USE OF EXPLOSIVES
- (a) 29 CFR 1926.900 General provisions, published 4/6/79, FR vol. 44, p. 20940.
- (b) 29 CFR 1926.901 Blaster qualifications, published 4/6/79, FR vol. 44, p. 20940.
- (c) 29 CFR 1926.902 Surface transportation of explosives, published 6/30/93, FR vol. 58, no. 124, p. 35311.
- (d) 29 CFR 1926.903 Underground transportation of explosives, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.904 Storage of explosives and blasting agents, published 6/30/93, FR vol. 58, no. 124, p. 35311.
- (f) 29 CFR 1926.905 Loading of explosives or blasting agents, published 6/30/93, FR vol. 58, no. 124, p. 35184.
- (g) 29 CFR 1926.906 Initiation of explosive charges – electric blasting, published 6/18/98, FR vol. 63, no. 117, p. 33469.
- (h) 29 CFR 1926.907 Use of safety fuse, published 4/6/79, FR vol. 44, p. 20940.
- (i) 29 CFR 1926.908 Use of detonating cord, published 4/6/79, FR vol. 44, p. 20940.
- (j) 29 CFR 1926.909 Firing the blast, published 4/6/79, FR vol. 44, p. 20940.
- (k) 29 CFR 1926.910 Inspection after blasting, published 4/6/79, FR vol. 44, p. 20940.
- (l) 29 CFR 1926.911 Misfires, published 4/6/79, FR vol. 44, p. 20940.
- (m) 29 CFR 1926.912 Underwater blasting, published 4/6/79, FR vol. 44, p. 20940.
- (n) 29 CFR 1926.913 Blasting in excavation work under compressed air, published 4/6/79, FR vol. 44, p. 20940.
- (o) 29 CFR 1926.914 Definitions applicable to this subpart, published 6/30/93, FR vol. 58, no. 124, p. 35184, 35311.
- (22) Subdivision V – POWER TRANSMISSION AND DISTRIBUTION
- (a) 29 CFR 1926.950 General requirements, published 4/6/79, FR vol. 44, p. 20940.
- (b) 29 CFR 1926.951 Tools and protective equipment, published 8/9/94, FR vol. 59, no. 152, p. 40730.
- (c) 29 CFR 1926.952 Mechanical equipment, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (d) 29 CFR 1926.953 Material handling, published 4/6/79, FR vol. 44, p. 20940.
- (e) 29 CFR 1926.954 Grounding for protection of employees, published 4/6/79, FR vol. 44, p. 20940.
- (f) 29 CFR 1926.955 Overhead lines, published 4/6/79, FR vol. 44, p. 20940.
- (g) 29 CFR 1926.956 Underground lines, published 4/6/79, FR vol. 44, p. 20940.
- (h) 29 CFR 1926.957 Construction in energized substations, published 4/6/79, FR vol. 44, p. 20940.
- (i) 29 CFR 1926.958 External load helicopters, published 4/6/79, FR vol. 44, p. 20940.
- (j) 29 CFR 1926.959 Lineman’s body belts, safety straps, and lanyards, published 4/6/79, FR vol. 44, p. 20940.
- (k) 29 CFR 1926.960 Definitions applicable to this subpart, published 4/6/79, FR vol. 44, p. 20940.
- (23) Subdivision W – ROLLOVER PROTECTIVE STRUCTURES: OVERHEAD PROTECTION
- (a) 29 CFR 1926.1000 Rollover protective structures (ROPS) for material handling equipment, published 4/6/79, FR vol. 44, p. 20940.

- (b) 29 CFR 1926.1001 Minimum performance criteria for rollover protective structure for designated scrapers, loaders, dozers, graders, and crawler tractors, published 4/6/79, FR vol. 44, p. 20940.
- (c) 29 CFR 1926.1002 Protective frame (ROPS) test procedures and performance requirements for wheel-type agricultural and industrial tractors used in construction, published 7/20/06, FR vol. 71, no. 139, p. 41127..
- (d) 29 CFR 1926.1003 Overhead protection for operators of agricultural and industrial tractors, published 2/28/06, FR vol. 71, no. 39, p. 9909.
- (24) Subdivision X – STAIRWAYS AND LADDERS
 - (a) 29 CFR 1926.1050 Scope, application and definitions applicable to this Subdivision, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (b) 29 CFR 1926.1051 General requirements, published 11/14/90, FR vol. 55, no. 220, p. 47688.
 - (c) 29 CFR 1926.1052 Stairways, published 8/23/91, FR vol. 56, no. 164, pp. 41793-41794.
 - (d) 29 CFR 1926.1053 Ladders, published 8/23/91, FR vol. 56, no. 164, pp. 41793-41794.
 - (e) 29 CFR 1926.1054 (Reserved)
 - (f) 29 CFR 1926.1055 (Reserved)
 - (g) 29 CFR 1926.1056 (Reserved)
 - (h) 29 CFR 1926.1057 (Reserved)
 - (i) 29 CFR 1926.1058 (Reserved)
 - (j) 29 CFR 1926.1059 (Reserved)
 - (k) 29 CFR 1926.1060 Training requirements, published 11/14/90, FR vol. 55, no. 220, p. 47691.
- (25) Subdivision Z – TOXIC AND HAZARDOUS SUBSTANCES
 - (a) 29 CFR 1926.1101 Asbestos, published 1/9/09, FR vol. 74, no. 6, p. 858.
 - (b) 29 CFR 1926.1126 Chromium (VI), published; 3/17/10, FR vol. 75, no. 51, pp. 12681-12686.
 - (c) 29 CFR 1926.1127 Cadmium, published 12/12/08, FR vol. 73, no. 240, pp. 75568-75589.
 - (d) 29 CFR 1926.1152 Methylene Chloride, published 12/18/97, FR vol. 62, no. 243, p. 66275.
- (26) Subdivision AA – (Reserved)
- (27) Subdivision BB – (Reserved)
- (28) Subdivision CC – Cranes and Derricks in Construction
 - (a) 29 CFR 1926.1400 Scope, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (b) 29 CFR 1926.1401 Definitions, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (c) 29 CFR 1926.1402 Ground conditions, published 8/9/10, FR vol. 75, no. 152. Pp. 47906-48177.
 - (d) 29 CFR 1926.1403 Assembly/Disassembly – selection of manufacturer or employer procedures, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (e) 29 CFR 1926.1404 Assembly/Disassembly – general requirements (applies to all assembly and disassembly operations), published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (f) 29 CFR 1926.1405 Disassembly – additional requirements for dismantling of booms and jibs (applies to both the use of manufacturer procedures and employer procedures), published 8/9/10, FR vol. 75, no. 152. Pp. 47906-48177.
 - (g) 29 CFR 1926.1406 Assembly/Disassembly – employer procedures – general requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (h) 29 CFR 1926.1407 Power line safety (up to 350 kV) – assembly and disassembly, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (i) 29 CFR 1926.1408 Power line safety (up to 350 kV) – equipment operations, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
 - (j) 29 CFR 1926.1409 Power line safety (over 35 kV), published 8/9/10, FR vol. 75, vol. 152, pp. 47906-48177.

- (k) 29 CFR 1926.1410 Power line safety (all voltages) – equipment operations closer than the Table A zone, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (l) 29 CFR 1926.1411 Power line safety – while traveling, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (m) 29 CFR 1926.1412 Inspections, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (n) 29 CFR 1926.1413 Wire rope – inspection, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (o) 29 CFR 1926.1414 Wire rope – selection and installation criteria, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (p) 29 CFR 1926.1415 Safety devices, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (q) 29 CFR 1926.1416 Operational aids, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (r) 29 CFR 1926.1417 Operation, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (s) 29 CFR 1926.1418 Authority to stop operation, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (t) 29 CFR 1926.1419 Signals – general requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (u) 29 CFR 1926.1420 Signals – radio, telephone or other electronic transmission of signals, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (v) 29 CFR 1926.1421 Signals – voice signals – additional requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (w) 29 CFR 1926.1422 Signals – hand signal chart, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (x) 29 CFR 1926.1423 Fall protection, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (y) 29 CFR 1926.1424 Work area control, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (z) 29 CFR 1926.1425 Keeping clear of the load, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (aa) 29 CFR 1926.1426 Free fall and controlled load lowering, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (bb) 29 CFR 1926.1427 Operator qualification and certification, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (cc) 29 CFR 1926.1428 Signal person qualifications, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (dd) 29 CFR 1926.1429 Qualifications of maintenance & repair employees, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (ee) 29 CFR 1926.1430 Training, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (ff) 29 CFR 1926.1431 Hoisting personnel, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (gg) 29 CFR 1926.1432 Multiple-crane/derrick lifts – supplemental requirements, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (hh) 29 CFR 1926.1433 Design, construction and testing, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (ii) 29 CFR 1926.1434 Equipment modifications, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (jj) 29 CFR 1926.1435 Tower cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (kk) 29 CFR 1926.1436 Derricks, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (ll) 29 CFR 1926.1437 Floating cranes/derricks and land cranes/derricks on barges, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (mm) 29 CFR 1926.1438 Overhead & gantry cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

- (nn) 29 CFR 1926.1439 Dedicated pile drivers, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (oo) 29 CFR 1926.1440 Sideboom cranes, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (pp) 29 CFR 1926.1441 Equipment with a rated hoisting/lifting capacity of 2,000 pounds or less, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (qq) 29 CFR 1926.1442 Severability, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (rr) Appendix A to Subdivision CC of 1926 – Standard Hand Signals, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (ss) Appendix B to Subdivision CC of 1926 – Assembly/Disassembly – Sample Procedures for Minimizing the Risk of Unintended Dangerous Boom Movement, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (tt) Appendix C to Subdivision CC of 1926 – Operator Certification – Written Examination – Technical Knowledge Criteria, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (29) Subdivision DD – Cranes and Derricks Used in Demolition and Underground Construction, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (a) 29 CFR 1926.1500 Scope, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.
- (b) 29 CFR 1926.1501 Cranes and Derricks, published 8/9/10, FR vol. 75, no. 152, pp. 47906-48177.

These standards are available at the Oregon Occupational Safety and Health Division, Oregon Department of Consumer and Business Services, and the United States Government Printing Office.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
 Stats. Implemented: ORS 654.001 through 654.295.

§1926.21 Safety Training and Education.

- (a) General requirements. The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the act.
- (b) Employer responsibility.

- (1) The employer should avail himself of the safety and health training programs the Secretary provides.
- (2) The employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.
- (3) Employees required to handle or use poisons, caustics, and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required.
- (4) In job site areas where harmful plants or animals are present, employees who may be exposed shall be instructed regarding the potential hazards, and how to avoid injury, and the first aid procedures to be used in the event of injury.
- (5) Employees required to handle or use flammable liquids, gases, or toxic materials shall be instructed in the safe handling and use of these materials and made aware of the specific requirements contained in Subparts D, F, and other applicable subparts of this part.
- ~~(6)~~
 - (i) ~~All employees required to enter into confined or enclosed spaces shall be instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in~~

~~the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.~~

~~(ii) For purposes of paragraph (b)(6)(i) of this section, "confined or enclosed space" means any space having a limited means of egress, which is subject to the accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere. Confined or enclosed spaces include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open top spaces more than 4 feet in depth such as pits, tubs, vaults, and vessels.]~~

NOTE: Oregon OSHA repealed 1926.21(b)(6), with AO X-2011, f. XX/XX/11, ef. XX/XX/11. In Oregon, 437-002-0146 Confined Spaces, in Division 2/J, applies.