Oregon OSHA – Adopted Changes in

Division 4, Agriculture

Administrative Order 4-2012, Filed September 19, 2012, effective January 1, 2013

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Text added is in **bold and underlined**.

Subdivision I – Protective Equipment

437-004-1005 General Requirements **for Protective Equipment**.

(1) Definitions.
Contaminant**s** – **include a**[A]ny substance that [~~causes or~~]can cause **illness or** physical harm to a person by contact with or entry into the body. **Examples include dust in the air and pesticide residues in water.**

Hazards – include chemicals, contaminants, and energy sources that are present in the workplace environment in a way that can cause injury to, or functional impairment of, any part of the body through absorption, inhalation or physical contact.

[~~Lanyard – A flexible line connected at one end to a body belt or harness and at the other end to an anchorage.~~
~~Lifeline – A flexible line engineered to serve as an anchorage for personal fall arrest or fall restraint systems.~~
~~Personal Fall Arrest System – a system that limits a person's fall to between 2 and 6 feet and prevents contact with a lower surface or obstacle.~~

~~Personal Fall Prevention/Fall Restraint System – a system that prevents a person from falling more than 2 feet. This includes positioning systems.~~]

Personal protective equipment **(PPE)** – **includes a**[~~A~~]nything worn or used for protecting a person from **hazards**[~~personal injury or illness~~].
[~~Safety belt – A strap around a person's waist for attachment to a personal fall restraint system.~~]

(2) Hazard assessment and protective equipment selection.

NOTE: This section applies to protective equipment not covered in OAR 437-004-1041(Respiratory Protection) or OAR 437-004-0630(Noise Exposure).

(a) The employer must assess the workplace to determine if hazards are present, or are likely to be present, that would make the use of personal protective equipment (PPE) necessary to protect employees.

(b) If such hazards are present, or likely to be present, the employer must:

(A) Select, and ensure that each exposed employee use, the types of PPE that will protect them from the hazards identified in the hazard assessment;

(B) Communicate PPE selection decisions to each exposed employee; and,

(C) Select PPE that properly fits each exposed employee.

NOTE: Nonmandatory Appendix A to Subdivision I provides a sample hazard assessment procedure.

[~~(2)~~] **(3)**Payment for protective equipment.

(a) Except as in paragraphs **(3)**(b) through **(3)**(e), employers must provide, at no cost to the employee, all protective equipment, including personal protective equipment (PPE). For purposes of this rule, employees of labor contractors, labor leasing companies and temporary labor providers are the employees of the using employer. The using employer must supply PPE in compliance with this rule.

Note: When another O[~~R~~]**regon** OSHA standard specifies **that**[~~whether or not~~] the employer must pay for **protective**[~~specific~~] equipment, that standard applies over this one.

(b) Employers do not have to pay for non-specialty safety-toe protective footwear (including steel-toe shoes or steel-toe boots) and non-specialty prescription safety eyewear, if the employer allows employees to wear the items off the job site.

(c) When employers provide metatarsal guards and allow the employee, to use shoes or boots with built-in metatarsal protection, employers do not have to reimburse the employee for the shoes or boots.

(d) Employers do not have to pay for:

(A) Everyday clothing, such as long-sleeve shirts, long pants, street shoes, and normal work boots; or

(B) Ordinary clothing, skin creams, or other items, used solely for protection from weather, such as winter coats, jackets, gloves, parkas, rubber boots, hats, raincoats, ordinary sunglasses, and sunscreen.
(e) Employers must pay for replacement PPE, except when the employee has lost or intentionally damaged the PPE.

NOTE: Employees must not be allowed to work in hazardous conditions without the appropriate PPE.

(f) Where an employee provides their own [~~adequate~~] protective equipment the employer does not have to reimburse the employee for that equipment. (Also see paragraph ([~~3~~]**4**)) [~~This paragraph (2) is adopted on May 1, 2008. Employers must implement the PPE payment requirements no later than the effective date May 15, 2008.~~]

[~~(3)~~]**(4)** Employees' equipment. If employees provide their own protective equipment, the employer is responsible **to** [~~for assuring~~]**ensure** that it **is adequate** [~~meets OR-OSHA standards~~] and is right for the job and hazards. [~~The employer also must assure that it is clean and in good repair.~~]

[~~(4) Storage. When not in use, store personal protective equipment so that it will be clean and ready for use.~~]

(5) [~~Bad e~~]**E**quipment **inspection, maintenance, and storage**. Do not allow workers to use defective or damaged personal protective equipment. **All protective equipment, whether furnished by the employer or provided by the employee, must be maintained in a sanitary and reliable condition.**

(6) Skin **protection**. Where needed, provide and require the use of protective coverings, **such as** aprons, ointments, gloves**,** or other effective protection to employees exposed to materials **or conditions** that are hazardous to their skin.

(7) Follow **manufacturer's** instruction. **Require employees to w**[~~W~~]ear and use personal protective equipment according to the manufacturer's instructions.

(8) Watches and jewelry. Employees working where they might contact moving parts of powered machinery or live parts of electrical equipment, must not **be allowed to** wear rings, watches, earrings, bracelets or other things that could cause a hazard.

(9) [~~Try c~~]**C**ontrol[~~s~~] **hazards** first. Contain or eliminate hazards at the source by **using** administrative or engineering controls. [~~Employees must use p~~]**P**ersonal protective equipment **is appropriate** whe**n**[~~re~~] th[~~is~~]**ese types of controls are** [~~is~~] not feasible or where there are still hazards.

~~[(10) Universal requirements. Personal protective equipment must meet these requirements:~~
~~provide adequate protection against the particular hazards for which it is used.~~
~~fit securely and not interfere with the movements of the wearer.~~
~~employees can clean or disinfect it.~~]

(10) Training.
NOTE: This section applies to protective equipment not covered in OAR 437-004-1041(Respiratory Protection) or OAR 437-004-0630(Noise Exposure).

(a) The employer must provide training to each employee who is required to use Personal
Protective Equipment (PPE). that includes at least the following:
(A) When PPE is necessary;

(B) What type of PPE is necessary;

(C) How to properly put on, take off, adjust, and use the PPE;

(D) The limitations and useful life of the PPE; and,

(E) The proper care, maintenance, storage and disposal of the PPE.

(b) Each affected employee must demonstrate an understanding of the training specified
in paragraph (10)(a) of this section, and the ability to use PPE properly, before being allowed to perform work requiring the use of PPE.

(c) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (10)(a) of this section, the employer must retrain that employee. Circumstances where retraining is required include:
(A) When changes in the workplace make previous training obsolete;

(B) When changes in the types of PPE to be used make previous training obsolete;

(C) When deficiencies in an affected employee's demonstrated knowledge or use of assigned PPE indicate that the employee has not retained the required understanding or skill.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 5-2008, f. 5/1/08, ef. 5/15/08.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1020 Personal Fall Protection.

NOTE: The general requirements for Protective Equipment in 437-004-1005 apply to Personal Fall Protection.

(1) Definitions.
Competent person – is a person who because of training and experience, can identify existing and predictable hazards in equipment, material, conditions or practices and who
has the knowledge and authority to take corrective steps.

Lanyard – A flexible line connected at one end to a body belt or harness and at the other end to an anchorage.

Personal fall arrest system means a system used to stop an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a
lanyard, deceleration device, lifeline, or suitable combinations of these.

Personal fall protection systems include arrest systems, restraint systems or positioning device systems.

Personal fall restraint system means a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness,
along with an anchorage, connectors and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices.

Positioning device system means a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work
with both hands free while leaning.

Qualified person – is a person who has a recognized degree, certification, professional
standing, knowledge, training or experience; and has successfully demonstrated the ability to perform the work, or solve or resolve problems relating to the work, subject matter, or project.

[~~(1)~~]**(2)** Protect all employees **from falls when** working**:**
(a) O[~~o~~]n unguarded surfaces more than 10 feet above a lower level**; and**
(b) Above open pits, tanks or [~~at any height above~~]dangerous equipment **at any height**[~~, from fall hazards~~].

NOTE: The[~~se~~] **requirements to protect employees from falls when working on unguarded surfaces more than 10 feet above a lower level** [~~provisions~~] do**es** NOT apply when the work is of limited duration and limited exposure, and it is equally or more hazardous to set up or use **a** [~~the~~] fall protection system. Examples include **work on**

haystacks, stacked silage, and stacked Christmas trees in open, outdoor areas[~~: the activities of grain weigher-samplers on railroad gondola-hopper cars, or railcar inspectors when testing or inspecting car tops~~].

(3) Personal fall protection systems must use:
(a) Lanyards and vertical lifelines that have a minimum breaking strength of 5,000 pounds.

(b) Connectors that are drop forged, pressed or formed steel, or equivalent materials.

(c) Connectors that have a corrosion-resistant finish, and with smooth surfaces and edges to prevent damage to interfacing parts of the system.

(d) Dee-rings, snap hooks or carabiners that have a minimum tensile strength of 5,000 lbs. and that are proof-tested to a minimum tensile load of 3,600 pounds without cracking, breaking, or taking permanent deformation.

(e) Snap hooks and carabiners that are self-locking or double-locking and sized to be compatible with the member to which they are connected .

[~~(2) Do not use material, not manufactured for the purpose, as belts, harnesses or lanyards in personal fall arrest or prevention systems. Such items include rope, wire and strapping.~~]

[~~(3)~~] **(4)** Use lifelines, body belts[~~/~~] **or safety** harnesses and lanyards only for **the purpose they were intended.**[~~employee fall prevention or fall arrest.~~] Remove **fall protection** [~~this~~] equipment from [~~fall prevention or fall arrest~~] service after it has been subjected to a load.

[~~(4) The point of attachment for lifelines must support a minimum dead weight of 5,000 pounds.~~]

[~~(5) Rig personal fall arrest systems so that an employee can neither free fall more than 6 feet, nor contact any lower level.~~]

(5) Anchorages:
(a) Anchorages used for attachment of personal fall arrest equipment must be capable of supporting at least 5,000 pounds per employee attached, or must be designed, installed, and used as follows:
(A) Under the supervision of a qualified person; and

(B) As part of a complete personal fall arrest system which maintains a safety factor of at least two.

(b) Anchorages used for attachment of personal fall restraint or positioning device systems must be capable of supporting 3000 lbs. per employee attached, or be designed, installed and used as follows:
(A) Under the supervision of a qualified person; and

(B) As part of a complete personal fall restraint or positioning device

system which maintains a safety factor of at least two.

(6) Horizontal lifelines must be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two.

(7) Fall arrest and fall restraint systems.
(a) Fall arrest systems must be rigged so that an employee can neither free fall more than 6 feet, nor contact any lower level.

(b) Fall arrest systems, when stopping a fall ,must limit maximum arresting force on an employee to 1,800 pounds

(c) Fall arrest systems must bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.

(d) Fall restraint systems must be rigged to prevent the user from falling any distance.

(e) Positioning device systems must be rigged such that an employee cannot free fall more than 2 feet.

(8) Personal fall protection systems must be inspected by a competent person prior to each use for wear, damage and other deterioration, and defective components must be removed from service.

(9) When employees use personal fall arrest systems, the employer must provide for prompt rescue of employees in the event of a fall or ensure that employees are able to rescue themselves.

~~[(6) Rig personal fall restraint systems so that an employee cannot free fall more than 2 feet.]~~

~~[(7) Use a lifeline with a minimum of 7/8-inch wire core manila rope where cuts or abrasions are possible. For all other lifeline applications, use a minimum of 3/4-inch manila or equivalent with a minimum breaking strength of 5,000 pounds.]~~

~~[Use only drop forged or pressed steel, cadmium plated body belts/harnesses and lanyard hardware. Keep surfaces smooth and free of sharp edges.]~~

~~[Use body belts/harnesses and lanyard hardware, except rivets, with a tensile loading strength of 4,000 pounds. Cracking, breaking, or permanent deformation must not result from this loading.]~~

~~[Use a minimum of 1/2-inch nylon or equivalent material for body belts/harnesses and lanyards. The length must limit the fall to 6 feet or less. The nominal breaking strength must be 5,000 pounds.]~~

[~~Except as in (a) through (d) below, employees working more than 10 feet above the next lower surface must use a personal fall protection system or have safety nets for fall protection:~~

~~Haystacks that are not next to open pits, tanks or other hazardous locations;~~

~~Fixed or portable ladders not over water, exposed moving machinery or other hazardous locations;~~

~~Fixed ladders.~~

~~Situations covered by OAR 437-004-0310 and 0320.~~]

[~~Inspect all lifelines, lanyards and safety belts before each use. Do not use a defective belt or lifeline.~~]

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1030 Work Clothing.

(1) General requirements. **Ensure that employees:**
(a) Wear clothing that provides adequate protection for the hazards of the work.
(b) Do not wear loose sleeves or other loose clothing when near enough to be caught in moving parts of machinery.
NOTE: See Divisions 4/O and 4/P for equipment and tool guarding requirements.
(c) Do not wear clothing soaked with [~~enough~~]flammable liquids [~~to be~~]**or contaminated with other** hazardous **substances**.

NOTE: See **Subdivision 4/P,** [~~OAR~~]437-004-2230 for requirements for PPE while using chain saws.

(2) High visibility garments.
(a) The employer is responsible to determine, before work begins, if any task or work assigned will expose emloyees to hazards caused by on-highway type moving vehicles in work zones and street or highway traffic.
(b) Work that exposes employees to these hazards must comply with Division 2/I, 437-002-0134(7) High Visibility Garments.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1035 Eye and Face Protection.

NOTES:
See Division 4/Q, 437-004-2310(6) for the protective equipment requirements for welders in agricultural workplaces.

See Division 4/W, 437-004-6000, 170.240(c)(7) for the protective eyewear requirements for pesticide handlers.

(1) General requirements. **Employers must:**
(a) Provide and require the use of eye or face protection that protects employees from **hazards such as** flying particles, molten metal, liquid chemicals, acids or caustic **materials,** [~~liquids, chemical~~] gases and vapors**, electrical hazards,** or potentially harmful light radiation.

(b) If an employee wears prescription lenses while doing work that involves eye **or face** hazards, [~~they must wear eye~~]**either provide** protecti[~~on~~]**ve equipment** that **incorporates** [~~has~~] the prescription **lenses or provide protective equipment that can be worn**[~~. Otherwise, they must wear protection~~] over the prescription lenses **in a way that does not** [~~without~~] disturb[~~ing~~] the proper position of **either** the prescription lenses or the protective [~~lenses~~]**equipment**.

(c) **Require e**[~~E~~]mployees [~~must~~]**to** use eye **or face** protection with side protection when there is a hazard from flying objects. Detachable side protectors **on safety glasses** ([~~e.g.~~]**such as**, clip-on or slide-on side shields) are acceptable **if they offer adequate protection from the hazard**.

(d) Eye and face protection equipment must be clean and in good repair.

(2) Criteria for protective eye and face devices.

(a) Protective eye and face protection devices must comply with any of the following consensus standards:

(A) ANSI Z87.1-2003, “American National Standard Practices for Occupational and Educational Eye and Face Protection;”

(B) ANSI Z89.1-1997, “American National Standard for Industrial Head Protection;”

(C) ANSI Z89.1-1986, “American National Standard for Personnel Protection – Protective Headwear for Industrial Workers – Requirements.”

NOTE: The Oregon OSHA Resource Center has copies **of these standards** for public review at 350 Winter Street NE, Salem OR[~~ 97309-0405~~].

(b) Protective eye and face protection devices that the employer demonstrates are at least as effective as protective eye and face protection devices that are constructed in accordance with one of the consensus standards will be deemed to be in compliance with the requirements of this section.

(3) Laser protection.
(a) The employer is responsible to determine, before work begins, if any task or work assigned will expose employees to laser light beams.

(b) Work that exposes employees to laser light beams must be furnished laser safety goggles which will protect for the specific wavelength of the laser and be of optical density adequate for the energy involved.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 2-2010, f. 2/25/10, ef. 2/25/10.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1041 Respiratory Protection.

(1) Permissible practice.
(a) To control occupational diseases caused by **breathing** contaminated air, the best method is to prevent contamination with engineering controls. **To the extent feasible, accepted engineering controls must be used. Examples of engineering controls include enclosing the source of contamination, providing general or local exhaust ventilation to remove the contaminated air from work areas, and substituting less toxic materials.** When this approach is not feasible, **or while engineering controls are being established,** employers must **provide appropriate respirators in compliance**[y] with this standard.
(b) You must provide **a** respirator[s] to **each**[all] employee[s] when it is necessary to protect their health. Respirators must be appropriate for the hazard. You must also **establish and maintain**[have] an effective respirator**y protection** program that includes at least the requirements **outlined in paragraph (3)** of this standard. [(See paragraph (3)).]**The program must cover each employee required to use a respirator.**
(2) Definitions. The following definitions apply to this standard.

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

Assigned protection factor (APF) means the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.

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

Canister or cartridge is a container with a filter, sorbent, or catalyst, or combination of these items, that removes specific contaminants from the air passed through the container.

Competent person is a person who, because of training and experience, can identify existing and predictable hazards in equipment, material, conditions or practices and who has the knowledge and authority to take corrective steps.

Demand respirator is an atmosphere-supplying respirator that admits breathing air to the face piece only when inhalation creates a negative pressure inside the face piece.

Elastomer (elastomeric) is an elastic substance like rubber or neoprene.

Emergency situation is any event such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.

Employee exposure is exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.

End-of-service-life indicator (ESLI) is a device, on the cartridge, that warns respirator users when their respirator is near the end of its ability to protect them. For example, an indicator on the cartridge will change to warn the user that the cartridge sorbent material is nearing saturation and is no longer effective.

Engineering control measures are methods to eliminate or control employee exposure to the hazard; e.g., substitution of a less toxic material, general or local ventilation and enclosing the operation.

Escape-only respirator is a respirator only for use during emergency exit.

Filter or air purifying element is a respirator component (e.g., canister or cartridge) that removes solid or liquid aerosols from the inspired air.

Filtering face piece (dust mask) is a tight fitting negative pressure particulate respirator with a filter as an integral part of the face piece or with the entire face piece made of the filtering medium.

Fit factor is a quantitative estimate of the fit of a particular respirator to a specific person, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn. Instrumentation is used with ambient air as the “test agent” to quantify the respirator fit. See [~~a~~]**A**ppendix A.

Fit test is the use of procedures in Appendix A to qualitatively or quantitatively evaluate the fit of a respirator on a person. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)

Helmet is a rigid respirator covering that also provides head protection against impact and penetration.

High efficiency particulate air (HEPA) filter is a filter that is at least 99.97 percent efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.

Hood is a respirator covering that completely covers the head and neck and may also cover portions of the shoulders and torso.

Immediately dangerous to life or health (IDLH) is an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.

Interior structural firefighting is the physical activity of fire suppression, rescue or both, inside of buildings or enclosed structures which are involved in a fire situation beyond the incipient stage.

Loose-fitting face piece is a respiratory covering that forms a partial seal with the face, e.g., hood.

Maximum use concentration (MUC) means the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.

Negative pressure respirator (tight fitting) is a respirator in which the air pressure inside the face piece is negative during inhalation with respect to the ambient air pressure outside the respirator.

Oxygen deficient atmosphere is an atmosphere with an oxygen content less than 19.5 percent by volume.

Physician or other licensed health care professional (PLHCP) is a person whose legally permitted scope of practice (i.e., license, registration, or certification) allows them to independently provide, or be delegated to provide, some or all of the health care services required by this standard.

Positive pressure respirator is a respirator in which the pressure inside the respiratory covering is higher than the air pressure outside the respirator.

Powered air-purifying respirator (PAPR) is an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.

Pressure demand respirator is a positive pressure atmosphere-supplying respirator that admits breathing air to the face piece when inhalation reduces the positive pressure inside the face piece.

Qualitative fit test (QLFT) is a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent. See Appendix A.

Quantitative fit test (QNFT) is an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator. See Appendix A.

Respirator covering is that part of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a face piece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.

Self-contained breathing apparatus (SCBA) is an atmosphere-supplying respirator for which user carries the breathing air source.

Service life is the period of time that a respirator, filter or sorbent, or other respiratory equipment adequately protects the wearer.

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

Tight-fitting face piece is a respirator covering that forms a complete seal with the face, e.g., half mask or full-face piece.

User seal check is an action by the respirator user to determine if the respirator is properly seated to the face. See appendix B-1.

(3) Respiratory protection program.
(a) When respirators are necessary to protect the health of workers or when you require workers to wear them, you must have an effective, written respiratory protection program, managed by a knowledgeable person, with procedures specific to your work site. Keep the program updated to reflect changes in conditions that require the use of respirators. You must include at least these points**, as applicable**:

(A) Procedures for selecting respirators for use in the workplace;

(B) **Procedures for the m**[~~M~~]edical evaluations of employees require**d** to use respirators;

(C) Fit testing procedures for tight-fitting respirators;

(D) Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations;

(E) Procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, discarding, and otherwise maintaining respirators;

(F) Procedures to ensure adequate air quality, quantity, and flow of breathing air for atmosphere-supplying respirators;

(G) **Procedures for t**[~~T~~]raining [~~of~~]employees in the respiratory hazards to which they are potentially exposed during routine and emergency situations;

(H) **Procedures for t**[~~T~~]raining [~~of~~]employees in the proper use of respirators, including putting on and removing them, any limitations on their use, and their maintenance; and

(I) Procedures for regularly evaluating the effectiveness of the program.

(b) The employer must provide respirators, **and all other program requirements including** training, and medical evaluations at no cost to the employee.

(c) Where respirator use is voluntary:

(A) You may provide respirators to employees who request them or they may use their own respirators. If you allow this voluntary use**:**[~~,~~]

(i) Y[~~y~~]ou must determine that it will not create a hazard to the user[~~.~~]**;**

(ii) You must provide the voluntary user with the information in Appendix D, **"Information for Employees Using Respirators When Not Required Under the Standard",** and;

(B) You must have a limited written respiratory program for voluntary users. It must include those parts of the standard **program** necessary to ensure that:

(i) The user is medically able to use [~~it~~]**the respirator** without **adverse health effects**[~~creating a hazard to themselves~~]. Use**rs** of **tight-fitting** respirators other than dust masks **must have a** [~~require~~]medical evaluation[~~s~~].

(ii) The **user will** [~~program includes~~]proper**ly** clean[~~ing~~], stor**e**[~~ing~~] and maint**ain**[~~enance~~] **the respirator**.

[~~EXCEPTION: No program is necessary for voluntary users who only use dust masks (filtering face pieces).~~]

(4) Selection of respirators. Identify and evaluate the respiratory hazard(s) including a reasonable estimate of employee exposures and an identification of the contaminant's chemical state and physical form. You must treat atmospheres with the potential for IDLH conditions as an IDLH hazard and provide appropriate respiratory protection.

(a) General requirements.

(A) You must evaluate respiratory hazards, conditions in the workplace and user factors, then select and provide the appropriate respirators.

(B) All respirators must have NIOSH certification and all use must conform to that certification.

(C) Respirators must correctly fit and be acceptable to the user.

(b) Respirators for IDLH atmospheres.

(A) Provide the following respirators for employee use in IDLH atmospheres:

(i) A full-face piece pressure demand SCBA certified by NIOSH for a minimum service life of 30 minutes, or

(ii) A combination full-face piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

(B) Respirators only for escape from IDLH atmospheres must have NIOSH certification for escape from the atmosphere of use.

(C) Treat all oxygen-deficient atmospheres as IDLH.
EXCEPTION **to paragraph (4)(b)(C)**: If you can demonstrate that[~~,~~] under all foreseeable conditions, the oxygen concentration will stay within the ranges in Table **A**[~~II (i.e.,~~] for the **appropriate** altitudes set out in the table[~~)~~], then **your selection of** [~~use any~~] atmosphere-supplying respirator**s is not limited to the types listed in (4)(b)(A)**.

Table [~~II~~]**A**

Altitude (ft.)	Oxygen deficient Atmospheres (% 0_2) for which the employer may rely on atmosphere-supplying respirators
Less than 3,001	16.0-19.5
3,001-4,000	16.4-19.5
4,001-5,000	17.1-19.5
5,001-6,000	17.8-19.5
6,001-7,000	18.5-19.5
7,001-8,000[1]	19.3-19.5

[1] **This exception does not apply to altitudes a**[~~A~~]bove 8,000 feet[~~ the exception does not apply~~]. Oxygen-enriched breathing air must be supplied above 14,000 feet.

(c) Respirators for atmospheres that are not IDLH.

(A) Provide respirators adequate to protect the health of workers and ensure compliance with all other OR-OSHA requirements, under routine and reasonably foreseeable emergency situations.

(i) Assigned Protection Factors (APFs). Employers must use the assigned protection factors listed in Table [~~I~~]**B** to select a respirator that meets or exceeds the required level of employee protection. When using a combination respirator (e.g., airline respirators with an air-purifying filter), employers must ensure that the assigned protection factor is appropriate to the mode of operation in which the respirator is being used.

Table [~~1~~] **B**. -- Assigned Protection Factors[5]

Type of respirator[1], [2]	Quarter mask	Half mask	Full facepiece	Helmet/ hood	Loose-fitting facepiece
1. Air-Purifying Respirator	5	[3]10	50	……..	…….
2. Powered Air-Purifying Respirator (PAPR)	……. ..	50	1,000	[4]25/1,000	25
3. Supplied-Air Respirator (SAR) or Airline Respirator					
• Demand mode	……..	10	50	……..	……..
• Continuous flow mode	……..	50	1,000	[4]25/1,000	25
• Pressure-demand or other positive-pressure mode	…….	50	1,000	……..	……..
4. Self-Contained Breathing Apparatus (SCBA)					
• Demand mode	…….	10	50	50	……..
• Pressure-demand or other positive-pressure mode (e.g., open/closed circuit)	. ……. ..	……..	10,000	10,000	……..

Notes:

1 Employers may select respirators assigned for use in higher workplace concentrations of a hazardous substance for use at lower concentrations of that substance, or when required respirator use is independent of concentration.

2 The assigned protection factors in Table [~~1~~]**B** are only effective when the employer implements a continuing, effective respirator program as required by this section ([~~29 CFR 1910.134~~]**Division 4/I, 437-004-1041**), including training, fit testing, maintenance, and use requirements.

3 This APF category includes filtering facepieces, and half masks with elastomeric facepieces.

4 The employer must have evidence provided by the respirator manufacturer that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater to receive an APF of 1,000. This level of performance can best be demonstrated by performing a WPF or SWPF study or equivalent testing. Absent such testing, all other PAPRs and SARs with helmets/hoods are to be treated as loose-fitting facepiece respirators, and receive an APF of 25.

5 These APFs do not apply to respirators used solely for escape. For escape respirators used in association with specific substances covered by [~~29 CFR 1910 subpart Z~~]**Division 4/Z**, employers must refer to the appropriate substance-specific standards in that subpart. Escape respirators for other IDLH atmospheres are specified by [~~29 CFR 1910.134(d)(2)(ii)~~]**Division 4/I, 437-004-1041(4)(b)(B)**.

(ii) Maximum Use Concentration (MUC).

(I) The employer must select a respirator for employee use that maintains the employee's exposure to the hazardous substance, when measured outside the respirator, at or below the MUC.

(II) Employers must not apply MUCs to conditions that are immediately dangerous to life or health (IDLH); instead, they must use respirators listed for IDLH conditions in paragraph (4)(b) of this standard.

(III) When the calculated MUC exceeds the IDLH level for a hazardous substance, or the performance limits of the cartridge or canister, then employers must set the maximum MUC at that lower limit.
(B) The respirator must be appropriate for the chemical state and physical form of the contaminant.
(C) For protection against gases and vapors, provide:
(i) An atmosphere-supplying respirator, or
(ii) An air-purifying respirator, if:
(I) It has and end-of-service-life indicator (ESLI) certified by NIOSH for the contaminant; or
(II) If there is no ESLI appropriate for your conditions, implement a change schedule for canisters and cartridges that is based on objective information or data that will ensure that canisters and cartridges are changed before the end of their service life. Describe in the respirator program the information and data relied on and the basis for the canister and cartridge change schedule and the basis for reliance on the data.

(NOTE: The Worker Protection Standard contains criteria for specific change out schedules for respirator canisters and cartridges. See **Division 4/W,** [~~OAR 437-004-~~]170.240.)

(D) For protection against particulates, provide:
(i) An atmosphere-supplying respirator; or
(ii) An air-purifying respirator with a filter certified by NIOSH under 30 CFR part 11 as a high efficiency particulate air (HEPA) filter, or an air-purifying respirator with a filter certified for particulates by NIOSH under 42 CFR part 84; or
(iii) For contaminants consisting primarily of particles with mass median aerodynamic diameters (MMAD) of at least 2 micrometers, an air-purifying respirator with any filter certified for particulates by NIOSH.

(5) Medical evaluation. **Using a respirator may place a physiological burden on employees that depends on the type of respirator, the job and workplace conditions in which the respirator is used, and the medical status of the employee.**
(a) General. You must provide medical evaluations to determine **each** worker**'**s[**:**] ability to use a respirator **without causing adverse health effects**[~~safely~~]. Do this before the worker's fit test and before **they perform** any work requiring respirator use. The employer may discontinue an employee's medical evaluations when the employee no longer uses a respirator.
(b) Medical evaluation procedures. [~~(A) Use~~]**The employer must identify** a physician or other licensed health care professional (PLHCP) to **perform medical** [~~do the~~]evaluations using [~~either~~]a medical questionnaire or an initial examination that **obtains** [~~produces~~]the same information as [~~in Appendix C~~]**the medical questionnaire**. **The medical evaluation must obtain the information requested by the questionnaire in Appendix C, Part A, Sections 1 and 2, of this standard.**

NOTE: If the employee refuses the examination, they may not be permitted to work in jobs that require a tight-fitting respirator.

(c) Follow-up medical examination.
(A) [~~If the PLHCP reports that the employee needs a follow-up examination because of a positive response to any of questions 1 through 8 of the questionnaire in Appendix C or if their initial exam caused the need for a follow-up, you must ensure that they get the~~

~~opportunity for the examination. NOTE: If the employee refuses the examination, they may not work in jobs that require a respirator.~~] **The employer must ensure that a follow-up medical examination is provided for an employee if, in the opinion of the PLHCP, this is necessary.**

NOTE: The PLHCP may require a follow-up examination for an employee who gives a positive response to any question among questions 1 through 9, or 10 through 15 in Appendix C, Part A, Section 2; or whose initial medical examination demonstrates the need for a follow-up medical examination.

(B) The follow-up medical examination must include any medical tests, consultations, or diagnotic procedures that the PLHCP deems necessary to make a final determination.

(d) Administration of the medical questionnaire and examinations.
(A) You must allow the employee to complete the questionnaire in a way that protects the confidentiality of the information. Employers are not **allowed** to see the answers or **to** review the completed form. You must allow employees to complete the form during normal working hours or at a time and place convenient to them. If employees need help, allow them to ask your PLHCP or anybody other than their employer or represent- tatives of their employer.
(B) The employer must provide the employee with an opportunity to discuss the questionnaire and examination results with the PLHCP.

(e) Supplemental information for the PLHCP.
(A) You must give the PLHCP the **required supplemental** [~~following~~]information before they make any recommendation about a worker's ability to use a respirator. **Use Appendix C, Part B, Section 2 of this standard, or an equivalent form to provide this information.**
(i) The type and weight of the respirator the employee will use;
(ii) How long and how often the employee will use the respirator (including use for rescue and escape);
(iii) The expected physical work effort **while using the respirator**;
(iv) Additional protective clothing and equipment to be worn; and
(v) Temperature and humidity extremes that may exist during use.
(B) **Supplemental information y**[~~Y~~]ou [~~need not~~]provide **for an employee's medical evaluation does not have to be provided again for later evaluations unless the** information [~~more than once if it is unchanged~~]**or the PLHCP changes**.
(C) You must provide a copy of your written respiratory program and this standard to the PLHCP.

Note to Paragraph (5)(e)[~~(C)~~]: When the employer replaces a PLHCP, the employer must ensure that the new PLHCP has this information, either by providing the documents directly to the **new** PLHCP or **by** having the documents transferred from the former PLHCP to the new PLHCP. However, OR-OSHA does not expect employers to have employees medically reevaluated solely because there is a new PLHCP.

(f) Medical determination. In determining the employee's ability to use a respirator, the employer must:

(A) Obtain a written recommendation about the employee's ability to use the respirator from the PLHCP. The recommendation must provide only the following information:
(i) Any limitations on respirator use relating to the medical condition of the employee, or relating to the workplace conditions, including whether or not the employee is medically able to use the respirator;
(ii) The need, if any, for follow-up medical evaluations; and
(iii) A statement that the PLHCP gave a copy of the recommendation to the worker.
(B) If the respirator is a negative pressure respirator and the PLHCP finds that using it would increase the employee's health risk, the employer must provide a PAPR until a subsequent evaluation clears the employee for another type.

(g) Additional medical evaluations. At a minimum, the employer must provide additional medical evaluations that comply with this standard if:
(A) An employee reports medical signs or symptoms related to ability to use a respirator;
(B) A PLHCP, supervisor, or the knowledgeable person **who manages the respiratory protection program** informs the employer that an employee needs a reevaluation; or
(C) Information from the respiratory protection program, including observations made during fit testing and program evaluation, indicates a need for employee reevaluation; or
(D) A change occurs in work conditions ([~~e.g.,~~]**such as** physical work effort, protective clothing, **and** temperature**s**) that may result in a substantial increase in the physiological burden to the employee.

(6) Fit testing. **You must:**
(a) [~~You must be certain~~]**Ensure** that employees using a tight-fitting face piece respirator pass a**n appropriate** qualitative fit test (QLFT) or quantitative fit test (QNFT), using the same make, model, style and size respirator **that they will use in the workplace**.[~~ The fit test must comply with this standard.~~]
(b) **Ensure that each w**[~~W~~]orker[~~s~~] using a tight-fitting face piece respirator **is fit-tested**[~~must renew their fit test annually~~], before initial **respirator** use**;** [~~and~~]when**ever** they change to another type, style, model**,** or make **of respirator, and at least annually thereafter**.
(c) [~~You must d~~]**D**o a new fit test on a[~~ny~~] worker when **you observe or** the[~~y~~] **worker, a supervisor, the program administrator,** or a PLCHP report [~~or you observe~~]any change in the worker's physical condition that could affect the respirator fit. **Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.**
(d) [~~If after passing a QLFT or QNFT, the employee notifies the employer, supervisor, or PLHCP that the fit of the respirator is unacceptable, you must g~~]**G**ive **employees**[~~them~~] a reasonable opportunity to select a different respirator face piece and redo the fit test **if, after passing a QLFT or QNFT, the employee notifies the employer, supervisor, or PLHCP that the fit of the respirator is unacceptable**.
(e) **Ensure that a**[~~A~~]ll fit tests [~~must~~]comply with the **accepted QLFT or QNFT protocols in** Appendix A **of**[~~to~~] this standard.
(f) **Ensure that qualitative fit tests (QLFT) are used only to fit test negative pressure air-purifying respirators that must achieve an assigned protective factor of 50 or less.**[~~Do not use qualitative fit tests (QLFT) for negative pressure air purifying respirators for use in atmospheres where the contaminant could be more than 10 times the permissible exposure limit (PEL).~~]

(g) **Ensure that quantitative fit tests (QNFT), using an accepted QNFT protocol,** [~~A QNFT~~]**are only passed by achieving a** fit factor of 100 or more for **a** tight fitting half face piece **respirator, and**[~~or~~] a fit factor of 500 **or more** for **a** tight fitting full face piece respirator[~~s is necessary to pass a quantitative fit test~~].
(h) **Ensure that fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting powered air-purifying respirators is only accomplished by performing quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation (negative or positive pressure) that is used for respiratory protection.**[~~For both negative and positive pressure respirators that are tight-fitting, atmosphere-supplying types or powered air-purifying, use only negative pressure quantitative or qualitative fit tests, testing only in the negative pressure mode.~~]
(A) Do qualitative fit testing of these respirators by temporarily converting the respi- rator user's actual face piece into a negative pressure respirator with appropriate filters, or by using an identical negative pressure air-purifying respirator face piece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator face piece.
(B) Do quantitative fit testing of these respirators by modifying the face piece to allow sampling inside the face piece in the breathing zone of the user, midway between the nose and mouth. Do this by installing a permanent sampling probe onto a surrogate face piece, or by using a sampling adapter designed to temporarily provide a way to sample air from inside the face piece.
(C) Before returning a face piece to normal use, completely remove any modifications done for fit testing, and restore the face piece to NIOSH-approved **configuration**.

(7) Use of respirators.
(a) Face piece seal protection.
(A) **You must not permit w**[~~W~~]orkers **to**[~~who must~~] wear tight-fitting face pieces[~~ may not~~] **if they** have[~~ either of the following~~]:
(i) Facial hair **that comes** between the **face-to-face piece** sealing surface [~~and face~~]or [~~anything~~]that interferes with the **respirator's** valve function; or
(ii) Any other condition that interferes with the face-to-face piece seal or valve function.
(B) If an employee wears glasses or goggles or other personal protective equipment, the employer must ensure that it does not interfere with the seal of the face piece to the face of the user.
(C) Employers must **ensure that** [~~train~~]workers who wear respirators **perform**[~~on the need for and technique of doing~~]a user seal check before every use**.**[~~. This training must include~~] **using** the procedures in Appendix B-1 or**, if equally effective,** the recommendations of the respirator manufacturer.
(b) Continuing respirator effectiveness.
(A) You must **re**evaluate the effectiveness of a respirator when there is a change in work area conditions or degree of employee exposure or stress that may affect respirator effectiveness.
(B) You must ensure that employees leave the **area where** respirator**s are required**[~~ use area~~]:
(i) To wash their faces and respirator face pieces as necessary to prevent eye or skin irritation associated with respirator use; or
(ii) If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece; or
(iii) To replace the respirator or the filter, cartridge, or canister elements.

(C) If the employee detects vapor or gas breakthrough, changes in breathing resistance, or leakage of the face piece, the employer **or a competent person** must replace or repair the respirator before allowing the employee to return to the work area.
(c) Procedures for IDLH atmospheres. For all IDLH atmospheres, the employer must ensure that:
(A) One employee or, when needed, more than one employee is **stationed** outside the IDLH atmosphere;
(B) Visual, voice, or line communication is continuous between the employee(s) in the IDLH atmosphere and the employee(s) outside the IDLH atmosphere;
(C) The employee(s) outside the IDLH atmosphere have the training and equipment to provide effective emergency rescue;
(D) The employer or designee is notified before the employee(s) outside the IDLH atmosphere enter the IDLH atmosphere to provide emergency rescue;
(E) The employer or designee authorized to do so by the employer, once notified, provides necessary assistance appropriate to the situation;
(F) Employee(s) outside the IDLH atmospheres have:
(i) Pressure demand or other positive pressure SCBAs, or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either**:**
(ii) Appropriate retrieval equipment for removing the employee(s) who enter(s) these hazardous atmospheres where retrieval equipment would contribute to the rescue of the employee(s) and would not increase the overall risk resulting from entry; or
(iii) Equivalent means for rescue when there is no requirement for retrieval equipment under paragraph (7)(c)(F)(ii).
(d) Procedures for interior structural firefighting. If you require your workers to fight interior structural fires, paragraph (7)(c) applies. You must **also** do the following:
(A) At least two employees enter the IDLH atmosphere and remain in visual or voice contact with one another at all times; and
(B) At least two employees are located outside the IDLH atmosphere; and
(C) All employees engaged in interior structural firefighting use SCBA's.
Note 1 to paragraph (7)**(d)**:One of the two individuals located outside the IDLH atmosphere may be assigned to an additional role, such as incident commander in charge of the emergency or safety officer, so long as this individual is able to perform assistance or rescue activities without jeopardizing the safety of health of any firefighter working at the incident.
Note 2 to paragraph (7)**(d)**: Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team has assembled.

(8) Maintenance and care of respirators.
(a) Cleaning and disinfecting. You must provide each respirator user with a respirator that is clean, sanitary, and in good working order. You also must ensure that respirators are clean**ed** and disinfected using the procedures in Appendix B-2, or **equally effective** procedures recommended by the respirator manufacturer, [~~if they are of equivalent effectiveness. Clean and disinfect the respirators~~]at the following intervals:
(A) Clean and disinfect respirators [~~for~~]**used** exclusive**ly by** [~~use of~~]one worker as often as necessary to keep them sanitary;
(B) Clean and disinfect respirators [~~for~~]**after each use, or before being worn by different individuals, if** use**d** by more than one worker[~~ after each use~~];
(C) Clean and disinfect emergency use respirators after each use; and
(D) Clean and disinfect fit test and training respirators after each use.
(b) Storage. **Ensure that respirators are s**[~~S~~]tore**d** [~~all respirators~~]as follows:

(A) Store all respirators to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, damaging chemicals, and to prevent deformation of the face piece and exhalation valve.
(B) In addition to the requirements of paragraph (8)(b)(A), keep emergency respirators:
(i) Accessible to the work area;
(ii) In compartments or in covers clearly marked as containing emergency respirators; and
(iii) In accordance with any applicable manufacturer instructions.
(c) Inspection**s**.
(A) The employer must require respirator inspections as follows:
(i) Inspect all routine use respirators before each use and during cleaning;
(ii) Inspect emergency use respirators at least monthly and according to the manufacturer's recommendations. Check for proper function before and after each use; and
(iii) Inspect escape respirators before taking them into the **workplace**[~~area~~] for[~~ possible~~] use.
(B) The employer must ensure that respirator inspections include the following:
(i) A check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and
(ii) A check of elastomeric parts for pliability and signs of deterioration.
(C) In addition to the requirements of paragraphs (8)(c)(A) and (B), inspect self-contained breathing apparatus monthly. Keep air and oxygen fully charged and recharge them when the pressure falls to 90 percent of the manufacturer's recommended pressure level. Be certain the regulator and warning devices work properly.
(D) For emergency use respirators, the employer must:
(i) Certify the respirator by documenting the date of inspection, the name (or signature) of the inspector, the findings, required remedial action, and a serial number or other means of identifying the respirator; and
(ii) Provide this information on a tag or label attached to the respirator storage compartment, or keep it with the respirator, or include it in paper or electronic inspection reports. Keep this information until the next report replaces it.
(d) Repairs. Do not use respirators that fail an inspection or are otherwise defective. **Either d**[~~D~~]iscard **them** or repair them according to these procedures:
(A) Only people with appropriate training may repair or adjust respirators. They must use only the manufacturer's NIOSH-approved parts **designed** for the particular respirator;
(B) Repairs must conform to the manufacturer's recommendations **for the type of repair to be performed**;
(C) Only the manufacturer or a technician trained by the manufacturer may repair or adjust the reducing and admission valves, regulators and alarms.

(9) Breathing air quality and use.
(a) The employer must ensure or have their supplier certify that compressed air, compressed oxygen, liquid air, and liquid oxygen used for respiration meets the following specifications:
(A) Compressed and liquid oxygen must meet the United States Pharmacopoeia requirements for medical or breathing oxygen; and
(B) Compressed breathing air must meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989, to include:
(i) Oxygen content (v/v) [~~of~~]**between** 19.5 **and**[-] 23.5 percent;

(ii) Hydrocarbon (condensed) content of **no more than** 5 milligrams per cubic meter of air[~~ or less~~];
(iii) Carbon monoxide (CO) content of **no more than** 10 ppm[~~ or less~~];
(iv) Carbon dioxide content of **no more than** 1,000 ppm[~~ or less~~]; and
(v) **No**[~~Lack of~~] noticeable odor.
NOTE: Do not fill your own air vessels unless they and the contents meet all the requirements of this standard
(b) Do not use compressed oxygen in **atmosphere-supplied** respirators that previously held compressed air.
(c) The employer must ensure that [~~the~~]oxygen concentrations more than 23.5 percent are used only in equipment designed for oxygen service or distribution.
(d) The employer must ensure that cylinders to supply breathing air to respirators meet the following requirements:
(A) Cylinders **are tested and maintained as prescribed in**[~~must comply with~~] the Shipping Container Specification Regulations of the Department of Transportation (49 CFR part **180**[~~173 and part 178~~]);
(B) Cylinders of purchased breathing air have a certificate of analysis from the supplier that the breathing air meets the requirements for Grade D breathing air; and
(C) The moisture content in the cylinder does not exceed a dew point of –50 degrees F. (-45.6 degrees C.) at 1 atmosphere pressure.
(e) The employer must ensure that compressors supplying breathing air to respirators **are constructed and situated to**:
(A) Prevent entry of contaminated air into the air-supply system;
(B) Minimize moisture content so that the dew point at 1 atmosphere pressure is 10 degrees F. (5.56 degrees C.) below the ambient temperature;
(C) Have suitable in-line air-purifying sorbent beds and filters to further ensure breathing air quality. Maintain and replace sorbent beds and filters according to the manufacturer's instructions.
(D) Have a tag at the compressor showing the most recent change date and the signature of the authorized person who did the change.
(f) For compressors that are not oil-lubricated, ensure that carbon monoxide levels in the breathing air do not exceed 10 ppm.
(g) For oil-lubricated compressors, use only a high-temperature or carbon monoxide alarm, or both, to monitor carbon monoxide levels. If you use only high-temperature alarms, monitor the air supply often enough to prevent carbon monoxide in the breathing air from exceeding 10 ppm.
(h) The employer must ensure that breathing air couplings are incompatible with outlets for nonrespirable worksite air or other gas systems. Do not allow any asphyxiating substance to get into breathing airlines.
(i) Use only **the respirator manufacturer's NIOSH approved** breathing gas containers **marked and maintained in accordance with the Quality Assurance provisions of the NIOSH approval for the SCBA, as issued in accordance** with[~~ marking that comply with~~] the NIOSH respirator certification standard **at** 42 CFR part 84.

(10) Identification of filters, cartridges, and canisters. The employer must ensure that all filters, cartridges and canisters have labels and color codes that comply with the NIOSH standards and that the label remains in place and legible.

(11) Training and information.

(a) The employer must ensure that each employee can demonstrate knowledge of at least the following:
(A) Why the respirator is necessary and how improper fit, use, or maintenance can compromise the protective effect of the respirator;
(B) What the limitations and capabilities of the respirator are;
(C) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
(D) How to inspect, put on and remove, use, and check the seals of the respirator;
(E) What the procedures are for maintenance and storage of the respirator;
(F) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
(G) The general requirements of this rule.
(b) Training must be in a language or form that workers understand.
(c) Training must be complete before workers use respirators.
(d) Retrain respirator users annually and when these situations happen:
(A) Changes in the work or the type of respirator make previous training obsolete;
(B) Inadequacies in the employee's knowledge or use of the respirator indicate that they no longer have the basic understanding or skill; or
(C) Any other situation arises in which retraining appears necessary to ensure safe respirator use.
(e) An employer who can demonstrate that a new employee has training within the last 12 months that addresses the elements in paragraph (11)(a)(A) through (G) does not have to repeat that training if, the employee can demonstrate knowledge of those element(s). Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.
(f) Provide every voluntary respirator user with the basic advisory information in Appendix D. Any written or oral format **that the employee understands** is acceptable.

(12) Program evaluation.
(a) Evaluate the workplace as necessary to ensure effective **implementation**[~~use~~] of the current written program.
(b) Regularly consult your **respirator** users to get their views on your program's effectiveness and to identify problems. Correct the problem**s identified**. Things to assess include at least:
(A) Respirator fit (including the ability to use the respirator without interfering with effective workplace performance);
(B) Users have and use the correct respirator **and components** for their exposure hazards;
(C) Proper respirator use; and
(D) Proper respirator maintenance.

(13) Recordkeeping.
(a) Medical evaluation. Retain and make available[~~, according to 437-002-1910.1020,~~] all medical evaluations required by this standard **according to Division 2/Z, 1910.1020. (Division 4/A, 437-004-0005, Medical Records Access, stipulates that Division 2/Z, 1910.1020 applies to agricultural employers.)**[~~.~~]
(b) Fit testing.
(A) You must keep a record of qualitative and quantitative fit tests for each user including:
(i) The name or identification of the employee;
(ii) Type of fit test;

(iii) Specific make, model, style, and size of respirator tested;
(iv) Date of test; and
(v) The pass/fail results for QLFTs or the fit factor and strip chart recording or other recording of the test results for QNFTs.
(B) Keep fit test records until records of a new test replace them.
(c) You must keep a written copy of your current respirator program.
(d) On request, you must make written records required by this standard, available to the **Oregon** [~~R-~~]OSHA Administrator or their designee for examination or copying.

(14) Appendices.
[~~(a)~~] Compliance with Appendix A, Appendix B-1, Appendix B-2, [~~and~~]Appendix C**, and Appendix D** of this rule is mandatory.
~~[(b) Appendix D of this rule is mandatory and does not create any additional obligations or detract from any existing obligations.~~]

(15) Effective Date. OAR 437-004-1041, Respiratory Protection, is effective March 1, 2007.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 10-2006, f. 11/30/06, ef. 11/30/06.
OR-OSHA Admin. Order 3-2007, f. 8/13/07, ef. 8/13/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix A **to OAR 437-004-1041, Respiratory Protection** – Fit Testing Procedures (Mandatory)

Part I. Acceptable Fit Test Procedures
A. Fit Testing Procedures – General Requirements. These fit test procedures are mandatory and apply to both **Qualitative Fit Tests** QLFT and **Quantitative Fit Tests** QNFT.
(1) Provide enough respirators so the employee can choose an acceptable model that fits correctly. Be sure they understand that they must select a respirator that gives the best fit.
(2) Before the employee selects their respirator you must show them how to put on a respirator, how to position it on their face, how to set the strap tension and how to make sure the fit is acceptable. There must be a mirror for them to use when evaluating the position and fit. This instruction does not replace the required formal training.
(3) They must hold each face piece they choose up to their face to find the one with the best fit.
(4) Once they choose a mask, have them wear it for at least 5 minutes to evaluate the comfort level. Discuss the points in the following paragraph to assure the worker makes a good evaluation. If they are not familiar with using a particular respirator, have them put it on and take it off several times to assure they make the needed adjustments for a good fit.
(5) Assessment of comfort must include a review of the following points with the test subject and allowing the test subject enough time to determine the comfort of the respirator:
(a) Position of the mask on the nose

(b) Room for eye protection
(c) Room to talk
(d) Position of mask on face and cheeks
(6) Use the following criteria to help determine the adequacy of the respirator fit:
(a) Chin properly placed;
(b) Adequate strap tension, not too tight;
(c) Fit across nose bridge;
(d) Respirator of proper size to span distance from nose to chin;
(e) Tendency of respirator to slip;
(f) Self-observation in mirror to evaluate fit and respirator position.
(7) Have the employee do a user seal check according to Appendix B-1. Before they do the check have them seat the mask by moving their head from side to side and up and down slowly while taking a few deep breaths. If the test fails, have them select another mask.
(8) Do not do the test if the employee has any hair (including beard stubble) between the skin and sealing surface. They must alter or remove any clothing or items that interfere with the fit.
(9) If the testing employee shows signs of difficult breathing during the test, send them to a PLHCP to evaluate their ability to use a respirator.
(10) If the employee finds the fit unacceptable, you must allow them to select another respirator and retest.
(11) Exercises. Before beginning the fit test, give the worker a description of the test and advise them of their responsibilities during the test. The description must include the exercises. They must wear the respirator for 5 minutes before the start of the test.
(12) During the test the employee must wear any other safety equipment normally required for their work, if it could interfere with the respirator fit.
(13) Test Exercises.
(a) The worker must do these test exercises for all fit test methods except CNP. There are different exercises for CNP. The worker must do these in the test environment as follows:
(1) Normal breathing. In a normal standing position, without talking, the subject must breathe normally.
(2) Deep breathing. In a normal standing position, the subject must breathe slowly and deeply, taking caution so as not to hyperventilate.
(3) Turning head side to side. Standing in place, the subject must slowly turn their head from side to side between the extreme positions on each side. The head must be held at each extreme momentarily so the subject can inhale at each side.
(4) Moving head up and down. Standing in place, the subject must slowly move their head up and down. Instruct the subject to inhale in the up position (i.e., when looking toward the ceiling).
(5) Talking. The subject must talk out loud slowly and loud enough to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage
When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject must grimace by smiling or frowning. (This applies only to QNFT testing; it is not for QLFT.)
(7) Bending over. The test subject must bend at the waist as if they were to touch their toes. Substitute jogging in place for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.
(8) Normal breathing. Same as exercise (1).
(b) Do each test exercise for 1-minute except for the grimace exercise which is only for 15 seconds. Ask the test subject about the comfort of the respirator upon completion of the procedure. If there are problems, try another respirator. Do not adjust the respirator after the fit test exercises begin. Any adjustment voids the test.

B. Qualitative Fit Test (QLFT) Procedures
(1) General
(a) The employer must ensure that persons administering QLFT are able to prepare test solutions, calibrate equipment and perform tests properly, recognize invalid tests, and ensure that test equipment works properly.
(b) The employer must ensure that QLFT equipment is clean and well maintained so as to operate within its design parameters.
(2) Isoamyl Acetate Procedures
Note: This procedure is not appropriate to use for the fit testing of particulate respirators **unless the particulate cartridges can be replaced with organic vapor cartridges for the duration of the test**.[~~If used to fit test particulate respirators, the respirator must have an organic vapor filter.~~]
(a) Odor Threshold Screening. Odor threshold screening, done without wearing a respirator, is to determine if the individual tested can detect the odor of isoamyl acetate at low levels.
(1) You'll need three 1 liter glass jars with metal lids.
(2) Use odor-free water (e.g., distilled or spring water) at approximately 25 degrees C. (77 degrees F.) for the solutions.
(3) Make the isoamyl acetate (IAA) (also known at isopentyl acetate) stock solution by adding 1 ml of pure IAA to 800 ml of odor-free water in a 1-liter jar, closing the lid and shaking for 30 seconds. Make a new solution at least weekly.
(4) Do the screening test in a room separate from the room used for actual fit testing. Ventilate the two rooms to prevent the odor of IAA from becoming evident in the general room air where testing takes place.
(5) Make the odor test solution in a second jar by placing 0.4 ml of the stock solution into 500 ml of odor-free water using a clean dropper or pipette. Shake the solution for 30 seconds and allow it to stand for 2 to 3 minutes so that the IAA concentration above the liquid may reach equilibrium. Use this solution for only 1-day.
(6) Make a test blank in a third jar by adding 500 cc of odor-free water.
(7) Label the odor test and test blank jar lids (e.g., 1 and 2) for jar identification. Place the labels on the lids so that they can be peeled off periodically and switched to maintain the integrity of the test.
(8) Type the following instruction on a card and place it on the table in front of the two test jars (i.e., 1 and 2): "The purpose of this test is to determine if you can smell banana oil at a low concentration. The two bottles in front of you contain water. One of these bottles also has a small amount of banana oil. Be sure the covers are on tight, then shake each bottle

for two seconds. Unscrew the lid of each bottle, one at a time, and sniff at the mouth of the bottle. Indicate to the test conductor which bottle contains banana oil."
(9) Make the mixtures for the IAA odor detection test in an area separate from where you do the test, in order to prevent olfactory fatigue in the subject.
(10) If the test subject cannot correctly identify the jar containing the odor test solution, do not do the IAA qualitative fit test.
(11) If the test subject correctly identifies the jar containing the odor test solution, the test subject may proceed to respirator selection and fit testing.
(b) Isoamyl Acetate Fit Test
(1) The fit test chamber must be a clear 55-gallon drum liner suspended inverted over a 2-foot diameter frame so that the top of the chamber is about 6 inches above the test subject's head. If no drum liner is available, make a similar chamber using plastic sheeting. The inside top center of the chamber must have a small hook attached.
(2) Each respirator for the fitting and fit testing must have organic vapor cartridges or offer protection against organic vapors.
(3) After selecting, donning, and properly adjusting a respirator, the test subject must wear it to the fit testing room. This room must be separate from the room used for odor threshold screening and respirator selection, and must be well-ventilated, as by an exhaust fan or lab hood, to prevent general room contamination.
(4) Tape a copy of the test exercises and any prepared text from which the subject is to read to the inside of the test chamber.
(5) Give the test subject a 6-inch by 5-inch piece of paper towel, or other porous, absorbent, single-ply material, folded in half and wetted with 0.75 ml of pure IAA when they enter the test chamber. Have the test subject hang the wet towel on the hook at the top of the chamber. You may substitute an IAA test swab or ampule for the IAA wetted paper towel if the alternative IAA source will generate an IAA test atmosphere with a concentration equivalent to that generated by the paper towel method.
(6) Allow 2 minutes for the IAA test concentration to stabilize before starting the fit test exercises. This would be an appropriate time to talk with the test subject; to explain the fit test, the importance of their cooperation, and the purpose for the test exercises; or to demonstrate some of the exercises.
(7) If at any time during the test, the subject detects the banana-like odor of IAA, the test is a failure. The subject must quickly exit from the test chamber and leave the test area to avoid olfactory fatigue.
(8) If the test fails, the subject must return to the selection room and remove the respirator. The test subject must repeat the odor sensitivity test, select and put on another respirator, return to the test area and again begin the fit test procedure in (b)(1) through (7) above. The process continues until they find a respirator that fits right. Should the odor sensitivity test fail, the subject must wait at least a few minutes before re-testing. Odor sensitivity will usually return by this time.
(9) If the subject passes the test, demonstrate the efficiency of the test procedure by having the subject break the respirator face seal and take a breath before exiting the chamber.
(10) When the test subject leaves the chamber, they must remove the saturated towel and return it to the person conducting the test, so that there is no significant IAA concentration build-up in the chamber during subsequent tests. Keep the used towels in a self-sealing plastic bag to prevent contamination of the test area.

(3) Saccharin Solution Aerosol Procedure

You must explain the entire screening and testing procedure to the test subject before starting the screening test.

(a) Taste threshold screening. The saccharin taste threshold screening, done without wearing a respirator, is to determine if the individual being tested can detect the taste of saccharin.

Note to paragraph 3.(a): If the test subject eats or drinks something sweet before the screening test, they may be unable to taste the weak saccharin solution.

(1) During threshold screening as well as during fit testing, subjects must wear an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movements of the head when wearing a respirator. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.

(2) The test enclosure must have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) Have the test subject put on the test enclosure. Throughout the threshold screening test, the test subject must breathe through their slightly open mouth with tongue extended. Tell the subject to report when they detect a sweet taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor must spray the threshold check solution into the enclosure. Direct the nozzle away from the nose and mouth of the person. Clearly mark this nebulizer to distinguish it from the fit test solution nebulizer.

(5) Make the threshold check solution by dissolving 0.83 gram of sodium saccharin USP in 100 ml of warm water. You can also put 1 ml of the fit test solution (see (b)(5) below) in 100 ml of distilled water.

(6) To produce the aerosol, firmly squeeze the nebulizer bulb so that it collapses completely, then release and allow to fully expand.

(7) Repeat ten squeezes rapidly and then ask the test subject if they can taste the saccharin. The test is over when the test subject reports tasting the sweet taste during the ten squeezes. Note the taste threshold as ten regardless of the number of squeezes actually done.

(8) If the first response is negative, do ten more squeezes rapidly and ask the test subject if they taste the saccharin. If the test subject reports tasting the sweet taste during the second ten squeezes, the screening test is over. The taste threshold is twenty regardless of the number of squeezes actually done.

(9) If the second response is negative, do ten more squeezes rapidly and ask the test subject again if they taste the saccharin. If the test subject reports tasting the sweet taste during the third set of ten squeezes, the screening test is over. The taste threshold is thirty regardless of the number of squeezes actually done.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the test subject cannot taste saccharin after 30 squeezes they may not perform the saccharin fit test.

(12) If the test subject gives a taste response, ask them to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer uses approximately 1 ml of liquid at a time in the nebulizer body.

(14) Thoroughly rinse the nebulizer in water, shake it dry, and refill it at least each morning and afternoon or at least every 4 hours.

(b) Saccharin solution aerosol fit test procedure.
(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
(2) The fit test uses the same enclosure as in 3.(a) above.
(3) The test subject must put on the enclosure while wearing the respirator selected in section I.A.. They must properly adjust the respirator and it must have a particulate filter(s).
(4) Use a second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent to spray the fit test solution into the enclosure. Clearly mark this nebulizer to distinguish it from the screening test solution nebulizer.
(5) Make the fit test solution by adding 83 grams of sodium saccharin to 100 ml of warm water.
(6) As before, the test subject must breathe through the slightly open mouth with tongue extended, and report if they taste the sweet taste of saccharin.
(7) Insert the nebulizer into the hole in the front of the enclosure and spray an initial concentration of saccharin fit test solution into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test. The minimum is 10 squeezes.
(8) After generating the aerosol, tell the test subject to perform the exercises in section I.A.13.
(9) Replenish the aerosol concentration every 30 using one half the original number of squeezes used initially (e.g., 5, 10 or 15).
(10) The test subject must indicate to the test conductor if at any time during the fit test they taste saccharin. If the test subject does not report tasting the saccharin, the test is successful.
(11) If they taste the saccharin, the fit is unsatisfactory and a failure. Try a different respirator and repeat the entire test procedure (taste threshold screening and fit testing).
(12) Since the nebulizer has a tendency to clog during use, the test operator must make periodic checks of the nebulizer to ensure that it is not clogged. If clogging is found at the end of the test session, the test is invalid.

(4) Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Procedure
The Bitrex™ (Denatonium benzoate) solution aerosol QLFT procedure uses the published saccharin test procedure because that procedure is widely accepted. Bitrex is a taste aversion agent used in household liquids that children should not drink and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. Explain the entire screening and testing procedure to the test subject before the screening test.
(a) Taste Threshold Screening.
The Bitrex taste threshold screening, done without wearing a respirator, is to determine if the person being tested can detect the taste of Bitrex.
(1) During threshold screening as well as during fit testing, subjects must wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure must be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts # FT 14 and # FT 15 combined, is adequate.
(2) The test enclosure must have a 3/4-inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject must put on the test enclosure. Throughout the threshold screening test, the test subject must breathe through his or her slightly open mouth with tongue extended. Tell the subject to report when they detect a bitter taste.
(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the spray the Threshold Check Solution into the enclosure. Clearly mark this Nebulizer to distinguish it from the fit test solution nebulizer.
(5) Make the Threshold Check Solution by adding 13.5 milligrams of Bitrex to 100 ml of 5 percent salt (NaCl) solution in distilled water.
(6) To produce the aerosol, firmly squeeze the nebulizer bulb so that the bulb collapses completely, and then release it and allow it to fully expand.
(7) Repeat the initial ten squeezes rapidly and then ask the test subject if they taste the Bitrex. If the test subject tastes the bitter taste during the ten squeezes, the screening test is over. The taste threshold is ten regardless of the number of squeezes actually done.
(8) If the first response is negative, repeat ten more squeezes rapidly and ask the test subject if they taste the Bitrex. If the test subject tastes the bitter taste during the second ten squeezes, the screening test is over. The taste threshold is twenty regardless of the number of squeezes actually done.
(9) If the second response is negative, do ten more squeezes rapidly and ask the test subject if they taste the Bitrex. If the test subject tastes the bitter taste during the third set of ten squeezes, the screening test is over. The taste threshold is as thirty regardless of the number of squeezes actually done.
(10) The test conductor will take note of the number of squeezes required to solicit a taste response.
(11) If the subject does not taste the Bitrex after 30 squeezes (step 10), the test subject cannot taste Bitrex and may not do the Bitrex fit test.
(12) If they taste the Bitrex, ask the test subject to remember the taste for reference in the fit test.
(13) Correct use of the nebulizer is approximately 1 ml of liquid at a time in the nebulizer body.
(14) Thoroughly rinse the nebulizer in water, shake to dry, and refill at least each morning and afternoon or at least every 4 hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.
(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.
(2) The fit test uses the same enclosure as in 4.(a) above.
(3) The test subject must put on the enclosure while wearing the respirator selected according to section I.A. They must properly adjust the respirator and it must have any type particulate filter(s).
(4) Use a second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent to spray the fit test solution into the enclosure. Clearly mark this nebulizer to distinguish it from the screening test solution nebulizer.
(5) Make the fit test solution by adding 337.5 mg of Bitrex to 200 ml of a 5 percent salt (NaCl) solution in warm water.
(6) As before, the test subject must breathe through his or her slightly open mouth with tongue extended, and report if they taste the bitter taste of Bitrex.
(7) Insert the nebulizer into the hole in the front of the enclosure and spray an initial concentration of the fit test solution into the enclosure using the same number of squeezes

(either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.
(8) After generating the aerosol, tell the test subject to do the exercises in section I.A.13.
(9) Replenish the aerosol concentration every 30 seconds using one half the number of squeezes used initially (e.g., 5, 10 or 15).
(10) The test subject must indicate to the test conductor if they taste the Bitrex during the test. If the test subject does not taste the Bitrex, the test passes.
(11) If they taste the Bitrex, the fit is unsatisfactory and the test fails. They must try a different respirator and repeat the entire test procedure (taste threshold screening and fit testing).

(5) Irritant Smoke (Stannic Chloride) Procedure
This qualitative fit test uses a person's response to the irritating chemicals released in the "smoke" produced by a stannic chloride ventilation smoke tube to detect leakage into the respirator.
(a) General Requirements and Precautions
(1) The test respirator must have high efficiency particulate air (HEPA) or P100 series filter(s).
(2) Use only stannic chloride smoke tubes for this procedure.
(3) Do not use any form of test enclosure or hood for the test subject.
(4) The smoke can be irritating to the eyes, lungs, and nasal passages. The test conductor must take precautions to minimize the test subject's exposure to irritant smoke. Sensitivity varies, and certain individuals may respond to a greater degree to irritant smoke. Use only the smallest amount of smoke necessary to get a response when doing the sensitivity screening checks that determine if the test subject can detect irritant.
(5) Do the fit test in an area with adequate ventilation to prevent exposure of the person doing the fit test or the build-up of irritant smoke in the general area.

(b) Sensitivity Screening Check
The person taking the test must demonstrate their ability to detect a weak concentration of the irritant smoke.
(1) The test operator must break both ends of a ventilation smoke tube containing stannic chloride, and attach one end of the smoke tube to a low flow air pump set to deliver 200 milliliters per minute, or an aspirator squeeze bulb. The test operator must cover the other end of the smoke tube with a short piece of tubing to prevent potential injury from the jagged end of the smoke tube.
(2) The test operator must advise the test subject that the smoke can be irritating to the eyes, lungs, and nasal passages and instruct the subject to keep their eyes closed during the test.
(3) Allow the test subject to smell a weak concentration of the irritant smoke before putting the respirator on to become familiar with its irritating properties and to determine if they can detect the irritating properties of the smoke. Carefully direct a small amount of the irritant smoke in the test subject's direction to determine that they can detect it.

(c) Irritant Smoke Fit Test Procedure
(1) The person fit tested must put on the respirator without assistance, and do the required user seal check(s).
(2) Tell the test subject to keep their eyes closed.

(3) The test operator must direct the stream of irritant smoke from the smoke tube toward the face seal area of the test subject, using the low flow pump or the squeeze bulb. The test operator must begin at least 12 inches from the face piece and move the smoke stream around the whole perimeter of the mask. The operator must gradually make two more passes around the perimeter of the mask, moving to within 6 inches of the respirator.
(4) If the test subject has no involuntary response and/or does not detect the irritant smoke, proceed with the test exercises.
(5) The test subject must do the exercises in section I.A.13. while the respirator seal is continually challenged by the smoke, directed around the perimeter of the respirator at a distance of 6 inches.
(6) If the person detects the irritant smoke, the test fails. The person re-testing must repeat the entire sensitivity check and fit test procedure.
(7) Give a second sensitivity screening check to each test subject passing the irritant smoke test without evidence of a response (involuntary cough, irritation), with the smoke from the same smoke tube used during the fit test, with the respirator off, to determine if they still reacts to the smoke. Failure to evoke a response voids the fit test.
(8) If there is a response during this second sensitivity check, then the fit test passes.

C. Quantitative Fit Test (QNFT) Procedures
The following quantitative fit testing procedures are acceptable: Quantitative fit testing using a non-hazardous test aerosol (such as corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS], or sodium chloride) generated in a test chamber, and using instrumentation to quantify the fit of the respirator; Quantitative fit testing using ambient aerosol as the test agent and appropriate instrumentation (condensation nuclei counter) to quantify the respirator fit; Quantitative fit testing using controlled negative pressure and appropriate instrumentation to measure the volumetric leak rate of a face piece to quantify the respirator fit.

(1) General
(a) The employer must ensure that persons administering QNFT are able to calibrate equipment and perform tests properly, recognize invalid tests, calculate fit factors properly and ensure that test equipment is in proper working order.
(b) The employer must ensure that QNFT equipment is clean, and maintained and calibrated according to the manufacturer's instructions so as to operate at its design parameters.

(2) Generated Aerosol Quantitative Fit Testing Procedure
(a) Apparatus.
(1) Instrumentation. Use aerosol generation, dilution, and measurement systems using particulates (corn oil, polyethylene glycol 400 [PEG 400], di-2-ethyl hexyl sebacate [DEHS] or sodium chloride) as test aerosols.
(2) Test chamber. The test chamber must be large enough to permit all test subjects to perform freely all required exercises without disturbing the test agent concentration or the measurement apparatus. The test chamber must effectively isolate the test agent from the outside air, yet allow its concentration to be uniform throughout the chamber.
(3) When testing air-purifying respirators, replace the normal filter or cartridge element with a high efficiency particulate air (HEPA) or P100 series filter supplied by the same manufacturer.

(4) The sampling instrument must make a computer record or strip chart record of the test showing the rise and fall of the test agent concentration with each inhale and exhale at fit factors of at least 2,000. Integrators or computers that integrate the amount of test agent penetration leakage into the respirator for each exercise are Ok if they make a record of the readings.
(5) The combination of substitute air-purifying elements, test agent and test agent concentration must not expose the test subject in excess of an established exposure limit for the test agent at any time during the testing process.
(6) The sampling port on the test specimen must not allow leaks around the port (e.g., where the respirator is probed). It must always allow a free airflow into the sampling line, and there must be no interference with the fit or performance of the respirator. The in-mask sampling device (probe) must draw the air sample from the breathing zone of the test subject, midway between the nose and mouth and with the probe extending into the face piece cavity at least 1/4-inch.
(7) The test setup must permit the person administering the test to observe the test subject inside the chamber during the test.
(8) The equipment generating the test atmosphere must keep the concentration of test agent constant to within a 10 percent variation for the duration of the test.
(9) The time lag (interval between an event and the recording of the event on the strip chart or computer or integrator) must be minimal. There must be a clear association between the occurrence of an event and its recording.
(10) The sampling line tubing for the test chamber atmosphere and for the respirator sampling port must be of equal diameter and of the same material. The length of the two lines must be equal.
(11) The exhaust flow from the test chamber must pass through an appropriate filter (i.e., high efficiency particulate filter) before release.
(12) When using sodium chloride aerosol, the relative humidity inside the test chamber must not exceed 50 percent.
(13) Take into account the limitations of instrument when determining the fit factor.
(14) Test respirators must work right. Inspect them regularly for deficiencies such as cracks or missing valves and gaskets.

(b) Procedural Requirements.
(1) When performing the initial user seal check using a positive or negative pressure check, crimp the sampling line closed to avoid air pressure leakage during either of these pressure checks.
(2) The use of an abbreviated screening QLFT test is optional. Such a test may quickly identify poor fitting respirators that passed the positive and/or negative pressure test and reduce the amount of QNFT time. The use of the CNC QNFT instrument in the count mode is another optional method to obtain a quick estimate of fit and eliminate poor fitting respirators before going on to perform a full QNFT.
(3) You must measure a reasonably stable test agent concentration in the test chamber prior to testing. For canopy or shower curtain types of test units, you may determine the test agent's stability after the test subject enters the test environment.
(4) Immediately after the subject enters the test chamber, measure the test agent concentration inside the respirator to ensure that the peak penetration does not exceed 5 percent for a half mask or 1 percent for a full-face piece respirator.
(5) You must have a stable test agent concentration before starting the test.

(6) Do not tighten the respirator restraining straps too much for testing. The wearer must adjust the straps without assistance to give a reasonably comfort- able fit typical of normal use. Do not adjust the after the fit test exercises begin.
(7) Stop the test when any single peak penetration exceeds 5 percent for half masks and 1 percent for full-face piece respirators. The test subject must refit and retest.
(8) Calculation of fit factors.
(i) Determine the fit factor for the quantitative fit test by taking the ratio of the average chamber concentration to the concentration measured inside the respirator for each test exercise except the grimace exercise.
(ii) Calculate the average test chamber concentration as the arithmetic average of the concentration measured before and after each test (i.e., 7 exercises) or the arithmetic average of the concentration measured before and after each exercise or the true average measured continuously during the respirator sample.
(iii) Use one of these methods to figure the concentration of the challenge agent inside the respirator:
(A) Average peak penetration method means the method of determining test agent penetration into the respirator using a strip chart recorder, integrator, or computer. The agent penetration is the average of the peak heights on the graph or by computer integration, for each exercise except the grimace exercise. Integrators or computers that calculate the actual test agent penetration into the respirator for each exercise meet the requirements of the average peak penetration method.
B) Maximum peak penetration method means the method of determining test agent penetration in the respirator as determined by strip chart recordings of the test. The highest peak penetration for a given exercise is representative of average penetration into the respirator for that exercise.
(C) Integration by calculation of the area under the individual peak for each exercise except the grimace exercise. This includes computerized integration.
(D) The calculation of the overall fit factor using individual exercise fit factors involves first converting the exercise fit factors to penetration values, determining the average, and then converting that result back to a fit factor. This equation represents the procedure:

$$\text{Overal Fit Factor} = \frac{\text{Number of exercises}}{1/ff_1 + 1/ff_2 + 1/ff_3 + 1/ff_4 + 1/ff_5 + 1/ff_7 + 1/ff_8}$$

Where ff1, ff2, ff3, etc. are the fit factors for exercises 1, 2, 3, etc.

(9) Do not allow the test subject to wear a half mask or quarter face piece respirator unless they have a minimum fit factor of 100, or a full face piece respirator unless they have a minimum fit factor of 500.
(10) Replace filters used for quantitative fit testing when they cause increased breathing resistance, or when the test agent has altered the integrity of the filter media.

(3) **Quantitative fit testing (QNFT) procedure for the ambient aerosol condensation nuclei counter (CNC.**
Ambient aerosol condensation nuclei counter (CNC) quantitative fit testing procedure.
The ambient aerosol condensation nuclei counter (CNC) quantitative fit testing (Porta-count™) procedure quantitatively fit tests respirators with the use of a probe. The probed respirator is only for use with quantitative fit tests. A probed respirator has a special sampling device, installed on the respirator, that allows the probe to sample the air from inside the mask. A probed respirator is required for each make, style, model, and size that

the employer uses and is available from the respirator manufacturer or distributor. The CNC instrument manufacturer, TSI Inc., also provides probe attachments (TSI sampling adapters) that permit fit testing in an employee's own respirator. A minimum fit factor pass level of at least 100 is necessary for a half-mask respirator and a minimum fit factor pass level of at least 500 is required for a full-face piece negative pressure respirator. Explain the entire screening and testing procedure to the test subject before doing the screening test.
(a) Portacount Fit Test Requirements.
(1) Check the respirator to make sure the sampling probe and line are properly attached to the face piece and that the respirator has a particulate filter capable of preventing significant penetration by the ambient particles used for the fit test (e.g., NIOSH 42 CFR 84 series 100, series 99, or series 95 particulate filter) per manufacturer's instruction.
(2) Instruct the test employee to put on the respirator for 5 minutes before the fit test starts. This purges the ambient particles trapped inside the respirator and permits the wearer to make certain the respirator is comfortable. This person must have training on how to wear the respirator properly.
(3) Check the following conditions for the adequacy of the respirator fit: Chin properly placed; Adequate strap tension, not overly tightened; Fit across nose bridge; Respirator of proper size to span distance from nose to chin; Tendency of the respirator to slip; Self-observation in a mirror to evaluate fit and respirator position.
(4) Have the person wearing the respirator do a user seal check. If it leaks, determine the cause. If the leak is from a poorly fitting face piece, try another size of the same model respirator, or another model of respirator.
(5) Follow the manufacturer's instructions for operating the Portacount and proceed with the test.
(6) Instruct the test subject to perform the exercises in section I.A.13.
(7) After the test exercises, question the test subject about the comfort of the respirator. If it has become unacceptable, try another model respirator.

(b) Portacount Test Instrument.
(1) The Portacount will automatically stop and calculate the overall fit factor for the entire set of exercises. The overall fit factor is what counts. The Pass or Fail message will indicate whether or not the test was successful. If the test was a Pass, the fit test is over.
(2) Since the pass or fail criterion of the Portacount is user programmable, the test operator must ensure that the pass or fail criterion meet the requirements for minimum respirator performance in this Appendix.
(3) Keep a record of the test, assuming the fit test was successful. The record must have the test subject's name; overall fit factor; make, model, style, and size of respirator; and date of the test.

(4) Controlled negative pressure (CNP) quantitative fit testing procedure.
The CNP procedure is an alternative to aerosol fit test methods. The CNP fit test method technology is based on exhausting air from a temporarily sealed respirator face piece to generate and then maintain a constant negative pressure inside the face piece. The rate of air exhaust is controlled so that there is a constant negative pressure in the respirator during the fit test. The level of pressure is selected to replicate the mean inhalation pressure that causes leakage into the respirator under normal use conditions. With pressure held constant, airflow out of the respirator is equal to air flow into the respirator. Therefore, measurement of the exhaust stream required to hold the pressure in the temporarily sealed respirator constant yields a direct measure of leakage airflow into the respirator. The CNP

fit test method measures leak rates through the face piece as a method for determining the face piece fit for negative pressure respirators. The CNP instrument manufacturer Occupational Health Dynamics of Birmingham, Alabama also provides attachments (sampling manifolds) that replace the filter cartridges to permit fit testing in an employee's own respirator. To perform the test, the test subject closes his or her mouth and holds their breath, after which an air pump removes air from the respirator face piece at a pre-selected constant pressure. The face piece fit is expressed as the leak rate through the face piece, in milliliters per minute. The quality and validity of the CNP fit tests are determined by the degree to which the in-mask pressure tracks the test pressure during the system measurement time of approximately five seconds. Instantaneous feedback in the form of a real-time pressure trace of the in-mask pressure is provided and used to determine test validity and quality. A minimum fit factor pass level of 100 is necessary for a half-mask respirator and a minimum fit factor of at least 500 is required for a full-face piece respirator. Explain the entire screening and testing procedure to the test subject before doing the screening test.

(a) CNP Fit Test Requirements.
(1) The instrument must have a nonadjustable test pressure of 15.0 mm water pressure.
(2) The CNP system defaults selected for test pressure must be set at -15 mm of water (-0.58 inches of water) and the modeled inhalation flow rate must be 53.8 liters per minute for performing fit tests.
(Note: CNP systems have built-in capability to conduct fit testing that is specific to unique work rate, mask, and gender situations that might apply in a specific workplace. Use of system default values, which were selected to represent respirator wear with medium cartridge resistance at a low-moderate work rate, will allow inter-test comparison of the respirator fit.)
(3) The individual who conducts the CNP fit testing must have adequate training to lead the test.
(4) Replace the respirator filter or cartridge with the CNP test manifold. Temporarily remove or prop open the inhalation valve downstream from the manifold.
(5) Train the test subject to hold his or her breath for at least 20 seconds.
(6) The test subject must put on the test respirator without any assistance. The respirator must not be adjusted once the fit-test exercises begin. Any adjustment voids the test, and the test subject must repeat the fit-test.
(7) Follow the QNFT procedure according to section I.C.1. with an exception for the CNP test exercises.

(b) CNP Test Exercises.
(1) Normal breathing. In a normal standing position, without talking, the sub- ject must breathe normally for 1-minute. After the normal breathing exercise, the subject needs to hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
(2) Deep breathing. In a normal standing position, the subject must breathe slowly and deeply for 1-minute, being careful not to hyperventilate. After the deep breathing exercise, the subject must hold their head straight ahead and hold their breath for 10 seconds during test measurement.
(3) Turning head side to side. Standing in place, the subject must slowly turn their head from side to side between the extreme positions on each side for 1-minute. The head must be held at each extreme momentarily so the subject can inhale at each side. After the

turning head side to side exercise, the subject needs to hold their head full left and hold his or her breath for 10 seconds during test measurement. Next, the subject needs to hold their head full right and hold his or her breath for 10 seconds during test measurement.
(4) Moving head up and down. Standing in place, the subject must slowly move their head up and down for 1-minute. Instruct the subject to inhale in the up position (i.e., when looking toward the ceiling). After the moving head up and down exercise, the subject must hold their head full up and hold his or her breath for 10 seconds during test measurement. Next, the subject must hold their head full down and hold his or her breath for 10 seconds during test measurement.
(5) Talking. The subject must talk out loud slowly and loud enough to be heard clearly by the test conductor. The subject can read from a prepared text like the Rainbow Passage, count backward from 100, or recite a memorized poem or song for 1-minute. After the talking exercise, the subject must hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
(6) Grimace. The test subject must grimace by smiling or frowning for 15 seconds.
(7) Bending Over. The test subject must bend at the waist as if they were to touch their toes for 1-minute. Substitute jogging in place for this exercise in those test environments such as shroud-type QNFT units that prohibit bending at the waist. After the bending over exercise, the subject must hold their head straight ahead and hold their breath for 10 seconds during the test measurement.
(8) Normal Breathing. The test subject must remove and re-don the respirator within a 1-minute period. Then, in a normal standing position, without talking, the subject must breathe normally for 1-minute. After the normal breathing exercise, the subject must hold their head straight ahead and hold their breath for 10 seconds during the test measurement. After the test exercises, question the test about the comfort of the respirator after completion of the test. If it is unacceptable, try another model of respirator.

(c) CNP Test Instrument.
(1) The test instrument must have an effective audio warning device when the test subject fails to hold their breath during the test. Stop the test when the test subject fails to hold their breath. Refit and retest the test subject.
(2) Keep a record of the test, assuming the fit test was successful. The record must have the test subject's name; overall fit factor; make, model, style and size of respirator; and date of the test.

Part II. New Fit Test Procedures – Oregon OSHA will accept any new procedures that OSHA accepts. For more information of submitting new procedures for acceptance or other information about this subject, read the federal rules.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 3-2007, f. 8/13/07, ef. 8/13/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix B-1 **to OAR 437-004-1041, Respiratory Protection** – User Seal Check Procedures (Mandatory)

The user of a tight-fitting respirator must do a seal check every time they put on the respirator. They must use one of the two methods below or the manufacturer's recommended method. **(**These tests do no**t** substitute for qualitative or quantitative fit tests.**)**

(I) Face piece Positive and/or Negative Pressure Checks
(A) Positive pressure check. Close off the exhalation valve and exhale gently into the face piece. The face fit is satisfactory if a slight positive pressure can be built up inside the face piece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.
(B) Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the face piece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the face piece remains in its slightly collapsed condition and there is no sign of inward leakage of air, the tightness of the respirator is satisfactory.
(II) Manufacturer's Recommended User Seal Check Procedures
You may use the respirator manufacturer's recommended procedures for performing a user seal check instead of the positive and/or negative pressure check procedures if you can demonstrate that the manufacturer's procedures are equally effective.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix B-2 **to OAR 437-004-1041, Respiratory Protection** – Respirator Cleaning Procedures (Mandatory)

These are general procedures for cleaning respirators. You may also use the manufacturer's recommendations if they meet the objectives of these procedures to prevent harm to the user and/or damage to the respirator.

I. Procedures for Cleaning Respirators
(A) Remove filters, cartridges, or canisters. Disassemble face pieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.
(B) Wash components in warm (43 degrees C. [110 degrees F.] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.
(C) Rinse components thoroughly in clean, warm (43 degrees C. [110 degrees F.] maximum), preferably running water. Drain.

(1) When the cleaner does not contain a disinfecting agent, immerse respirator components for 2 minutes in one of the following:
(2) Hypochlorite solution (50 ppm of chlorine) of approximately one-milliliter of laundry bleach and one liter of water at 43 degrees C. (110 degrees F.); or,
(3) Aqueous solution of iodine (50 ppm iodine) of approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45 percent alcohol) to one liter of water at 43 degrees C. (110 degrees F.); or,
(D) Other commercially available cleansers of equivalent disinfectant quality, if the respirator manufacturer recommends their use.
(E) Rinse components thoroughly in clean, warm (43 degrees C. [110 degrees F.] maximum), preferably running water. Drain. Thorough rinsing is extremely important. Detergents or disinfectants that dry on face pieces may cause dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.
(F) Components should be hand-dried with a clean lint-free cloth or air-dried.
(G) Reassemble face piece, replacing filters, cartridges, and canisters where necessary.
(H) Test the respirator to ensure that all components work properly.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 3-2007, f. 8/13/07, ef. 8/13/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix C **to OAR 437-004-1041, Respiratory Protection –** RESPIRATOR MEDICAL EVALUATION QUESTIONNAIRE (MANDATORY)

EMPLOYEE: Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers. Your employer must tell you how to send or deliver this questionnaire to the health care professional who will review it.

Part A. Section 1. ~~[(Mandatory)~~] Every employee selected to use any type of respirator must provide the following information (please print).

Date: _____

Name: _____ Job Title: _____

Age: _____ Sex: M / F Height: _____ Weight: _____
Phone #: ( )_____-_____

A phone number where the health care professional can reach you (include the Area Code): ( )_____-_____

The best time to phone you at this number:

Has your employer told you how to contact the health care professional who will review this questionnaire (circle one)? Yes / No

Check the type of respirator you will use (you can check more than one category):

a. ____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).

b. ____ Other type (for example, half or full-face type, powered-air purifying, supplied-air, self-contained breathing apparatus).

Have you worn a respirator (circle one)? Yes / No

If "yes", what type(s):

Part A. Section 2. ~~[(Mandatory)~~] Every employee selected to use any type of respirator must answer questions 1 through 9 below (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month? Yes / No
2. Have you ever had any of the following conditions?

a. Seizures ~~[(fits)~~] Yes / No
b. Diabetes (sugar disease) Yes / No
c. Allergic reactions that interfere with your breathing Yes / No
d. Claustrophobia (fear of closed-in places) Yes / No
e. Trouble smelling odors Yes / No

3. Have you ever had any of the following pulmonary or lung problems?

a. Asbestosis Yes / No
b. Silicosis Yes / No
c. Asthma Yes / No
d. Pneumothorax (collapsed lung) Yes / No
e. Chronic bronchitis Yes / No
f. Lung cancer Yes / No
g. Emphysema Yes / No
h. Broken ribs Yes / No
i. Pneumonia Yes / No
j. Any chest injuries or surgeries Yes / No
k. Tuberculosis Yes / No
l. Any other lung problem that you have been told about Yes / No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath Yes / No
b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline Yes / No
c. Shortness of breath when walking with other people at an ordinary pace on level ground Yes / No

d. Have to stop for breath when walking at your own pace on level ground Yes / No
e. Shortness of breath when washing or dressing yourself Yes / No
f. Shortness of breath that interferes with your job Yes / No
g. Coughing that produces phlegm (thick sputum) Yes / No
h. Coughing that wakes you early in the morning Yes / No
i. Coughing that occurs mostly when you are lying down Yes / No
j. Coughing up blood in the last month Yes / No
k. Wheezing Yes / No
l. Wheezing that interferes with your job Yes / No
m. Chest pain when you breath deeply Yes / No
n. Any other symptoms that you think may be related to lung problems Yes / No

5. Have you ever had any of the following cardiovascular or heart problems?
a. Heart attack Yes / No
b. Stroke Yes / No
c. Angina Yes / No
d. Heart failure Yes / No
e. Swelling in your legs or feet (not caused by walking) Yes / No
f. Heart arrhythmia (heart beating irregularly) Yes / No
g. High blood pressure Yes / No
h. Any other heart problems that you have been told about Yes / No

6. Have you ever had any of the following cardiovascular or heart symptoms?
a. Frequent pain or tightness in your chest Yes / No
b. Pain or tightness in your chest during physical activity Yes / No
c. Pain or tightness in your chest that interferes with your job Yes / No
d. In the past 2 years, have you noticed your heart skipping or missing a beat Yes / No
e. Heartburn or indigestion that is not related to eating Yes / No
f. Any other symptoms that you think may be related to heart or circulation problems Yes / No

7. Do you currently take medication for any of the following problems?
a. Breathing or lung problems Yes / No
b. Heart trouble Yes / No
c. Blood pressure Yes / No
d. Seizures ~~[(fits)]~~ Yes / No

8. If you have used a respirator, have you ever had any of the following problems? (If you have never used a respirator continue to question 9)
a. Eye irritation Yes / No
b. Skin allergies or rashes Yes / No
c. Anxiety Yes / No
d. General weakness **or**[~~f~~] fatigue Yes / No
e. Any other problem that interferes with your use of a respirator Yes / No

9. Would you like to discuss your answers with the health care professional who will review this questionnaire? Yes / No

Employees who will use either a full-face respirator OR a self-contained breathing apparatus (SCBA) MUST answer Questions 10 through 15: [~~Questions 10 to 15 must be answered if you will use either a full-face respirator or a self-contained breathing apparatus (SCBA).~~]

10. Have you ever lost vision in either eye temporarily or permanently? Yes / No

11. Do you currently have any of the following vision problems?
a. Wear contact lenses Yes / No
b. Wear glasses Yes / No
c. Color blind Yes / No
d. Any other eye or vision problem Yes / No

12. Have you ever had an injury to your ears, including a broken ear drum? Yes / No

13. Do you currently have any of the following hearing problems?
a. Difficulty hearing Yes / No
b. Wear a hearing aid Yes / No
c. Any other hearing or ear problem Yes / No

14. Have you ever had a back injury? Yes / No

15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet Yes / No
b. Back pain Yes / No
c. Difficulty fully moving your arms and legs Yes / No
d. Pain or stiffness when you lean forward or backward at the waist Yes / No
e. Difficulty fully moving your head up or down Yes / No
f. Difficulty fully moving your head side to side Yes / No
g. Difficulty bending at your knees Yes / No
h. Difficulty squatting to the ground Yes / No
i. Climbing a flight of stairs or a ladder carrying more than 25 pounds Yes / No
j. Any other muscle or skeletal problem that interferes with using a respirator Yes / No

Part B. Section 1. The health care professional who will review this questionnaire may **– at their discretion –** add these questions and any other questions [~~not listed at their~~ discretion.]**pertinent to this evaluation:**

1. In your present job are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen? Yes / No

If "Yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you are working under these condition? Yes / No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals? Yes / No

If “Yes,” name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions listed below:

a. Asbestos[÷] Yes / No
b. Coal (for example, mining) Yes / No
c. Silica (e.g., sandblasting) Yes / No
d. Iron Yes / No
e. Tungsten/cobalt (grinding or welding this material) Yes / No
f. Tin Yes / No
g. Dusty environments Yes / No
h. Beryllium Yes / No
i. Any other hazardous exposures Yes / No
j. Aluminum Yes / No

If “Yes,” describe these exposures:

4. List any second jobs or side businesses you have:

5. List your previous occupations:

6. List your current and previous hobbies:

7. Were you ever in the military services? Yes / No

If “yes” were you exposed to biological or chemical agents (either in training or combat)? Yes / No

8. Have you ever worked on a HAZMAT team?Yes / No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications)? Yes / No

If “Yes,” name the medications if you know them:

NOTES:

Part B. Section 2. **The EMPLOYER must provide this supplemental information to the health care professional (PLHCP) who will review the employee’s medical**

questionnaire: [~~Supplemental information for the health care professional filled out by the employer.~~]

EMPLOYEE'S NAME:

_____

EMPLOYEE'S JOB TITLE/ CLASSIFICATION:

_____

1. What type of respirator will this employee use?
   Check the type(s) below (you can check more than one category):
   _____ N-, R-, or P- filtering facepiece (disposable, "dust mask" type)
   _____ Tight-fitting, air-purifying half-mask,
   _____ Tight-fitting full-face mask
   _____ Air-purifying type
   _____ Supplied air type

   _____ Powered-air purifying respirator (PAPR)
   _____ Tight-fitting, full-face mask
   _____ Loose-fitting helmet or hood
   _____ Self-Contained Breathing Apparatus (SCBA).
   _____ Escape (gas mask)

2. What is the approximate weight of the respirator and any tanks or air hoses?
   _____

3.[~~10.~~] Will the employee use any of the following items with **these**[~~your~~] respirator(s)?
a. HEPA filters Yes / No
b. Canisters ([~~i.e.,~~]gas masks) Yes / No
c. Cartridges **(air-purifying)** Yes / No

4.[~~11.~~] How often will the employee use the respirator(s)? (circle "yes" or "no" for all answers that apply)
a. Escape only (no rescue **duties**) Yes / No
b. Less than 2 hrs. per day Yes / No
c. Emergency rescue only Yes / No
d. 2 to 4 hrs. per day Yes / No
e. Less than 5 hrs. per week Yes / No
f. over 4 hrs. per day Yes / No

5.[~~12.~~] When the employee uses the respirator(s), is their work effort:

a. Light (less than 200 kcal per hour) Yes / No

If "yes" how long does this period last during the average shift:
hrs. mins.

Examples of light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while controlling machines.

b. Moderate (200 to 350 kcal per hour): Yes / No

If "yes" how long does this period last during the average shift:
hrs. mins.

Examples of moderate work effort are sitting while nailing or filing: driving a truck, drilling, nailing performing assembly work, or transferring a moderate load (about 35 pounds) at trunk level; walking on a level surface about 2 mph or down a 5 degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 pounds) on a level surface. **(NOTE: A gallon of water weighs about 8 lbs; so, a full, 3-gallon, backpack sprayer weights about 25 lbs.)**

c. Heavy (above 350 kcal per hour): Yes / No

If "yes" how long does this period last during the average shift?
hrs. mins.

Examples of heavy work are lifting a heavy load (about 50 pounds) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8 degree grade about 2 mph, climbing stairs with a heavy load (about 50 pounds).

6.[~~13.~~] Will the employee wear protective clothing and/or equipment (other than the respirator) when using their respirator? Yes / No

If "yes," describe this protective clothing and/or equipment:

7.[~~14.~~] Will they be working in hot conditions (temperature more than 77 degrees F)? Yes / No

8.[~~15.~~] Will they be working in humid conditions? Yes / No

9.[~~16.~~] Describe the work they will be doing while using their respirator(s):

10.[~~17.~~] Describe any special or hazardous conditions they might encounter when using a respirator[~~(s)~~]**y protection** (for example, confined spaces, **oxygen-deficient atmospheres,** life threatening gases):

11.[~~18.~~] Provide the following information, if you know it, for each toxic substance that they will be exposed to when using their respirator(s):

Name of the first toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the second toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name of the third toxic substance:

Estimated maximum exposure level per shift:

Duration of exposure per shift:

Name**s** of any other toxic substances that they will be exposed to while using a respirator:

12.[~~19.~~] Describe any special responsibilities they will have while using their respirator(s) that may affect the safety and well-being of others (i.e., rescue, security):

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

[~~Apendice C~~

~~Este es un apéndice que no es obligatorio añadir al OAR 437-004-1040, Respiradores.~~
~~CUESTIONARIO DE EVALUACION MEDICA RESPIRATORIA~~
~~(OBLIGATORIO)~~
~~A. TRABAJADOR: Su compañía o patrón debe dejarlo responder estas preguntas durante horas normales de trabajo o durante una hora y lugar que sea conveniente para usted.~~
~~Para mantener su confin\dencialidad, su patron o supervisor no podrán revisar o mirar sus respuestas. Su empleador deberá decirle comoenviar o entregar este cuestionario al professional de la salud que lorevisará.~~
~~Parte A. Sección 1 (Obligatorio)~~
~~La siguiente información tiene que ser provisto por cada empleado que es designado a usar cualquier tipo de respirador (escribe claro por favor).~~
~~Fecha: _____~~
~~Nombre: _____ Ocupación, título o tipo de trabajo:_____~~
~~Edad: _____Género: M / F Estatura: _____ Peso: _____~~
~~Número de Teléfono: ( ) -_____~~
~~Un número de teléfono donde el profesional de salud que revisa rá este cuestionario puede comunicarse con usted (incluya el código de área): ( ) -_____~~

La mejor hora de comunicarse con usted ha este número de teléfono: Manana/Tarde (Marque uno)

¿Le explicó su patrón como comunicarse con el profesional de salud que revisará este cuestionario? Si / No (Marque uno):

Marque el tipo de respirador que usará (puede marcar más de uno)
____ N, R, o P respirador desechable (máscara con filtro, tipo sin cartucho solamente).
____ Otra clase de respirador (por ejemplo, máscara de media cara, máscara completa, tanque de aire, sistema cen una linea y aire).
¿Ha usado usted un respirador? Si / No (Marque uno)
Si es afirmativo, ¿Que estilo(s)?:
_____

Parte A. Sección 1 (Obligatorio)
Todo empleado disignado ha vsar cualquier clase de respirador de be contester las preguntas del 1 al 9 (circule si o no).
1. ¿Actualmente, fuma tabaco, o ha fumado tabaco en el último mes? Si / No

2. ¿Ha padecido usted de lo siguiente?
a. Convulsiones Si / No
b. Diabetes (azúcar en la sangre) Si / No
c. Reacciones alérgicas que interfieren con su respiración Si / No
d. Claustrofobia (temor a espacios cerrados) Si / No
e. Problemas del olfato Si / No

3. ¿Ha padecido usted de los siguientes problemas pulmonares?
a. Asbestosis Si / No
b. Asma Si / No
c. Bronquitis crónica Si / No
d. Enfisema Si / No
e. Neumonía Si / No
f. Tuberculosis Si / No
g. Silicosis Si / No
h. Neumotorax (desinfle del pulmón) Si / No
i. Cáncer del pulmón Si / No
j. Fracturas de las costillas Si / No
k. Lesiones o cirugía del pecho Si / No
l. Otros problemas del pulmón Si / No

4. ¿Actualmente tiene usted alguno de los siguientes síntomas pulmonares o enfermedades del pulmón?
a. Falta de aire Si / No
b. Falta de aire cuando camina rápido en una superficie plana una superficie levemente inclinada o camino elevado Si / No
c. Falta de aire cuando camina con otras personas a un ritmo normal superficie plana Si / No
d. El tener que parar para coger aire cuando camina a su ritmo en superficie plana Si / No

e. Falta de aire cuando usted se lava o se viste Si / No
f. Falta de aire lo cual interfiere con su trabajo Si / No
g. Tos, la cual produce flema espesa Si / No
h. Tos, la cual lo despierta Si / No
i. Tos, la cual se manifiesta cuando esta acostado Si / No
j. Tos con sangre durante el ultimo mes Si / No
k. Respiración jadiante Si / No
l. Respiración jadiante, la cual interfiere con su trabajo Si / No
m. Dolor en el pecho cuando respira profundamente Si / No
n. Cualquier otro síntoma o problema el cual usted cree que puede estar relacionado con problemas del pulmón Si / No

5. ¿Ha padecido usted de alguno de los siguientes problemas cardiovasculares o del corazón?
a. Ataque al corazón Si / No
b. Derrame cerebral o Embolia Si / No
c. Angina Si / No
d. Problemas del corazón Si / No
e. Hinchazón de las piernas o pies (no causada por el andar) Si / No
f. Arritmias del corazón (palpitación irregular) Si / No
g. Presión alta de la sangre Si / No
h. Otros problemas del corazón Si / No

6. ¿Ha padecido usted de los siguientes síntomas cardiovasculares o del corazón?
a. Dolor o presión frecuente del pecho Si / No
b. Dolor o presión enel pecho durante actividad física Si / No
c. Dolor o presión enel pecho lo cual interfiere con su trabajo Si / No
d. En los últimos dos años ha notado cambios en el ritmo de su corazón Si / No
e. Agrura o indigestión, no ocasionada por la comida Si / No
f. Otros síntomas los cuales usted cree están relacionados a problemas del corazón o circulación Si / No

7. ¿Actualmente toma usted medicamentos para algunos de los siguientes problemas?
a. Problemas de la respiración o de los pulmones Si / No
b. Problemas del corazón Si / No
c. Presión Si / No
d. Convulsiones Si / No

8. Si usted ha usado un respirador, ¿ha tenido en alguna ocasión alguno de los siguientes problemas? (Si usted nunca ha usado un respirador por favor continúe con la pregunta #9).
a. Irritación de los ojos Si / No
b. Irritación o alergias de la piel Si / No
c. Ansiedad Si / No
d. Agotamiento o debilidad Si / No
e. Algún otro problema que interfiere con el uso del respirador Si / No

9. Quiere hablar de sus respuestas con el profesional de salud que rivisara su cuestionario? Si / No

Las preguntas del 10 al 15 tienen que ser contestadas si usted va a usar un respiradorde máscara completa o tanque con aire (SCBA).

10. ¿Ha perdido la visión temporalmente o permanentemente en uno o ambos ojos? Si / No

11. ¿Actualmente tiene alguno de los siguientes problemas de la vista?
a. Usa lentes de contacto Si / No
b. Usa anteojos Si / No
c. Dificultad para distinguir los colores (acromatopsia) Si / No
d. Otros problemas con los ojos o visón? Si / No

12. ¿Ha tenido un una lesión en los oídos, incluyendo daño al tímpano? Si / No
13. ¿Actualmente tiene alguno de los siguientes problemas con los oídos?
a. Dificultad al oír Si / No
b. Usa prótesis en el oído Si / No
c. Cualquier otro problema con el sentido del oído o los oídos? Si / No

14. ¿Se ha lesionado la espalda? Si / No

15. ¿Actualmente tiene alguno de los siguientes problemas músculo esquelético?
a. Debilidad de los brazos, manos, piernas pies Si / No
b. Dolor de la espalda Si / No
c. Dificultad para mover completamente los brazos y piernas Si / No
d. Dolor o dificultad al doblar la cintura Si / No
e. Dificultad para mover la cabeza hacia arriba y abajo Si / No
f. Dificultad para mover la cabeza de un lado a otro Si / No
g. Dificultad para doblar las rodillas Si / No
h. Dificultad para ponerse de cuclillas Si / No
i. Subiendo gradas o una escalera cargando más de 25 libras Si / No
j. Cualquier otro problema del esqueleto o de los músculos que pueda interferir con el uso de un respirador Si / No

Parte B.
El professional de la salud que revisará este cuestionario puede uñadir a su discreción las siguientes preguntas y cualquier otra pregunta no listada.

1. ¿En su presente trabajo, trabaja en alturas elevadas (amás de 5,000 pies) o en lugares con medidas de oxigeno más bajas de lo normal? Si / No

¿Si es afirmativo, tiene mareos, falta de aire, presión en el pecho, u otros síntomas cuando está trabajando bajo estas condiciones? Si / No

2. ¿En el trabajo o su casa, ha sido usted expuesto a solventes peligrosos, químicos peligrosos transportados por el aire, (gases, humos, o polvos), o haentrado su piel en contacto con químicos peligrosos? Si / No

Si es afirmativo, nombre del (los) químico(s): _____

3. ¿Ha trabajado usted con los siguientes materiales, o bajo alguna de las siguientes condiciones?

a. Asbestos Si / No
b. Carbón (por ejemplo, trabajo en minas) Si / No
c. Silice (trabajo con arena o cemento) Si / No
d. Hierro Si / No
e. Tungsteno/cobalto (limando o soldando este material) Si / No
f. Estaño Si / No
g. Ambiente polvorozo Si / No
h. Berilio Si / No
i. Otra exposición química Si / No
j. Aluminio Si / No

Si es afirmativo, describa la(s) exposición(es): _____

4. Liste trabajos secundarios o negocios que usted realiza: _____

5. Liste sus ocupaciones anteriores: _____

6. Liste Pasatiempos presentes y pasados: _____

7. ¿Servicio Militar?: Si / No

Si es afirmativo, ¿estuvo expuesto a agentes biológicos o químicos (durante entrenamiento o combate)? Si / No

8. ¿Ha trabajado en un equipo HAZMAT(Grupo de emergencia)? Si / No
9. ¿Fuera de medicinas para la respiración, los pulmones, problemas del corazón, presión, y convulsiones mencionadas anteriormente en este cuestionario, está usted tomando otras medicinas por cualquier razón (incluyendo medicinas sin receta médica)? Si / No

Si es afirmativo, nombre las medicinas: _____

A pedido del professional de la salud la compañía la compañía Y/O patron proporcionar la siguiente información

10. ¿Va el empleado a utilizar alguno de los siguientes artículos con su respirador?

a. Filtros HEPA Si / No
b. Canisters (por ejemplo, máscaras para gas) Si / No
c. Cartuchos Si / No

11. ¿Con que frecuencia usará el empleado el respirador (circule todas las respuestas que sean necesarias)?
a. Solamente para escape (sin rescate) Si / No
b. Menos de 2 horas por día Si / No
c. Rescate de emergencia Si / No
d. 2 a 4 horas por día Si / No
e. Menos de 5 horas por semana Si / No
f. Más de 4 horas por día Si / No

12. ¿Durante el período que el empleado usa el respirador, el esfuerzo de trabajo es?
a. Liviano (menos de 200 Kcal por hora) Si / No

Si es afirmativo, promedio de horas durante turno de trabajo:
horas _____ minutos _____

Ejemplos de trabajo liviano son: estar sentado cuando escribe, computación, haciendo planos, o de pie operando maquinaria.
b. Moderado (200 a 350 Kcal por hora) Si / No

Si es afirmativo, promedio de horas durante turno de trabajo:
horas _____ minutos _____

Ejemplos de trabajo moderado son: estar sentado cuando martilla o archiva, manejar un bus o camión en tráfico de la ciudad, perforar, martillar o ensamblar cargas moderadas (35 libras) a nivel de la cintura mientras esta de pie; caminando en superficie plana a 2 mph (millas pr hora) o hacia abajo, a un nivel de 5 grados a 3 mph; o empujando una carretilla con carga pesada (100 libras) en superficie plana.

c. Pesado (más de 350 Kcal por hora) Si / No

Si es afirmativo, promedio de horas durante turno de trabajo:
horas _____ minutos _____

Ejemplos de trabajo pesado son: levanter aproximadamente 50 libras del suelo a la altura de la cintura u hombros, remover material con una pala, empacar heno, caminar hacia arriba a 8 grados a 2 mph, subiendo gradas cargando carga pesada (50 libras).

13. ¿Va el empleado a utilizar ropa o equipo protector además del respirador? Si / No

Si es afirmativo describa el equipo que va a usar:
_____

14. ¿Va el empleado a trabajar en temperaturas altas (temperaturas más de 77 F)? Si / No

~~15. ¿Va el empleado a trabajar en condiciones húmedas? Si / No~~

~~16. Describa el trabajo que el empleado hará cuando usando el respirador:~~
~~_____~~

~~17. Describa algunes condiciones especiales o condiciones peligrosas las cuales el empleado puede enfrentar cuando usa el respirador (por ejemplo, espacios confinados, gases fulminantes):~~
~~_____~~
~~_____~~

~~18. Provea la siguiente información si lo sabe, por cada substancia tóxica a que el empleado puede estar expuesto cuando use el (los) respiradores):~~

~~Primera substancia tóxica:~~
~~_____~~

~~Nivel máximo de exposición por turno de trabajo:~~
~~_____~~

~~Tiempo de exposición por turno de trabajo:~~
~~_____~~

~~Segunda substancia tóxica:~~
~~_____~~

~~Nivel máximo de exposición por turno de trabajo:~~
~~_____~~
~~_____~~

~~Tiempo de exposición por turno de trabajo:~~

~~Tercera substancia tóxica:~~

~~Nivel máximo de exposición por turno de trabajo:~~

~~Tiempo de exposición por turno de trabajo:~~

~~El nombre de cualquier otra substancia(s) tóxica(s) a la cual el empleado pueda estar expuestos mientras usa el respirador:~~

~~19. Describa otras responsabilidades especiales que los empleados tendrán durante el tiempo que estarán usando respiradores y que puedán afectar la seguridad de otras personas (por ejemplo, rescate, seguridad)~~]

Apéndice C de OAR 437-004-1041, Protección de la Respiración CUESTIONARIO PARA EVALUACION MEDICA RESPIRATORIA

(OBLIGATORIO)

TRABAJADOR: Su empleador debe permitirle contestar estas preguntas durante horas normales de trabajo o durante un tiempo y lugar que le sea conveniente a usted. Para mantener su confidencialidad, su empleador o supervisor no debe ver o revisar sus respuestas. Su empleador deberá decirle como enviar o entregar este cuestionario al profesional de cuidado de la salud que lo revisará.

Parte A. Sección 1.
Cada trabajador elegido para usar cualquier tipo de respirador debe proporcionar la siguiente información (use letra de molde).

Fecha:_____

Nombre:_____Posición en el trabajo:
_____

Edad:_____ Género: M / F Estatura:_____ Peso:
_____

Número de Teléfono: ( )_____ -_____
Dé un número de teléfono donde el profesional de salud que revisará este cuestionario pueda comunicarse con usted (incluya el Código de Área)
La mejor hora de hablarle ha este teléfono:_____

¿Su patrón le explicó como comunicarse con el profesional de salud que revisará este cuestionario? (circule uno)_____Sí / No

Marque el tipo de respirador que usará (puede marcar más de una categoría):

- **a. N, R, o P respirador desechable (máscara de filtro solamente sin cartucho).**
- **b. Otro tipo (por ejemplo, máscara de media cara o cara completa, purificadores motorizados, de suministro de aire, equipo autónomo de respiración).**

¿Ha usado usted un respirador antes? (circule uno)
Sí / No

Si "afirmativo", ¿que tipo(s)?:
_____
___

Parte A. Sección 2.

Cualquier trabajador elegido ha usar cualquier tipo de respirador debe contestar las preguntas del 1 al 9 (circule sí o no).

1. ¿En la *actualidad*, fuma tabaco, o ha fumado tabaco en el último mes? Sí / No

2. ¿Ha padecido usted de lo siguiente?

a. Convulsiones Sí / No
b. Diabetes (azúcar en la sangre)
Sí / No
c. Reacciones alérgicas que interfieren con su respiración
Sí / No
d. Claustrofobia (temor a espacios cerrados)
Sí / No
e. Problemas del olfato
Sí / No

3. ¿Ha padecido en *cualquier tiempo* usted de los siguientes problemas pulmonares?

a. Asbestosis Sí / No
b. Silicosis Sí / No
c. Asma Sí / No
d. Neumotórax (desinfle del pulmón)
Sí / No
e. Bronquitis crónica
Sí / No
f. Cáncer del pulmón
Sí / No
g. Enfisema Sí / No
h. Fracturas de las costillas
Sí / No
i. Neumonía Sí / No
g. Cualquier lesión o cirugía del pecho
Sí / No
k. Tuberculosis
Sí / No
l. Cualquier otro problema del pulmón del cual se le ha informado
Sí / No

4. *¿Actualmente* tiene usted alguno de los siguientes síntomas pulmonares o enfermedades del pulmón?

a. Falta de aire Sí / No
b. Falta de aire cuando camina rápido sobre una superficie plana o una cuesta leve o una inclinación
Sí / N
c. Falta de aire cuando camina con otras personas a un ritmo normal sobre una superficie plana
Sí / No
d. Tener que detenerse a coger aire cuando camina a su propio paso sobre superficie plana
Sí / No
e. Falta de aire cuando usted se lava o se viste
Sí / No
f. Falta de aire que interfiere con su trabajo
Sí / No
g. Tos que produce flema espesa
Sí / No
h. Tos que lo despierta temprano por la mañana
Sí / No
i. Tos que se pasa más cuando esta acostado
Sí / No
j. Tos con sangre (durante el ultimo mes)
Sí / No
k. Respiración jadeante
Sí / No
l. Respiración jadeante, que interfiere con su trabajo
Sí / No
m. Dolor en el pecho cuando respira profundamente
Sí / No
n. Cualquier otro síntoma que usted cree que puede estar relacionado con problemas del pulmón
Sí / No

5. ¿Ha padecido en *cualquier tiempo* alguno de los siguientes problemas cardiovasculares o del corazón?

a. Ataque al corazón Sí / No
b. Derrame cerebral o Embolia
Sí / No
c. Angina Sí / No
d. Falla del corazón Sí / No
e. Hinchazón de las piernas o pies (no causado por el andar)
Sí / No
f. Arritmias del corazón (palpitación irregular)
Sí / No

g. Presión alta de la sangre
Sí / No
h. Otros problemas del corazón del cual se le ha informado
Sí / No

6. ¿Ha padecido *cualquier tiempo* los siguientes síntomas cardiovasculares o del corazón?

a. Dolor o presión frecuente del pecho
Sí / No
b. Dolor o presión en el pecho durante actividad física
Sí / No
c. Dolor o presión en el pecho que interfiere con su trabajo
Sí / No
d. En los últimos dos años ha notado que le salta o le falta un latido al corazón
Sí / No
e. Agrura o indigestión, no ocasionada por la comida
Sí / No
f. Otros síntomas los cuales usted cree están relacionados a problemas del corazón o la circulación
Sí / No

7. *¿Actualmente* toma usted medicamentos para algunos de los siguientes problemas?

a. Problemas de la respiración o de los pulmones
Sí / No
b. Problemas del corazón
Sí / No
c. Presión Sí / No
d. Convulsiones Sí / No

8. *Si usted ha usado* un respirador, ¿ha tenido en alguna ocasión alguno de los siguientes problemas? (Si nunca ha usado un respirador por favor salte a la pregunta 9).

a. Irritación de los ojos
Sí / No
b. Irritación o alergias de la piel
Sí / No
c. Ansiedad Sí / No
d. Agotamiento o debilidad general
Sí / No
e. Algún otro problema que interfiere con el uso del respirador
Sí / No

9. Quiere hablar de sus respuestas con el profesional de salud que revisará su cuestionario? Sí / No

Trabajadores que usarán *un respirador de cara completa O Equipo Autónomo de Respiración (SCBA)* DEBERÁN contestar las preguntas del 10 al 15:

10. ¿Ha perdido la visión temporalmente o permanentemente en uno o ambos ojos? Sí / No

11. ¿*Actualmente* tiene alguno de los siguientes problemas de la vista?

- **a. Usa lentes de contacto**
  Sí / No
- **b. Usa anteojos Sí / No**
- **c. Dificultad para distinguir los colores**
  Sí / No
- **d. Otros problemas con los ojos o la visón**
  Sí / No

12. ¿Ha tenido *cualquier tiempo* una lesión en los oídos, incluyendo daño al tímpano? Sí / No

13. ¿*Actualmente* tiene alguno de los siguientes problemas con los oídos?

- **a. Dificultad al oír Sí / No**
- **b. Usa prótesis en el oído**
  Sí / No
- **c. Cualquier otro problema con la audición o el oído**
  Sí / No

14. ¿Se ha lesionado la espalda? Sí / No

15. ¿Actualmente tiene alguno de los siguientes problemas músculo esqueléticos?

- **a. Debilidad en cualquiera de los brazos, manos, piernas, o pies**
  Sí / No
- **b. Dolor de la espalda**
  Sí / No
- **c. Dificultad para mover completamente los brazos y piernas**
  Sí / No
- **d. Dolor o entumecimiento al inclinarse hacia delante o atrás desde la cintura**
  Sí / No
- **e. Dificultad en mover la cabeza completamente hacia arriba o abajo**
  Sí / No

f. Dificultad en mover la cabeza completamente de un lado a otro
Sí / No
g. Dificultad en doblar las rodillas
Sí / No
h. Dificultad en ponerse de cuclillas
Sí / No
i. Subiendo escalones o una escalera cargando más de 25 libras
Sí / No
j. Cualquier otro problema del esqueleto o de los músculos que pueda interferir con usar un respirador
Sí / No

Parte B. Sección 1
El profesional de la salud que revisará este cuestionario puede añadir a su discreción las siguientes preguntas y cualquier otra pregunta no listada.

1. ¿En su presente trabajo, trabaja en alturas elevadas (a más de 5,000 pies) o en lugares con niveles de oxigeno más bajas de lo normal? Sí / No

***¿Si "afirmativo"*, tiene mareos, falta de aire, presión en el pecho, u otros síntomas cuando está trabajando bajo estas condiciones? Sí / No**

2. ¿En el trabajo o en su casa, ha sido usted expuesto a disolventes peligrosos, químicos peligrosos llevados por el aire, (gases, humos, o polvos), o su piel ha hecho contacto con químicos peligrosos? Sí / No

***Si "afirmativo"*, anote los químicos si sabe cuales son:**

_____
_____
_____

3. ¿Ha trabajado usted con los siguientes materiales, o bajo alguna de las siguientes condiciones?

- **a. Asbesto Sí / No**
- **b. Carbón (por ejemplo, en minas) Sí / No**
- **c. Sílice (por ejemplo con chorro de arena) Sí / No**
- **d. Hierro Sí / No**
- **e. Tungsteno/cobalto (limando o soldando este material) Sí / No**
- **f. Estaño Sí / No**
- **g. Ambientes polvorosos Sí / No**
- **h. Berilio Sí / No**
- **i. Cualquier otras exposiciones peligrosas Sí / No**
- **j. Aluminio Sí / No**

***Si "afirmativo"*, describa la(s) exposición(es):**

_____
_____
_____

4. Liste segundos trabajos o negocios paralelos que usted tiene:

_____

5. Liste sus ocupaciones anteriores:

_____

6. Liste pasatiempos presentes y pasados:

_____

7. ¿Estuvo en el servicio militar? Sí / No

***Si "afirmativo"*, ¿estuvo expuesto a agentes biológicos o químicos (durante entrenamiento o combate)? Sí / No**

8. ¿Ha trabajado en un equipo de limpieza de materiales peligrosos (HAZMAT)? Sí / No

9. ¿Fuera de medicinas para la respiración, los pulmones, problemas del corazón, presión, y convulsiones mencionadas anteriormente en este cuestionario, está usted tomando otras medicinas por cualquier razón (incluyendo medicinas sin receta médica)? Sí / No

***Si "afirmativo"*, nombre las medicinas:**

_____

APUNTES:
Parte B. Sección 2.

El EMPLEADOR deberá proporcionar esta información suplementaria al profesional de cuidado de la salud (PLHCP) que revisará el cuestionario médico del trabajador:

NOMBRE DEL TRABAJADOR: _____

POSICIÓN DEL TRABAJADOR:
_____

1. ¿Qué tipo de respirador usará este trabajador?
Marque el (los) tipo(s) que siguen (puede marcar más de una categoría):
_____ N-, R-, o P- máscara filtrante (desechable, tipo "máscara de polvo").
_____ De ajuste apretado de purificación de media cara
_____ De ajuste apretado de cara completa
_____ De tipo de purificación de aire
_____ De tipo de línea

_____ Respirador purificador de aire motorizado (PAPR)
_____ De ajuste apretado, de cara completa
_____ De ajuste apretado de casco o capucha
_____ Equipo Autónomo de Respiración (SCBA)
_____ Escape (máscara de gas)

2. ¿Cuál es el peso aproximado del respirador, y cualquier tanque o mangueras?
_____
___

3 ¿El trabajador va a utilizar alguno de los siguientes artículos con su(s) respirador(es)?

a. Filtros HEPA _____ Sí / No
b. Cánisters (máscaras para gas)
Sí / No
c. Cartuchos (purificación de aire)
Sí / No

4 ¿Con que frecuencia usará el trabajador el respirador? (circule sí o no a toda las preguntas que apliquen)
a. Solamente para escape (sin deberes de rescate)
Sí / No
b. Menos de 2 horas por día _____ Sí / No

c. Rescate de emergencia solamente
Sí / No
d. 2 a 4 horas por día Sí / No
e. Menos de 5 horas por semana Sí / No
f. Más de 4 horas por día Sí / No

5 ¿Durante el período que el trabajador usa el respirador, el esfuerzo de trabajo es?

a. Liviano (menos de 200 Kcal por hora)
Sí / No

Ejemplos de trabajo liviano es estar sentado al escribir, computación, haciendo planos, o realizando ensamble ligero, o de pie operando máquinas.
***Si "afirmativo"*, cuanto tiempo dura esto en un turno promedio:**
horas minutos

b. Moderado (200 a 350 Kcal por hora) Sí / No

Ejemplos de trabajo moderado son: estar sentado martillando o limando, manejado un camión, perforando, o ensamble, moviendo cargas moderadas (aproximadamente 25 – 35 libras) a nivel de la cintura caminando en superficie planas a 2 millas por hora o bajando un nivel de terreno de 5 grados a 3 millas por hora, o empujando una carretilla con carga pesada (aproximadamente 100 libras) en superficie plana. (NOTA: Un galón de agua peso aproximadamente 8 libras, o sea, un rociadora de mochila llena con 3 galones pesa aproximadamente 25 libras.)

***Si "afirmativo"*, cuanto tiempo dura esto en un turno promedio:**
horas minutos

c. Pesado (más de 350 Kcal por hora)
Sí / No

Ejemplos de trabajo pesado son: levantar cargas pesadas(aproximadamente 50 libras) del suelo a la altura de la cintura u hombros, trabajando en un plataformas de carga, trabajo con pala, albañilería de pie, desbarbando piezas de fundición, subiendo niveles de terreno de 8 grados aproximadamente a 2 millas por hora, subiendo escalones con cargas pesadas (aproximadamente 50 libras)

***Si "afirmativo"*, cuanto tiempo dura esto en un turno promedio:**
horas minutos

6. ¿El trabajador va a utilizar ropa o equipo protector aparte del respirador? Sí / No

***Si "afirmativo"* describa el equipo que va a usar:**

_____

_____

_____

_____

7. ¿El trabajador va a trabajar en temperaturas altas (temperaturas más de 77 F)? Sí / No

8. ¿El trabajador va a trabajar en condiciones húmedas? Sí / No

9. Describa el trabajo que hará el trabajador mientras usa su respirador(es):

_____

_____

10. Describa algunas condiciones especiales o condiciones peligrosas las cuales el trabajador puede enfrentar cuando usa el respirador (por ejemplo, espacios confinados, atmósferas deficientes en oxígeno, gases fulminantes):

_____

_____

11. Proporcione la siguiente información si lo sabe, para cada substancia tóxica a que el trabajador puede ser expuesto cuando usa el respirador(es):

Nombre de la primera substancia tóxica: _____
Nivel máximo de exposición por turno de trabajo:

_____
Tiempo de exposición por turno de trabajo: _____

Nombre de la segunda substancia tóxica: _____
Nivel máximo de exposición por turno de trabajo:

_____
Tiempo de exposición por turno de trabajo:

_____

Nombre de la tercera substancia tóxica: _____
Nivel máximo de exposición por turno de trabajo:

_____
Tiempo de exposición por turno de trabajo: _____

Nombre(s) de cualquier otra substancia(s) tóxica(s) a la cual el trabajador pueda ser expuesto mientras usa un respirador:

12. Describa otras responsabilidades especiales que tendrán durante el tiempo que estarán usando respiradores y que puedan afectar la seguridad y bienestar de otras personas (por ejemplo, rescate, seguridad):

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix D **to OAR 437-004-1041** – Information for Employees Voluntarily Using Respirators (Mandatory)

Respirators are an effective method of protection against designated hazards when properly selected and worn. O[~~R -~~]**regon** OSHA encourages respirator use, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if you improperly use a respirator or do not keep it clean, the respirator itself can become a hazard. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by O[~~R -~~]**regon** OSHA standards. If your employer provides respirators for your voluntary use, of if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

Read and follow all instructions from the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

Do not wear your respirator into atmospheres with contaminants that it is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Apéndice D **to OAR 437-004-1041** – Información para Trabajadores que Usan Respiradores Voluntariamente
(Obligatorio)

Los respiradores que son seleccionados y usados correctamente son un método de protección efectivo contra peligros designados. O[~~R-~~]**regon** OSHA promueve el uso de respiradotes, aunque la exposición sea menor al límite permitido de exposición, para proveer un mejor nivel de comodidad y protección a los trabajadores. Sin embargo, si usted usa su respirador de manera incorrecta o si la limpieza adecuada no es mantenida, el respirador mismo podría convertirse en un peligro. Los trabajadores pueden usar los respiradores para evitar la exposición a peligros aunque la cantidad de substancias peligrosas no exceda los límites establecidos bajo las reglas de O[~~R-~~]**regon** OSHA. Si su empleador provee respiradores para uso voluntario, o si usted provee su propio respirador, necesita tomar ciertas precauciones para asegurarse de que el respirador no presenta ningún peligro.

Usted debería hacer lo siguiente:

1. Lea y siga todas las instrucciones del fabricante acerca del uso, mantenimiento, limpieza y cuidado. También siga las instrucciones acerca de las advertencias en cuanto a las limitaciones del respirador.

2. Elija respiradores que sean certificados para ser usados en la clase de atmósfera contaminada, específica a su situación El Instituto Nacional para Salud y Seguridad Ocupacional del Departamento de Salud y Servicios Humanos (NIOSH por sus siglas en inglés) certifica respiradores. Una certificación o declaración que debe aparecer en el respirador o paquete del respirador le dirá para qué clase de uso el respirador está diseñado y la capacidad de protección que éste ofrece.

3. No use su respirador en atmósferas que contengan contaminantes si éste no esta diseñado para protegerlo en esos ambientes. Por ejemplo, un respirador que esta diseñado para filtrar partículas de polvo, no lo protegerá contra gases, vapores o partículas sólidas muy pequeñas de humo.

4. Marque su respirador claramente para que por error usted no use el respirador de otra persona.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 3-2006, f. 6/7/06, ef. 3/1/07.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1050 Head Protection.

NOTE: See Division 4/W, 437-004-600, 170.240(c)(10) for information about the chemical-resistant headwear requirements for pesticide handlers.

(1) General requirements. **Require employees to w**[~~W~~]ear **head** protecti[~~ve~~]**on (**helmets **or** [~~(~~]hardhat**s**[~~)~~]] when working in areas where there is a potential for injury to the head **such as** from falling or flying objects **or electrical hazards**.
(2) Criteria for protective headwear.
(a) Head protection must comply with any of the following consensus standards:
(A) ANSI Z89.1-2003, "American National Standard for Industrial Head Protection;"
(B) ANSI Z89.1-1997, "American National Standard for Industrial Head Protection;" or
(C) ANSI Z89.1-1986, "American National Standard for Personnel Protection – Protective Headwear for Industrial Workers – Requirements."
NOTE: The Oregon OSHA Resource Center has copies **of these standards** for public review at 350 Winter Street NE, Salem OR[~~ 97309-0405~~].
(b) **Protective h**[~~H~~]ead**wear** [~~protection devices~~] that the employer demonstrates **is**[~~are~~] at least as effecive as **protective** head**wear** [~~protection devices~~]that **is**[~~are~~] constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.
([~~c~~]**3**) **Require e**[~~E~~]mployees who work close to moving parts of power-driven machinery or sources of ignition and whose hair is long enough to be caught in it or **to** be ignited, **to** [~~must~~] wear caps or other head covering**s** that completely restrains the hair.
NOTE: See Divisions 4/O and 4/P for equipment and tool guarding requirements.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 2-2010, f. 2/25/10, ef. 2/25/10.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1060 Hand**,** [~~and~~]Foot**, and Extremity** Protection.

NOTES:
See Division 4/P, 437-004-2220(10) for the protective equipment requirements (appropriate gloves, aprons and leg guards) for employees using sharp-edged cutting tools.

See Division 4/P, 437-004-2230 for requirements for PPE while using chain saws.

See Division 4/W, 437-004-6000, 170.240(c)(5) and (6) for information about the requirements for gloves and chemical-resistant footwear for pesticide handlers.

(1) General requirements **for hand protection**. [~~Wear protective footwear when working where there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole or electrical hazards.~~]

(a) Employers must select and require employees to use appropriate hand protection when the work exposes employees' hands to hazards such as contact with harmful substances; severe cuts, lacerations, or abrasions; punctures; chemical burns; electrical hazards; harmful temperature extremes.

(b) Do not allow the use of leather or other absorbent materials to protect against chemical hazards.

(c) Do not allow employees to wear gloves near moving parts or machines that might catch them.

NOTE: See Divisions 4/O and 4/P for equipment and tool guarding requirements.

(2) [~~Criteria for~~]**General requirements for** protective footwear.
(a) Require employees to use appropriate protective footwear when there is a danger of foot injuries due to falling or rolling objects, objects piercing the sole, chemical exposures, or electrical hazards.

([~~a~~]**b**) Protective footwear must comply with any of the following consensus standards:

(A) ASTM F-2412-2005, "Standard Test Methods for Foot Protection," and ASTM F-2413-2005, "Standard Specification for Performance Requirements for Protective Footwear;"

(B) ANSI Z41-1999, "American National Standard for Personal Protection – Protective Footwear;" or

(C) ANSI Z41-1991, "American National Standard for Personal Protection – Protective Footwear."

NOTE**S**:
Look for ANSI compliance information on the shoe, the box, or tags.

The Oregon OSHA Resource Center has copies **of these consensus standards** for public review at 350 Winter Street NE, Salem OR[~~-97309-0405~~].

([~~b~~]**c**) Protective footwear that the employer demonstrates is at least as effective as [~~protective~~] footwear that is constructed in accordance with one of the above consensus standards will be deemed to be in compliance with the requirements of this section.

[~~NOTE: Look for ANSI compliance information on the shoe, the box or tags.~~]

[~~(3) Wear special types or designs of shoes, steel-toed boots, or foot guards where conditions exist that make their use necessary for worker safety~~]

(3) Protection of Extremities.

(a) Require employees to [~~W~~]**w**ear leggings or high boots of leather, rubber or other suitable material to protect legs from **physical** [~~the~~] hazards **such as**[~~of~~] hot **or cold** substances, **or sharp objects, and from** chemical **hazards such as** spills[~~,~~] **or splashes**[~~brush, sharp tools or other hazards~~].

(b) Require employees to wear sleeves or long gloves of leather, rubber or other suitable material to protect arms from physical hazards such as hot or cold substances, or sharp objects; and from chemical hazards such as spills or splashes.

([~~a~~]**c**)Do not **allow the use of**[~~wear~~] **of** leather or other absorbent materials to protect against chemical hazards.

~~[(5) Do not wear or provide defective footwear or footwear that is ineffective in preventing or limiting injury if conditions may cause foot injuries.~~
~~(6) Employers must select and require employees to use appropriate hand protection when the work exposes employees' hands to hazards such as those from skin absorption of harmful substances; severe cuts or lacerations; severe abrasions; punctures; chemical burns; thermal burns and harmful temperature extremes.~~
~~(7) Do not wear gloves near moving parts or machines that might catch them.]~~

NOTE: See Division 4/P, OAR 437-004-2230(1)(c)(G) for the requirement to provide flexible bassistic nylon pads, chaps (or other equivalent protective equipment for the legs from the thigh to the top of the boot) for employees using chain saws.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 2-2010, f. 2/25/10, ef. 2/25/10.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1070 Working Underway on Water.

~~[(1) Scope and Application.~~
~~This rule applies to all employees covered by Division 4, Agriculture.]~~
([~~2~~]**1**) Definitions.
(a) Boat – means every description of water craft used or capable of being used as a means of transportation on the water, but does not include aircraft built to land on the water. E**xamples**[~~XAMPLE: A partial list~~] include[~~s:~~] **row**boats, **powerboats,** rafts, barges, pontoons, **and** dredges[~~ and floating logs~~].
~~[(b) Serviceable condition – means the flotation device is able to perform the function that the manufacturer intended.]~~
([~~c~~]**b**) Underway – means when a boat is **in or on the water and on the move –** not at anchor, **not**[~~or~~] moored, **and not**[~~or~~] made fast to the shore[~~, or aground~~].
([3]**2**) **Personal flotation devices.**
(a) Workers in boats that are underway must wear [~~a~~]Coast Guard approved or equivalent, wearable personal flotation device**s** (PFD).

Exception: **A w**[~~W~~]orker[~~s,~~] below deck or in **an** enclosed part[~~s~~] of **a** boat[~~s,~~] like **a** cabin[~~s and~~] **or** pilot house[~~s~~]**,** need not wear the PFD but must have it **readily available**[~~at hand~~].
(b) The PFD **provided** must be**:**
(A) T[~~t~~]he right size for the wearer**,**
(B) Able to perform the function that the manufacturer intended, and
(C) Maintained [~~must be in serviceable condition~~]according to the manufacturer's requirements and recommendations.

Stat. Authority: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 1-2001, f. 1/18/01, ef. 3/1/01.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-1075 Working Over or in Water.

([~~2~~]**1**) Definition.
Rescue device [~~—~~]**means a**[~~A~~] ring buoy and line, gaff pole, throwable rescue device**,** or other device that serves as a means to rescue somebody from the water without requiring the rescuer to enter the water.

([~~1~~]**2**) Scope and Application.
(a) These rules apply where the**re is a** danger of drowning [~~exists~~]and the water is more than 5 feet deep. These rules do not apply to [~~any~~]workers protected by general or personal fall protection[~~ nor to employees covered by OAR 437-002-1910.401 through 1910.441, Commercial Diving Operations~~].
(b) If employees are engaged in diving and related support operations conducted in connection with Agricultural employment, Division 2, 1910.401 through 1910.440, Commercial Diving Operations, applies.
(3) **Personal flotation and rescue devices.**
(a) Workers in water**, over water on floating or unstable surfaces, or adjacent to water,** must wear a Coast Guard approved or equivalent, wearable personal flotation device (PFD).
[~~(b) Workers over water on floating or unstable surfaces must wear a Coast Guard approved or equivalent, wearable PFD.~~]
(b) The PFD must be:
(A) The right size for the wearer,
(B) Able to perform the function that the manufacturer intended, and
(C) Maintained according to the manufacturer's requirements and recommendations.
(c) Piers, docks, wharves and work sites along developed shorelines must have rescue devices available within 200 feet of the water or shoreline work area.

Stat. Authority: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 1-2001, f. 1/18/01, ef. 3/1/01.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix A to Subdivision 4/I –
(NONMANDATORY)
SAMPLE HAZARD ASSESSMENT
for
PERSONAL PROTECTIVE EQUIPMENT (PPE)

NOTE: The following list does not cover all possible hazards that employees may face or for which personal protective equipment may be required. Noisy environments or those that may require respirators must be evaluated with appropriate test equipment to quantify the exposure level when overexposure is suspected.

Employer:

_____

_____

_____

Address:

_____

_____

_____

Workplace/Area/ Job Assessed:

_____

_____

_____

Name / Job Title of Person performing Assessment:

_____

_____

Date(s) of Assessment:

_____

_____

TYPES OF HAZARDS:

A. IMPACT HAZARDS/ FALLING OBJECTS

1. Is work performed above or below other workers?
YES NO
2. Is it possible for an employee to be struck by a falling object?
YES NO
3. Are there any activities generating flying fragments/particles?
YES NO
4. If "YES," list the sources of falling or flying materials:

5. Do employees carry heavy objects, which could cause injury if dropped?
YES NO
6. Could movement of personnel result in a collision with stationary objects?
YES NO
7. Are there any other potential impact hazards, such as moving objects or mechanical processes?
YES NO
8. If "YES," list the sources of potential mechanical impact:

9. Number and characteristic of this type injury logged in company records for the last 5 years:

B. PENETRATION (by sharp objects)

1. Are there sharp or breakable objects such as glass, scrap metal, nails, wire, staples, or other objects that could penetrate hands or feet used in this area?
YES NO
2. Are there sharp tools used in the area? YES NO
3. Are there rough surfaces that could scrape, scratch or abrade the skin?
YES NO
4. List the source(s) of penetration hazards:

5. Number and characteristic of this type injury logged in company records for the last 5 years:

C. COMPRESSION HAZARDS: CRUSHING/ ROLLING / PINCHING OBJECTS

1. Are forklifts used in employee walk areas?
YES NO
2. Do employees use manual material movers?
YES NO
3. Are there process hazards that could pinch or crush employee's hands or feet?
YES NO
4. Are there bulk rolls of material or heavy pipes handled by employees?
YES NO
5. Are there objects that could pinch, crush, or roll over workers?

YES NO

6. List the source(s) of compression /pinching/ roll over hazards:

_____

_____

7. Number and characteristic of this type injury logged in company records for the last 5 years:

_____

_____

_____

D. CHEMICAL or PESTICIDE EXPOSURE

1. Are chemicals used in the workplace? YES NO

2. If so, do you have a Material Safety Data Sheet for each chemical?
YES NO

3. Are there established Permissible Exposure Limits for each chemical?
YES NO

5 Is there a splash hazard? YES NO

6. Do the chemicals release mists, vapors or gases? YES NO

7. Will the chemicals irritate the skin or eyes? YES NO

PESTICIDES:

8. Are Pesticide products handled in the workplace
YES NO

9. Are label directions for PPE followed for each product?
YES NO

10. Number and characteristic of chemical or pesticide-related injury logged in company records for the last 5 years:

_____

_____

_____

E. HIGH or LOW TEMPERATURES (Including possible effects of heat-stress)

1. Are there sources of high temperature in the workplace?
YES NO

2. Are there sources of low temperature in the workplace?
YES NO

3. Are welding operations performed by employees in the work area?
YES NO

4. Are compressed gasses used in the workplace?
YES NO

5. Could skin or eye injuries occur from any of the above hazards?
YES NO

6. Could temperature extremes adversely affect the PPE chosen?
YES NO
7. Could the use of PPE cause heat-related illness?
YES NO
8. Number and characteristic of this type injury logged in company records for the last 5 years:

_____

F. HARMFUL DUST or PARTICULATES

1. Are there sources of breathable dust or particulate?
YES NO
2. If YES, list the sources of the hazard(s):

_____

_____

_____

3. Number and characteristic of this type of injury logged in company records for the last 5 years?

_____

_____

_____

G. LIGHT (optical) RADIATION

1. Are welding, brazing or cutting operations performed in this workplace?
YES NO
2. Are furnaces operated in this workplace? YES NO
3. Are there high intensity light sources? YES NO
4. Are any lasers used in this workplace? YES NO
5. Number of this type injury logged in company records for the last 5 years?

_____

_____

H. OTHER

1. ELECTRICAL

1. Are there exposed electrical conductors in the work area? YES NO
2. Can employees come into contact with these conductors? YES NO

2. WORKPLACE LAYOUT HAZARDS:

_____

_____

_____

_____

_____

3. DROWNING HAZARDS:

_____
_____
_____
_____

4. SLIP, TRIP & FALL HAZARDS:

_____
_____
_____

5. OTHER SAFETY ISSUES/ RECOMMENDATIONS

_____
_____
_____
_____

The following list of Personal Protective Equipment (PPE) is recommended while working in this assessed job / work area: (check all that apply)

Hand/ Arm Protection
_____Chemical Resistant Gloves/ Sleeves (What chemicals?)
_____Cut Resistant Gloves/ Sleeves
_____Heat Resistant Gloves/ Sleeves
_____Electrical Protective Gloves/ Sleeves
_____Long Sleeves
_____Leather Work Gloves
_____Other: (list)

_____
_____
_____

Head Protection
_____Hard Hat: Class A_____ Class B_____ Class C_____ Other _____
_____Welding Hood (Also, see recommended filter lens rating, under "Eye and Face")
_____Cap or head covering (to restrain hair)
_____Other: (list)

_____
_____

Foot /Leg Protection
_____Shoe Covers
_____Rubber Boots
_____Chemical Resistant.(What chemical?)
_____Steel toed.

_____Steel shank
_____Metatarsal Guards
_____Other: (list)

_____
_____

Eye and Face Protection
_____Goggles
_____Chemical protective
_____Safety Glasses
_____Side Shields
_____Face Shield
Screen_____
Reflective_____
_____Shaded Spectacles
Filter lenses rating_____

_____Welding Helmet
Filter lenses rating_____
_____Welding Shield
_____Welding Goggles
Filter lenses rating_____
_____Other: (list)

_____
_____
_____

Is Hearing Protection used by employees in this area?
_____Required by employer?
NRR needed:_____
_____Ear Plugs
NRR_____
_____Ear Muffs
NRR_____
_____Other: (list)

_____
_____
_____

Chemical Protective Clothing (Choose materials based on exposure to specific chemicals)
_____Lab Coat
_____Smock
_____Apron
Made of _____
_____Coveralls
Made of: _____
_____Level A Suit

Made of: _____

_____Level B Suit

Made of: _____

_____Level C Suit

Made of: _____

_____Rain Suit

Made of: _____

Is Respiratory Protection used by employees in this area?

_____Required by employer?

_____Voluntary use?

Contaminant(s):

_____

_____

Level of exposure:

_____

_____

_____IDLH?

_____NIOSH-approved "Dust Mask"/Filtering Face Piece

_____Type N

_____Type R

_____Type P

Rating_____95_____99_____99.99

_____Air Purifying Respirator

_____half mask

_____full-face mask

Specify Cartridge(s):

_____

_____

_____

_____Supplied Air System

_____Self Contained Breathing Apparatus (SCBA)

Flotation Devices

_____Life Vest

_____Buoyant Work Vest

_____Other (specify):

_____

Traffic Safety (High Visibility) Clothing
_____ Reflective Vest
_____ Reflective Suit
_____ Other (specify):

Other Recommended Personal Protective Equipment PPE (specify):

Standards or Reference Documents Used:

Stat. Authority: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Subdivision Z – Chemical/Toxins

437-004-9000 **Oregon Rules for** Air Contaminants.

An employee's e[~~E~~]xposure to any substance in **Oregon** Tables Z-1, Z-2, or Z-3 **of this section** must **be limited in accordance** [~~comply~~]with the **requirements of the** following **paragraphs of this section**.

(1) **Oregon** Table Z-1.
(a) Substances with limits preceded by "C" – ceiling values. **An employee's e**[~~E~~]xposure to any substance in **Oregon** Table Z-1, **the exposure limit of which is not preceded by a "C",** must **at no time exceed**[~~never be more than~~] the **ceiling**exposure limit **given** for that substance. If instantaneous monitoring is not feasible, then assess the ceiling as a 15-minute time- weighted average. **This e**[~~E~~]xposure **level** must **never be**[~~not~~] exceed**ed** [~~that level~~] **at** any time during the workday.

(b) Other substances – 8-hour time-weighted averages **(PEL-TWA)**. **An employee's e**[~~E~~]xposure to any substance in **Oregon** Table Z-1, **the exposure limit of which is not**

preceded by a "C", must **not exceed**[~~never be more than~~] the 8-hour Time-Weighted Average for that sub- stance in any 8-hour shift of a 40-hour work week.

(c) Other substances – **E**[~~e~~]xcursion **L**[~~l~~]imits. Excursions in exposure levels may be more than three times the PEL-TWA **number** for no more than a total of 30 minutes during a workday, and must never be more than five times the PEL-TWA, [~~if the~~]**provided that the overall 8-hour** PEL-TWA is not exceeded.

(d) Skin designation. **To prevent or reduce skin absorption, you must prevent or reduce an employee's skin exposure to substances listed in Oregon Table Z-1 with an "X" in the Skin designation column following the substance name. Prevent or reduce exposure to the extent necessary in the cirumstances through the u**[~~U~~]se **of** gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls or work practices[~~ to prevent or reduce skin absorption of substances in Table Z-1 with an "X" in the Skin Designation column follow- ing the substance name~~].

(e) **Oregon** Table Z-1 **in**[~~has hazardous substances commonly found in agriculture.~~] Division **4**[~~2~~]/Z, OAR 437-00**4**[~~2~~]-**9**[~~1~~]000, [~~Table Z-1~~]has a complete list of regulated substances. If your operation **exposes an employee to a**[~~uses~~] substances **listed in Oregon Table Z-1, and that substance includes a reference to another rule, that rule may apply to your circumstances.**[~~not common to agriculture, you must check Table Z-1 in 437-002-1000. That table is adopted here and applies equally to agriculture.~~]

(2) **Oregon** Table Z-2. **An employee's e**[~~E~~]xposure to any substance **listed** in **Oregon** Table Z-2 must **not exceed**[~~never be more than~~] the following **exposure** limits:

(a) 8-hour time-weighted averages. **An employee's e**[~~E~~]xposure to any substance in **Oregon** Table Z-2, in any 8-hour work shift of a 40-hour work week, must **not exceed**[~~never be more than~~] the 8-hour time-weighted average limit for that substance in **Oregon** Table Z-2.

(b) Acceptable ceiling concentrations. **An employee's e**[~~E~~]xposure to a substance in **Oregon** Table Z-2 must **not exceed**[~~never be more than~~] the acceptable ceiling concentration **for that substance** during an 8-hour shift except:

(i) Acceptable maximum peak above the acceptable ceiling concentration for an 8-hour shift. **An employee's e**[~~E~~]xposure to a substance in **Oregon** Table Z-2 must never **exceed**[~~be more than~~] the acceptable maximum peak above the acceptable ceiling concentration and must not exceed the maximum duration **of exposure at that level** for the substance during an 8-hour shift.

(c) Example. During an 8-hour work shift, an employee's exposure to benzene **is limited to**[~~may be~~] an 8-hour time-weighted average (TWA) of 10 ppm. **The acceptable ceiling c**[~~C~~]oncentration[~~s~~] of benzene during the 8-hour work shift **is a maximum of**[~~may not be more than~~] 25 ppm, unless that exposure is no more than 50 ppm and for not longer than 10 minutes during an 8-hour work shift. Such exposures must be compensated by **lower** exposure[~~s to~~] **levels (**concentrations below **the TWA number –** 10 ppm**) during that shift** so that the **overall** 8-hour time-weighted average is **a maximum of**[~~less than~~] 10 ppm.

Example from Oregon Table Z-2					
Substance	**8-Hour Time-Weighted Average**	**Acceptable Ceiling Concentration**	**Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-hour Shift**		**Skin**
			Concentration	**Maximum Duration**	
Benzene (a) (Z87.4-1969)	**10 ppm**	**25 ppm**	**50 ppm**	**10 min.**	
Beryllium and beryllium compounds (Z37.17-1970)	**2 µg/m3**	**5 µg/m3**	**25 µg/m3**	**30 min.**	
Carbon tetrachloride (Z37.19-1967)	**10 ppm**	**25 ppm**	**200 ppm**	**5 min. In any 4 hours**	

(d) Skin designation. **To prevent or reduce skin absorption, you must prevent or reduce an employee's skin exposure to substances listed in Oregon Table Z-2 with an "X" in the Skin designation column following the substance name. Prevent or reduce exposure to the extent necessary in the circumstances through the u**[~~U~~]se **of** gloves, coveralls, goggles, or other appropriate personal protective equipment, engineering controls**,** or work practices[~~ to prevent or reduce skin absorption of substances in Table Z-2 with an "X" in the Skin Designation column following the substance name~~].

(3) **Oregon** Table Z-3. An employee's exposure to any substance in **Oregon** Table Z-3, in any 8-hour work shift of a 40-hour work week, must [~~never be more than~~]**not exceed** the 8-hour time-weighted average limit given for that substance.

(4) Computation formulae. The computation formula**e** that appl**y**[~~ies~~] to exposure**s** to **one or** more [~~than one~~]substance**s**, **with**[~~for which~~] 8-hour time-weighted averages [~~are~~]in**cluded in** OAR 437, Division 4/Z, Chemicals/Toxins, **in order** to determine **whether**[~~if~~] an **employee is** expos**ed**[~~ure~~] is over the regulatory limit [~~is~~]**are as follow**:

(a) **For a single air contaminant:**

(i) Compute the cumulative exposure for an 8-hour work shift as follows:
$E = (CaT_a + CbT_b + ...CnT_n) \div 8$
Where:
E is the equivalent exposure **to that substance** for the shift.
C is the concentration during any period T where the concentration remains constant.
T is the duration in hours of the exposure at the concentration C.
The value of E must not exceed the 8-hour time-weighted average **specified for that substance** in Subdivision 4/Z.

(ii) To illustrate the formula in (4)(a)(i) above, assume that Substance A **(from Oregon Table Z-1)** has an 8-hour time-weighted average limit of 100 ppm[~~ (Table Z-1)~~]. Assume that an employee is subject to the following exposure:

Two hours exposure at 150 ppm
Two hours exposure at 75 ppm
Four hours exposure at 50 ppm
Substituting this information in the formula, we have:

$$[(C_a \times T_a) + (C_b \times T_b) + \ldots (C_n \times T_n)] \div 8 = E = TWA$$

$$[(2 \times 150) + (2 \times 75) + (4 \times 50)] \div 8 = 81.25 \text{ ppm}$$

Since 81.25 ppm is less than 100 ppm, the 8-hour time-weighted average limit, the exposure is acceptable.

(b) **For a mixture of air contaminants:**

(i) In case of a mixture of air contaminants, compute the equivalent exposure as follows:

$$E_m = (C_1 \div L_1) + (C_2 \div L_2) + \ldots (C_n \div L_n)$$

Where:
E_m is the equivalent exposure for the mixture.
C_n is the concentration of a particular contaminant.
L_n is the exposure limit for that substance in Subdivision 4/Z.

The value of E_m must not exceed **"**unity**"** (1).

(ii) To illustrate the formula in (4)(b)(i) above, consider the following exposures:

Substance	Actual concentration of 8-hour exposure **(C_n)**	8-hour time-weighted average exposure limit **(L_n)**
1[~~B~~]	500 ppm	1,000 ppm
2[~~C~~]	45 ppm	200 ppm
3[~~D~~]	40 ppm	200 ppm

Substituting in the formula, we have:
$E_m = (C_1 \div L_1) + (C_2 \div L_2) + \ldots (C_n \div L_n)$
$E_m = (500 \div 1000) + (45 \div 200) + (40 \div 200)$
$E_m = 0.500 + 0.225 + 0.200$
$E_m = 0.925$

Since E_m **(0.925)** is less than unity (1), the exposure combination is within acceptable limits.

(5) Engineering or administrative controls. **To achieve compliance with the exposure limits in paragraphs (1) through (4) of this section, first determine and implement, when feasible,**[~~Use~~] engineering or administrative controls[~~ first to comply with (1) through (4) above, when feasible~~]. When such controls are not feasible, mandate the use of protective equipment or any other protective measures to keep exposure within the limits in this section. Any equipment [~~and/~~]or technical measures used for this purpose must be approved for each particular use by a competent **I**[~~i~~]ndustrial **H**[~~h~~]ygienist or other technically

qualified person. When**ever** using respirators, comply with **Division** 4/I, OAR 437-004-1040**, Respiratory Protection**.

NOTE: Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m^3 [b]**	**Skin**
Abate	**3383-96-8**		**10**	
Acetaldehyde	**75-07-0**	**100**	**180**	
Acetic Acid	64-19-7	10	25	
Acetic anhydride	108-24-7	5	20	
Acetone	67-64-1	1,000	2,400	
Acetonitrile	75-05-8	40	70	
2-Acetylaminoflourine	53-96-3		(See 437-004-9090)	
Acetylene	**74-86-2**	**1,000**		
Acetylene dichloride, see 1,2-Dichloroethylene				
Acetylene tetrabromide	79-27-6	1	14	
Acrolein	107-02-8	0.1	0.25	
Acrylamide	79-06-1	—	0.3	X
Acrylonitrile	107-13-1		(See 437-004-9710)	
Aldrin	309-00-2	—	0.25	X
Allyl alcohol	107-18-6	2	5	X
Allyl chloride	107-05-1	1	3	
Allyn glycidyl ether (AGE)	**106-92-3**	**5** (C) 10	**22** (C) 45	
Allyl propyl disulfide	2179-59-1	2	12	
alpha Alumina **Total Dust** **Respirable Fraction**	**1344-28-1**	 — —	 **10** **5**	
Aluminum Metal Dust **Total Dust** **Respirable Fraction**	**7429-90-5**	 — —	 **10** **5**	
Alundum (A1203)		—	**10**	
4-Aminodiphenyl	92-67-1		(See 437-004-9090)	
2-Aminoethanol, see Ethanolamine				
2-Aminopyridine	504-29-0	0.5	2	
Ammonia	**7664-41-7**	**25**	**18**	
Ammonium Chloride Fumes	**12125-02-9**	—	**10**	
Ammonium sulfamate **Total Dust** **Respirable Fraction**	**7773-06-0**	 — —	 **10** **5**	
n-Amyl acetate	628-63-7	100	525	
sec-Amyl acetate	626-38-0	125	650	
Aniline and homologs	62-53-3	5	19	X
Anisidine (o, p-isomers)	29191-52-4		0.5	X
Antimony & Compounds (as Sb)	7440-36-0	—	0.5	
ANTU (alpha Naphthylthiourea)	86-88-4	—	0.3	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Arsenic, Inorganic Compounds (as As) (See 1910.1018)	7440-38-2		0.01	
Arsenic, Organic Compounds (as As)	7440-38-2	—	0.5	
Arsine	7784-42-1	0.05	0.2	
Asbestos		(See 437-004-9050)		
Asphalt (petroleum) Fumes	**8052-42-4**	—	**5**	
Azinphos-methyl	86-50-1	—	0.2	X
Barium (soluble compounds)	7440-39-3	—	0.5	
Barium Sulfate **Total Dust** **Respirable Fraction**	**7727-43-7**	 — —	 **10** **5**	
Benomyl **Total Dust** **Respirable Fraction**	**17804-35-2**	 — —	 **10** **5**	
Benzene See Table Z-2 for the limits applicable in the operations or sectors excluded in OAR 437-004-9640 [d]	71-43-2		(See 437-004-9640)	
Benzidine	92-87-5		(See 437-004-9090)	
p-Benzoquinone, see Quinone				
Benzoyl peroxide	94-36-0	—	5	
Benzyl chloride	100-44-7	1	5	
Beryllium and Beryllium compounds	7440-41-7		(See Table Z-2)	
Biphenyl, see Diphenyl				
Bismuth telluride (undoped) **Total Dust** **Respirable Fraction**	**1304-82-1**	 — —	 **10** **5**	
Bismuth telluride (Se-doped)		—	**5**	
Bisphenol A, see Diglycidyl ether				
Boron oxide	**1303-86-2**	—	**10**	
Boron tribromide	**10294-33-4**	**1**	**10**	
Boron trifluoride	7637-07-2	(C) 1	(C) 3	
Bromine	7726-95-6	0.1	0.7	
Bromine pentafluoride	**7789-30-2**	**0.1**	**0.7**	
Bromoform	75-25-2	0.5	5	X
Butadiene (1,3-Butadiene) (See 1910.1051; and 1910.19(l))	106-99-0	1 ppm/5 ppm STEL		
Butane	**106-97-8**	**800**	**1,900**	
Butanethiol, see Butyl mercaptan				
2-Butanone (Methyl Ethyl Ketone)	78-96-3	200	590	
2-Butoxyethanol (Butyl cellosolve)	111-76-2	50	240	X
Butyl acetate (n-Butyl acetate)	123-86-4	150	710	
sec-Butyl acetate	105-46-4	200	950	
tert-Butyl acetate	540-88-5	200	950	
n-Butyl alcohol	71-36-3	100	300	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
sec-Butyl alcohol	78-92-2	150	450	
tert-Butyl alcohol	75-65-0	100	300	
Butyl lactate	**138-22-7**	**1**	**5**	
Butylamine	109-73-9	(C) 5	(C) 15	X
tert-Butyl chromate (as CrO_3)	1189-85-1		(See 437-004-9626)	
n-Butyl glycidyl ether (BGE)	2426-08-6	50	270	
Butyl mercaptan	**109-79-5**	**0.5**	**1.5**	
p-tert-Butyltoluene	98-51-1	10	60	
Cadmium dust and fume (as Cd)	7440-43-9	(See 437-004-9620)	0.005	
Calcium carbonate **Total Dust** **Respirable Fraction**	**1317-65-3**	 — —	 **10** **5**	
Calcium hydroxide **Total Dust** **Respirable Fraction**	**1305-62-0**	 — —	 **10** **5**	
Calcium oxide	1305-78-8	—	5	
Calcium silicate **Total Dust** **Respirable Fraction**	**1344-95-2**	 — —	 **10** **5**	
Calcium sulfate **Total Dust** **Respirable Fraction**	**7778-18-9**	 — —	 **10** **5**	
Camphor, synthetic	76-22-2	—	2	
Caprolactam (2-Oxonexa-methylenimine)	**105-60-2**	—	**5**	
Carbaryl (Sevin®)	63-25-2	—	5	
Carbon black	1333-86-4	—	3.5	
Carbon dioxide	124-38-9	5,000	9,000	
Carbon disulfide	75-15-0		(See Table Z-2)	
Carbon monoxide	630-08-0	50	55	
Carbon tetrachloride	56-23-5		(See Table Z-2)	
Cellulose **Total Dust** **Respirable Fraction**	**9006-34-6**	 — —	 **10** **5**	
Chlordane	57-74-9	—	0.5	X
Chlorinated camphene	8001-35-2	—	0.5	X
Chlorinated diphenyl oxide	55720-99-5	—	0.5	
Chlorine	7782-50-5	(C) 1	(C) 3	
Chlorine dioxide	10049-04-4	0.1	0.3	
Chlorine trifluoride	7790-91-2	(C) 0.1	(C) 0.4	
Chloroacetaldehyde	107-20-0	(C) 1	(C) 3	
a-Chloroacetophenone (Phenacyl chloride)	532-27-4	0.05	0.3	
Chlorobenzene	108-90-7	75	350	
o-Chlorobenzylidene malononitrile	2698-41-1	0.05	0.4	
Chlorobromomethane	74-97-5	200	1,050	
2-Chloro-1, 3-butadiene, see beta-Chloroprene				

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Chlorodiphenyl (42% Chlorine)	53469-21-9	—	1	X
Chlorodiphenyl (54% Chlorine)	11097-69-1	—	0.5	X
1-Chloro, 2, 3-epoxypropane, see Epichlorhydrin				
2-Chloroethanol, see Ethylene chlorohydrin				
Chloroethylene, see Vinyl Chloride				
Chloroform (Trichloromethane)	**67-66-3**	**(C) 25**	**(C) 120**	
bis-Chloromethyl ether	542-88-1		(See 437-004-9090)	
Chloromethyl methyl ether	107-30-2		(See 437-004-9090)	
1-Chloro-1-nitropropane	600-25-9	20	100	
Chloropicrin	76-06-2	0.1	0.7	
beta-Chloroprene (2-chloro-1,3-butadiene)	126-99-8	25	90	X
2-Chloro-6-(trichloromethyl) pyridine **Total Dust** **Respirable Fraction**	**1929-82-4**	— —	**10** **5**	
Chromic acid and chromates (as CrO_3)	1333-82-0		(See Table Z-2)	
Chromium (II) compounds (as Cr)	7440-47-3	—	0.5	
Chromium (III) compounds (as Cr)	7440-47-3	—	0.5	
Chromium (VI) compounds			(See 437-004-9626)	
Chromium metal & insol. salts (as Cr)	7440-47-3	—	1	
Clopidol **Total Dust** **Respirable Fraction**	**2971-90-6**	— —	**10** **5**	
Coal Dust			(See Table Z-3)	
Coal tar pitch volatiles (See 1910.1002) (Benzene soluble fraction) anthracene, BaP, phenanthrene, acridine, chrysene, pyrene	65966-93-2	—	0.2	
Cobalt metal, fume & dust	7440-48-4	—	0.1	
Coke oven emissions (See 1910.1029)				
Copper fume Dusts and Mists	7440-50-8 7440-50-8	— —	0.1 1	
Corundum (A1203)	**1302-74-5**	—	**10**	
Cotton dust (See 1910.1043)				
Cotton dust (raw)		—	1 [e]	
Crag® herbicide (Sesone) **Total Dust** **Respirable Fraction**	**136-78-7**	— —	**10** **5**	
Cresol (all isomers)	1319-77-3	5	22	X
Crotonaldehyde	123-73-9/ 4170-30-3	2	6	
Cumene	98-82-8	50	245	X
Cyanides (as CN)		—	5	X
Cyanogen	**460-19-5**	**10**	—	
Cyclohexane	110-82-7	300	1,050	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Cyclohexanol	108-93-0	50	200	
Cyclohexanone	108-94-1	50	200	
Cyclohexene	110-83-8	300	1,015	
Cyclopentadiene	542-92-7	75	200	
2,4-D (Dichlorophenoxyacetic acid)	94-75-7	—	10	
DDT	50-29-3	—	1	X
DDVP, see Dichlorvos				
Decaborane	17702-41-9	0.05	0.3	X
Demeton® (Systox)	8065-48-3	—	0.1	X
Diacetone alcohol (4-hydroxy-4-methyl-2-pentanone)	123-42-2	50	240	
1, 2-Diaminoethane, see Ethylenediamine				
Diazinon	**333-41-5**	**—**	**0.1**	**X**
Diazomethane	334-88-3	0.2	0.4	
Diborane	19287-45-7	0.1	0.1	
Dibrom®	**300-76-5**	**—**	**3**	
1,2-Dibromo-3-chloropropane (DBCP) (See 1910.1044)	96-12-8	0.001		
1,2-Dibromoethane, see Ethylene dibromide				
2-N-Dibutylaminoethanol	**102-81-8**	**2**	**14**	**X**
Dibutyl phosphate	107-66-4	1	5	
Dibutyl phthalate	84-74-2	—	5	
Dichloroacetylene	**7572-29-4**	**(C) 0.1**	**(C) 0.4**	
o-Dichlorobenzene	95-50-1	(C) 50	(C) 300	
p-Dichlorobenzene	106-46-7	75	450	
3,3-Dichlorobenzidine	91-94-1		(See 437-004-9090)	X
Dichlorodifluoromethane	75-71-8	1,000	4,950	
1,3-Dichloro-5, 5-dimethyl hydantoin	118-52-5	—	0.2	
Dichlorodiphenyltrichloroethane (DDT)	50-29-3	—	1	X
1, 1-Dichloroethane	75-34-3	100	400	
1, 2-Dichloroethane, see Ethylene dichloride				
1, 2-Dichlorethylene	540-59-0	200	790	
Dichloroethyl Ether	**111-44-4**	**5** (C) 15	**30** (C) 90	**X**
Dichloromethane, see Methylene chloride				
Dichloromonofluoromethane	75-43-4	1,000	4,200	
1, 1-Dichloro-1-nitroethane	594-72-9	(C) 10	(C) 60	
1, 2-Dichloropropane, see Propylene dichloride				
Dichlorotetrafluoroethane	76-14-2	1,000	7,000	
Dichlorvos (DDVP)	62-73-7	**0.1**	1	X
Dicyclohexylmethane 4,4'-diisocyanate (hydrogenated MDI)	**5124-30-1**		**SeeTable Z-2**	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Dicyclopentadienyl iron **Total Dust** **Respirable Fraction**	**102-54-5**	— —	**10** **5**	
Dieldrin	60-57-1	—	0.25	X
Diethylamine	109-89-7	25	75	
2-Diethylaminoethanol	100-37-8	10	50	X
Diethylene triamine	**111-40-0**	**(C) 1**	**(C) 4**	**X**
Diethylether, see Ethyl ether				
Difluorodibromomethane	75-61-6	100	860	
Diglycidyl ether (DGE)	2238-07-5	(C) 0.5	(C) 2.8	
Dihydroxybenzene, see Hydroquinone				
Diisobutyl ketone	**108-83-8**	**25**	**150**	
Diisopropylamine	108-18-9	5	20	X
Dimethoxymethane, see Methylal				
Dimethyl acetamide	127-19-5	10	35	X
Dimethylamine	124-40-3	10	18	
4-Dimethylaminoazobenzene	60-11-7		(See 437-004-9090)	
Dimethylaminobenzene, see Xylidene				
Dimethylaniline (N,N-Dimethy-laniline)	121-69-7	5	25	X
Dimethylbenzene, see Xylene				
Dimethyl-1,2-dibromo-2, 2-dichloroethyl phosphate	300-76-5	—	3	
Dimethylformamide	68-12-2	10	30	X
2,6-Dimethylheptanone, see Diisobutyl ketone				
1,1-Dimethylhydrazine	57-14-7	0.5	1	X
Dimethylphthalate	131-11-3	—	5	
Dimethyl sulfate	77-78-1	1	5	X
Dinitrobenzene (all isomers) (ortho) (meta) (para)	 528-29-0 99-65-0 100-25-4		1	X
Dinitro-o-cresol	534-52-1	—	0.2	X
Dinitrotoluene	25321-14-6	—	1.5	X
Dioxane (Diethylene dioxide)	123-91-1	100	360	X
Diphenyl (Biphenyl)	92-52-4	0.2	1	
Diphenylamine	**122-39-4**	—	**10**	
Diphenylmethane diisocyanate (MDI),			(See Table Z-2)	
Dipropylene glycol methyl ether	34590-94-8	100	600	X
Diquat	**231-36-7**	**—**	**0.5**	
Di-sec, octyl phthalate (Di-2-ethyl-hexylphthalate	117-81-7	—	5	
Emery **Total Dust** **Respirable Fraction**	**12415-34-8**	— —	**10** **5**	
Endosulfan (Thiodan®)	**115-29-7**	**—**	**0.1**	**X**

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Endrin	72-20-8	—	0.1	X
Epichlorohydrin	106-89-8	5	19	X
EPN	2104-64-5	—	0.5	X
1,2-Epoxypropane, see Propylene oxide				
2,3-Epoxy-1-propanol, see Glycidol				
Ethane	**74-84-0**	**1,000**	—	
Ethanethiol, see Ethyl mercaptan				
Ethanolamine	141-43-5	3	6	
2-Ethoxyethanol (Cellosolve)	**110-80-5**	**100**	**370**	**X**
2-Ethoxyethylacetate (Cellosolve acetate)	111-15-9	100	540	X
Ethyl acetate	141-78-6	400	1,400	
Ethyl acrylate	140-88-5	25	100	X
Ethyl alcohol (ethanol)	64-17-5	1,000	1,900	
Ethylamine	75-04-7	10	18	
Ethyl amyl ketone (5-methyl-3-heptanone)	541-85-5	25	130	
Ethyl benzene	100-41-4	100	435	
Ethyl bromide	74-96-4	200	890	
Ethyl butyl ketone (3-Heptanone)	106-35-4	50	230	
Ethyl chloride	75-00-3	1,000	2,600	
Ethyl ether	60-29-7	400	1,200	
Ethyl formate	109-94-4	100	300	
Ethyl mercaptan	**75-08-1**	**0.5** (C) 10	**1** (C) 25	
Ethyl silicate	78-10-4	100	850	
Ethylene	**74-85-1**	**1,000**	—	
Ethylene chlorohydrin	107-07-3	5	16	X
Ethylenediamine	107-15-3	10	25	
Ethylene dibromide	106-93-4		(See Table Z-2)	
Ethylene dichloride	107-06-2		(See Table Z-2)	
Ethylene gylcol particulate		—	**10**	
Ethylene glycol, Vapor	**107-21-1**	**100**	**260**	
Ethylene glycol dinitrate	628-96-6	(C) 0.2	(C) 1	X
Ethylene gylcol methyl acetate (Methyl cellosolve acetate) (2-Methoxy-ethel acetate)	110-49-6	25	120	X
Ethylenimine	151-56-4		(See 437-004-9090)	
Ethylene oxide	75-21-8	1	(See 437-004-9740)	
Ethylidine chloride, see 1, 1-Dichloroethane				
N-Ethylmorpholine	100-74-3	20	94	X
Ferbam **Total Dust** **Respirable Fraction**	**14484-64-1**	— —	**10** **5**	
Ferrovanadium dust	12604-58-9	—	1	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Fibrous glass, see Glass, Fibrous				
Fluorides (As F)		—	(See Table Z-2)	
Fluorine	7782-41-4	0.1	0.2	
Fluorotrichloromethane (Trichlorofluoromethane)	75-69-4	1,000	5,600	
Formaldehyde	50-00-0		(See 437-004-9760)	
Formic acid	64-18-6	5	9	
Furfural	98-01-1	5	20	X
Furfuryl alcohol	**98-00-0**	**5**	**20**	
Gasoline	**8006-61-9**		**[g]**	
Germanium tetrahydride	**7782-65-2**	**0.2**	**0.6**	
Glass, Fibrous or dust			**10**	
Glycerin (mist) **Total Dust** **Respirable Fraction**	**56-81-5**		 **10** **5**	
Glycidol	556-52-5	50	150	
Glycol momoethyl ether, see 2-Ethoxythanol				
Grain dust (oat, wheat, barley)			10	
Graphite natural, respirable	7782-42-5		(See Table Z-3)	
Graphite (Synthetic) **Total Dust** **Respirable Fraction**	**7782-42-5**		 **10** **5**	
Guthion®, see Azinphosmethyl				
Gypsum **Total Dust** **Respirable Fraction**	**13397-24-5**	 — —	 **10** **5**	
Hafnium	7440-58-6	—	0.5	
Heptachlor	76-44-8	—	0.5	X
Heptane (n-heptane)	142-82-5	500	2,000	
Hexachlorocyclopentadiene	**77-47-4**	**0.1**	**1**	
Hexachloroethane	67-72-1	1	10	X
Hexachloronaphthalene	1335-87-1	—	0.2	X
Hexafluoroacetone	**684-16-2**	**0.1**	**0.7**	**X**
Hexamethylene diisocyanate (HDI)	**822-06-0**		(See Table Z-2)	
1,6 Hexamethylene diisocyanate Based Adduct			(See Table Z-2)	
Hexane (n-hexane)	110-54-3	500	1,800	
2-Hexanone	591-78-6	100	410	
Hexone (Methyl isobutyl ketone)	108-10-1	100	410	
sec-Hexyl acetate	108-84-9	50	300	
Hydrazine	302-01-2	1	1.3	X
Hydrogen	**1333-74-0**	**1,000**	—	
Hydrogen bromide	10035-10-6	3	10	
Hydrogen chloride	7647-01-0	(C) 5	(C) 7	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Hydrogen cyanide	74-90-8	10	11	X
Hydrogen fluoride (as F)	7664-39-3		(See Table Z-2)	
Hydrogen peroxide	7722-84-1	1	1.4	
Hydrogen selenide (as Se)	7783-07-5	0.05	0.2	
Hydrogen sulfide	7783-06-4		(See Table Z-2)	
Hydroquinone	123-31-9	—	2	
Indene	**95-13-6**	**10**	**45**	
Indium and compounds (as In)	**7440-74-6**	**—**	**0.1**	
Iodine	7553-56-2	(C) 0.1	(C) 1	
Iron oxide fume	1309-37-1	—	10	
Iron pentacarbonyl	**13463-40-6**	**0.1**	**0.23**	
Iron salts, soluble, as Fe		**—**	**1**	
Isoamyl acetate	123-92-2	100	525	
Isoamyl alcohol (primary and secondary)	123-51-3	100	360	
Isobutyl acetate	110-19-0	150	700	
Isobutyl alcohol	78-83-1	100	300	
Isophorone	**78-59-1**	**10**	**55**	
Isophorone diisocyanate (IPDI)	**4098-71-9**		(See Table Z-2)	
Isopropyl acetate	108-21-4	250	950	
Isopropyl alcohol	67-63-0	400	980	
Isopropylamine	75-31-0	5	12	
Isopropyl ether	**108-20-3**	**250**	**1,050**	
Isopropyl glycidyl ether (IGE)	4016-14-2	50	240	
Kaolin **Total Dust** **Respirable Fraction**	**1332-58-7**	 **—** **—**	 **10** **5**	
Ketene	463-51-4	0.5	0.9	
Lead, inorganic (as Pb)	7439-92-1	(See 437-004-9600)	0.05	
Lead arsenate (See 1910.1018)	**7784-40-9**		**0.01**	
Limestone **Total Dust** **Respirable Fraction**	**1317-65-3**	 **—** **—**	 **10** **5**	
Lindane	58-89-9	—	0.5	X
Lithium hydride	7580-67-8	—	0.025	
L.P.G. (Liquified petroleum gas)	68476-85-7	1,000	1,800	
Magnesite **Total Dust** **Respirable Fraction**	**546-93-0**	 **—** **—**	 **10** **5**	
Magnesium oxide fume **Total Dust** **Respirable Fraction**	**1309-48-4**	 **—** **—**	 **10** **5**	
Malathion	**121-75-5**	**—**	**10**	**X**
Maleic anhydride	108-31-6	0.25	1	
Manganese Compounds (as Mn)	7439-96-5	—	(C) 5	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Manganese fume (as Mn)	7439-96-5	—	(C) 5	
Marble **Total Dust** **Respirable Fraction**	**1317-65-3**	— —	**10** **5**	
Mercury (aryl, inorganic, organo, and vapor) (as Hg)	7439-97-6 (metal)		(See Table Z-2)	
Mesityl oxide	141-79-7	25	100	
Methane	**74-82-8**	**1,000**	—	
Methanethiol, see Methyl mercaptan				
Methoxychlor **Total Dust** **Respirable Fraction**	**72-43-5**	— —	**10** **5**	
2-Methoxyethanol (Methyl Cellosolve)	109-86-4	25	80	X
2-Methoxyethyl acetate (Methyl cellosolve acetate)	110-49-6	25	120	X
Methyl acetate	79-20-9	200	610	
Methyl acetylene (propyne)	74-99-7	1,000	1,650	
Methyl acetylene-propadiene mixture (MAPP)		1,000	1,800	
Methyl acrylate	96-33-3	10	35	X
Methylacrylonitrile	**126-98-7**	**1**	**3**	**X**
Methylal (dimethoxymethane)	109-87-5	1,000	3,100	
Methyl alcohol (methanol)	67-56-1	200	260	
Methylamine	74-89-5	10	12	
Methyl amyl alcohol, see Methyl isobutyl carbinol				
Methyl (n-amyl) ketone	110-43-0	100	465	
Methyl bromide	**74-83-9**	**15** (C) 20	**60** (C) 80	**X**
Methyl butyl ketone, see 2-Hexanone				
Methyl cellosolve, see 2 Methoxy ethanol				X
Methyl cellosolve acetate (Ethylene glycol monomethyl ether acetate)	110-49-6	25	120	X
Methyl Chloride	74-87-3		(See Table Z-2)	
Methyl Chloroform (1,1,1-Trichloroethane)	71-55-6	350	1,900	
Methyl Chloromethyl ether			(See 437-004-9090)	
Methyl 2-cyanoacrylate	**137-05-3**	**2**	**8**	
Methylcyclohexane	108-87-2	500	2,000	
Methylcyclohexanol	**25639-42-3**	**50**	**235**	
o-Methylcyclohexanone	**583-60-8**	**50**	**230**	**X**
2-Methylcyclopentadienyl manganese tricarbonyl (as Mn)	**12108-13-3**	**0.1**	**0.2**	**X**
Methyl demeton	**8022-00-2**	—	**0.5**	**X**
Methyl ethyl ketone (MEK), see 2-Butanone				
Methyl formate	107-31-3	100	250	
Methyl iodide	74-88-4	5	28	X

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Methyl isoamyl ketone	110-12-3	100	475	
Methyl isobutyl carbinol	108-11-2	25	100	X
Methyl isobutyl ketone, see Hexone				
Methyl isocyanate	624-83-9	0.02	0.05	X
Methyl mercaptan	**74-93-1**	**0.5** (C) 10	**1** (C) 20	
Methyl methacrylate	80-62-6	100	410	
Methyl parathion	**298-00-0**	—	**0.2**	**X**
Methyl propyl ketone, see 2-Pentanone				
Methyl silicate	**681-84-5**	**(C) 5**	**(C) 30**	
a-Methyl styrene	98-83-9	(C) 100	(C) 480	
Methylene bisphenyl isocyanate (MDI)	**101-68-8**	**(See Table Z-2 -- diisocyanates)**		
Methylenedianiline (MDA)		(See 437-004-9780) 0.01		
Methylene Chloride	75-09-2	25		
Mineral Wool Fiber		—	**10**	
MOCA [4,4'-Methylene bis (2-chloroaniline)] (See 437-002-0346)	**101-14-4**			
Molybdenum **(soluble compounds)** **(insoluble compounds)**	**7439-98-7**	 — —	 **5** **10**	
Monomethyl aniline	100-61-8	2	9	X
Monomethyl hydrazine	60-34-4	(C) 0.2	(C) 0.35	X
Morpholine	110-91-8	20	70	X
Naphtha (coal tar)	8030-30-6	100	400	
Naphthalene	91-20-3	10	50	
Naphthalene diisocyanate (NDI)	**3173-72-6**		(See Table Z-2)	
alpha-Naphthylamine	134-32-7		(See 437-004-9090)	
beta-Naphthylamine	91-59-8		(See 437-004-9090)	
Nickel carbonyl (as Ni)	13463-39-3	0.001	0.007	
Nickel, metal and insoluble compounds, as Ni	7440-02-0	—	1	
Nickel, soluble compounds, (as Ni)	7440-02-0	—	1	
Nicotine	**54-11-5**	**0.075**	**0.5**	**X**
Nitric acid	7697-37-2	2	5	
Nitric oxide	10102-43-9	25	30	
p-Nitroaniline	100-01-6	1	6	X
Nitrobenzene	98-95-3	1	5	X
4-Nitrodiphenyl	92-93-3		(See 437-004-9090)	
p-Nitrochlorobenzene	100-00-5	—	1	X
Nitroethane	79-24-3	100	310	
Nitrogen dioxide	10102-44-0	(C) 5	(C) 9	
Nitrogen trifluoride	7783-54-2	10	29	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Nitroglycerin	55-63-0	(C) 0.2	(C) 2	X
Nitromethane	75-52-5	100	250	
1-Nitropropane	108-03-2	25	90	
2-Nitropropane	79-46-9	25	90	
N-Nitrosodimethylamine			(See 437-004-9090)	
Nitrotoluene (all isomers)	88-72-2/ 99-08-1/ 99-99-0	5	30	X
Nitrotrichloromethane, see Chloropicrin				
Nitrous oxide	**10024-97-5**	**50**	**90**	
Octachloronaphthalene	2234-13-1	—	0.1	X
Octane	**111-65-9**	**400**	**1,900**	
Oil mist (mineral)	8012-95-1	—	5	
Oil mist, vapor		—	[g]	
Osmium tetroxide (as Os)	20816-12-0		0.002	
Oxalic acid	144-62-7	—	1	
Oxygen difluoride	7783-41-7	0.05	0.1	
Ozone	10028-15-6	0.1	0.2	
Parafin wax fume	**8002-74-2**	—	**1**	
Paraquat respirable dust	4685-14-7/ 1910-42-5/ 2074-50-2	—	0.5	X
Parathion	56-38-2	—	0.1	X
Particulates not otherwise regulated (PNOR) [f] **Total Dust** **Respirable Fraction**		 — —	 **10** **5**	
Pentaborane	19624-22-7	0.005	0.01	
Pentachloronaphthalene	1321-64-8	—	0.5	X
Pentachlorophenol	87-86-5	—	0.5	X
Pentaerythritol **Total Dust** **Respirable Fraction**	**115-77-5**	 — —	 **10** **5**	
Pentane	**109-66-0**	**500**	**1,500**	
2-Pentanone (Methyl propyl ketone)	107-87-9	200	700	
Perchloroethylene (tetrachloroethylene)	127-18-4		(See Table Z-2)	
Perchloromethyl mercaptan	594-42-3	0.1	0.8	
Perchloryl fluoride	7616-94-6	3	13.5	
Perlite **Total Dust** **Respirable Fraction**	**93763-70-3**	 — —	 **10** **5**	
Petroleum distillates (naphtha) (Rubber Solvent)		500	2,000 [g]	
Phenol	108-95-2	5	19	X
Phenothiazine	**92-84-2**	—	**5**	**X**
p-Phenylene diamine	106-50-3	—	0.1	X

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Phenyl ether (vapor)	101-84-8	1	7	
Phenyl ether – diphenyl mixture (vapor)	8004-13-5	1	7	
Phenylethylene, see Styrene				
Phenyl glycidyl ether (PGE)	122-60-1	10	60	
Phenylhydrazine	100-63-0	5	22	X
Phenylphosphine	**638-21-1**	**(C) 0.05**	**(C) 0.25**	
Phosdrin (Mevinphos®)	7786-34-7		0.1	X
Phosgene (carbonyl chloride)	75-44-5	0.1	0.4	
Phosphine	7803-51-2	0.3	0.4	
Phosphoric acid	7664-38-2	—	1	
Phosphorus (yellow)	7723-14-0	—	0.1	
Phosphorus pentachloride	10026-13-8	—	1	
Phosphorus pentasulfide	1314-80-3	—	1	
Phosphorus trichloride	7719-12-2	0.5	3	
Phthalic anhydride	85-44-9	2	12	
Picloram **Total Dust** **Respirable Fraction**	**1918-02-1**	 **—** **—**	 **10** **5**	
Picric acid	88-89-1	—	0.1	X
Pindone (2-Pivalyl-1, 3-indan-dione)	83-26-1	—	0.1	
Plaster of Paris **Total Dust** **Respirable Fraction**	**26499-65-0**	 **—** **—**	 **10** **5**	
Platinum (Soluble Salts) as Pt	7440-06-4	—	0.002	
Polychlorobiphenyls, see Chloro-diphenyls				
Portland Cement **Total Dust** **Respirable Fraction**	**65997-15-1**	 **—** **—**	 **10** **5**	
Propane	74-98-6	1,000	1,800	
Beta-Propiolactone	57-57-8		(See 437-004-9090)	
Propargyl alcohol	**107-19-7**	**1**	**—**	**X**
n-Propyl acetate	109-60-4	200	840	
n-Propyl alcohol	71-23-8	200	500	
n-Propyl nitrate	627-13-4	25	110	
Propylene dichloride	78-87-5	75	350	
Propylene glycol monomethyl ether	**107-98-2**	**100**	**360**	
Propylene imine	75-55-8	2	5	X
Propylene oxide	75-56-9	100	240	
Propyne, see Methyl acetylene				
Pyrethrum	8003-34-7	—	5	
Pyridine	110-86-1	5	15	
Quinone	106-51-4	0.1	0.4	
RDX (Cyclonite)	**121-82-4**	**—**	**1.5**	**X**

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Rhodium, Metal fume and dusts, as Rh Soluble salts	 7440-16-6 7440-16-6	 — —	 0.1 0.001	
Ronnel	**299-84-3**	**—**	**10**	
Rosin core solder pyrolysis products (as Formaldehyde)		**—**	**0.1**	
Rotenone	83-79-4	—	5	
Rouge **Total Dust** **Respirable Fraction**		**—** **—**	**10** **5**	
Selenium compounds (as Se)	7782-49-2	—	0.2	
Selenium hexafluoride (as Se)	7783-79-1	0.05	0.4	
Silica			(See Table Z-3)	
Silicon **Total Dust** **Respirable Fraction**	**7440-21-3**	**—** **—**	**10** **5**	
Silicon carbide **Total Dust** **Respirable Fraction**	**409-21-2**	**—** **—**	**10** **5**	
Silver, metal and soluble compounds (as Ag)	7440-22-4	—	0.01	
Sodium fluoroacetate	62-74-8	—	0.05	X
Sodium hydroxide	1310-73-2	—	2	
Starch **Total Dust** **Respirable Fraction**	**9005-25-8**	**—** **—**	**10** **5**	
Stibine	7803-52-3	0.1	0.5	
Stoddard solvent	**8052-41-3**	**200**	**1,150**	
Strychnine	57-24-9	—	0.15	
Styrene	100-42-5		(See Table Z-2)	
Subtilisins (Proteolytic enzymes) (as 100% pure crystalline enzyme)	**1395-21-7**	**—**	**(C) 0.0003**	
Sucrose **Total Dust** **Respirable Fraction**	**57-50-1**	**—** **—**	**10** **5**	
Sulfur dioxide	7446-09-5	5	13	
Sulfur hexafluoride	2551-62-4	1,000	6,000	
Sulfuric acid	7664-93-9	—	1	
Sulfur monochloride	10025-67-9	1	6	
Sulfur pentafluoride	5714-22-7	0.025	0.25	
Sulfur tetrafluoride	**7783-60-0**	**0.1**	**0.4**	
Sulfuryl fluoride	2699-79-8	5	20	
Systox, see Demeton®				
2, 4, 5-T	93-76-5	—	10	
Tantalum, metal and oxide dust	7440-25-7	—	5	
TEDP (Sulfotepp)	3689-24-5	—	0.2	X
Tellurium and compounds (as Te)	13494-80-9	—	0.1	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Tellurium hexafluoride (as Te)	7783-80-4	0.02	0.2	
Temephos **Total Dust** **Respirable Fraction**	**3383-96-8**	 — —	 **10** **5**	
TEPP (Tetraethyl pyrophosphate)	**107-49-3**	**0.004**	**0.05**	**X**
Terphenyls	26140-60-3	(C) 1	(C) 9	
1, 1, 1, 2-Tetrachloro-2, 2-difluoro-ethane	76-11-9	500	4,170	
1, 1, 2, 2-Tetrachloro-1, 2-difluoro-ethane	76-12-0	500	4,170	
1, 1, 2, 2-Tetrachloroethane	79-34-5	5	35	X
Tetrachloroethylene, see Perchloroethylene				
Tetrachloronaphthalene	1335-88-2	—	2	X
Tetrachloromethane, see Carbon tetrachloride				
Tetraethyl lead (as Pb)	78-0-2	—	.075	X
Tetrahydrofuran	109-99-9	200	590	
Tetramethyl lead (as Pb)	75-74-1	—	0.075	X
Tetramethyl succinonitrile	3333-52-6	0.5	3	X
Tetranitromethane	509-14-8	1	8	
Tetryl (2, 4, 6-trinitro-phenyl-methylnitramine)	479-45-8	—	1.5	X
Thallium (soluble compounds) as TI	7440-28-0	—	0.1	X
4,4'-Thiobis (6-tert, Butyl-m-cresol) **Total Dust** **Respirable Fraction**	**96-69-5**	 — —	 **10** **5**	
Thiram	**137-26-8**		**(See 437-004-9720)**	
Tin (inorganic compounds, except oxides) as Sn	7440-31-5	—	2	
Tin (organic compounds)	7440-31-5	—	0.1	
Tin oxide **Total Dust** **Respirable Fraction**	**1332-29-2**	 — —	 **10** **5**	
Titanium dioxide	**13463-67-7**	—	**10**	
Toluene (toluol)	108-88-3		(See Table Z-2)	
Toluene diisocyanate (TDI),	**584-84-9**		(See Table Z-2)	
o-Toluidine	95-53-4	5	22	X
Toxaphene, see Chlorinated camphene				
Tributyl phosphate	126-73-8	—	5	
1, 1, 1-Trichloroethane, see Methyl chloroform				
1, 1, 2-Trichloroethane	79-00-5	10	45	X
Trichloroethylene	79-01-6		(See Table Z-2)	
Trichloromethane, see Chloroform				
Trichloronaphthalene	1321-65-9	—	5	X
1, 2, 3-Trichloropropane	96-18-4	50	300	
1, 1, 2-Trichloro 1, 2, 2-trifluoro-ethane	76-13-1	1,000	7,600	
Triethylamine	121-44-8	25	100	

Oregon Table Z-1 - Adopted Values (In Alphabetical Order)				
Substance	**CAS No. [c]**	**ppm [a]**	**mg/m³ [b]**	**Skin**
Trifluorobromomethane	75-63-8	1,000	6,100	
Trimethyl benzene	**25551-13-7**	**25**	**120**	
2, 4, 6-Trinitrophenol, see Picric acid				
2, 4, 6-Trinitrophenylmethyl-nitramine, see Tetryl				
Trinitrotoluene (TNT)	118-96-7		1.5	X
Triorthocresyl phosphate	78-30-8	—	0.1	
Triphenyl phosphate	115-86-6	—	3	
Tungsten & compounds, as W **Soluble** **Insoluble**	**7440-33-7**	 **—** **—**	 **1** **5**	
Turpentine	8006-64-2	100	560	
Uranium (as U) Soluble compounds **Insoluble compounds**	7440-61-1	 — —	 0.05 **0.2**	
Vanadium respirable dust **(as V_2O_5)** **Fume (as V_2O_5)**	 **1314-62-1** **1314-62-1**	 **—** **—**	 **(C) 0.5** **(C) 0.05**	
Vegetable oil mist **Total Dust** **Respirable Fraction**		 — —	 **10** **5**	
Vinyl acetate	**108-05-4**	**10**	**30**	
Vinyl benzene, see Styrene				
Vinyl bromide	**593-60-2**	**250**	**1,100**	
Vinyl chloride (See 1910.1017)	75-01-4			
Vinyl cyanide, see Acrylonitrile				
Vinyl toluene	25013-15-4	100	480	
Warfarin	81-81-2	—	0.1	
Wood Dust (non-allergenic)		**—**	**10**	
Xylene (o-, m-, p-isomers)	1330-20-7	100	435	
Xylidine	1300-73-8	5	25	X
Yttrium	7440-65-5	—	1	
Zinc chloride fume	7646-85-7	—	1	
Zinc oxide **Total Dust** **Respirable Fraction**	**1314-13-2**	 **—** **—**	 **10** **5**	
Zinc oxide fume	1314-13-2	—	5	
Zinc stearate **Total Dust** **Respirable Fraction**	**557-05-1**	 **—** **—**	 **10** **5**	
Zirconium compounds (as Zr)	7440-67-7	—	5	

NOTE: PNOR means "particulates not otherwise regulated."

Table Z-1 FOOTNOTES:

[a] Parts of vapor or gas per million parts of contaminated air by volume at 25°C and 760 torr.

[b] Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.

(c) The CAS number is for information only. Enforcement is by the substance name. For an entry covering more than one metal compound, measured as the metal, the CAS number for the metal is given – not CAS numbers for the individual compounds.

(d) OAR 437-004-9640 applies to agricultural exposures to benzene except in circumstances such as the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures. For these exceptions, the benzene exposure limits in Table Z-2 apply. See Division 2/Z 1910.1028 for the specific circumstances of exemption.

(e) This 8-hour TWA applies to respirable dust as measured by a vertical elutriator cotton dust sampler or equivalent instrument. The time-weighted average applies to the cotton waste processing operations of waste recycling (sorting, blending, cleaning, and willowing) and garnetting. See also 1910.1043 for cotton dust limits applicable to other sectors.

(f) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit which is the same as the inert or nuisance dust limit of Table Z-3.

(g) Usually a mixture, in general the aromatic hydrocarbon content will determine which TWA applies.

(h) If the exposure limit in 1910.1026 is stayed or is otherwise not in effect, the exposure limit is a ceiling of 0.1 mg/m^3

Oregon Table Z-2 - Adopted Permissible Exposure Limits (PEL)					
Substance	**8-Hour Time-Weighted Average**	**Acceptable Ceiling Concen-tration**	**Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-hour Shift**		**Skin**
			Concen-tration	**Maximum Duration**	
Benzene [a] (Z87.4-1969)	10 ppm	25 ppm	50 ppm	10 min.	
Beryllium, and beryllium compounds (Z37.29-1970)	2 µg/m^3	5 µg/m^3	25 µg/m^3	30 min.	
Cadmium fume [b] (Z37.5-1970)	0.1 mg/m^3	0.3 mg/m^3			
Cadmium dust [b] (Z37.5-1970)	0.2 mg/m^3	0.6 mg/m^3			
Carbon disulfide (Z37.3-1968)	20 ppm	30 ppm	100 ppm	30 min.	X
Carbon tetrachloride (Z37.17-1967)	10 ppm	25 ppm	200 ppm	5 min. in any 4 hrs	
Chromic acid and chromates [c] (Z37.7-1971) (as CrO_3)		0.1 mg/m^3			
Ethylene dibromide (Z37.31-1970)	20 ppm	25 ppm	50 ppm	5 min.	X
Ethylene dichloride (Z37.21-1969)	50 ppm	100 ppm	200 ppm	5 min. in any 3 hrs	
Fluoride as dust (Z37.28-1969)	2.5 mg/m^3				
Formaldehyde (see 1910.1048)					
Hydrogen fluoride (Z37.28-1969)	3 ppm				
Hydrogen sulfide (Z37.2-1966)		20 ppm	50 ppm	10 min. once, only if no other measurable exposure occurs	
Mercury (Z37.8-1971)	**0.05 mg/m^3**	**0.1 mg/m^3**			**X**
Methyl chloride (Z37.18-1969)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs	
Organo (alkyl) mercury (Z37.30-1969)	**0.001 mg/m^3**	**0.01 mg/m^3**			**X**
Styrene (Z37.15-1969)	100 ppm	200 ppm	600 ppm	5 min. in any 3 hrs	
Tetrachloroethylene (Z37.22-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs	
Toluene (Z37.12-1967)	**100 ppm**	**300 ppm**	**500 ppm**	**10 min.**	
Trichloroethylene (Z37.19-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 2 hrs	

Oregon Table Z-2 - Adopted Permissible Exposure Limits (Continued)					
Substance	**8-Hour Time-Weighted Average**	**Acceptable Ceiling Concen-tration**	**Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-hour Shift**		**Skin**
			Concen-tration	**Maximum Duration**	
Diisocyanates					
Dicyclohexylmethane 4,4'-diisocyanate (hydrogenated MDI)	.055 mg/m .005 ppm	0.210 mg/m^3 0.02 ppm			
Diphenylmethane diisocyanate (MDI)	.050 mg/m^3 .005 ppm	0.200 mg/m^3 0.02 ppm			
Hexamethylene diisocyanate (HDI)	.035 mg/m^3 .005 ppm	0.140 mg/m^3 0.02 ppm			
1,6 Hexamethylene diisocyanated Based Adduct (includes HDI-Biuret trimer, and other polymeric forms of HDI, including isocyanurates)	0.5 mg/m^3	1.0 mg/m^3			
Isophorone diisocyanate (IPDI)	.045 mg/m^3 .005 ppm	0.180 mg/m^3 0.02 ppm			
Napthalene diisocyanate (NDI)	.040 mg/m^3 .005 ppm	0.170 mg/m^3 0.02 ppm			
Toluene diisocyanate (TDI)	.035 mg/m^3 .005 ppm	0.140 mg/m^3 0.02 ppm			

NOTE: **Bold print** identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal OSHA limits.

Table Z-2 FOOTNOTES:

(a) This standard applies to the industry occupational exposures exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the Benzene Standard, Division 2/Z 1910.1028, and OAR 437-004-9640.

(b) This standard applies to any operations or sectors for which the Cadmium Standard, Division 2/Z 1910.1027, and OAR 437-004-9620, is stayed or otherwise not in effect.

(c) This standard applies to any operations or sectors for which the exposure limit in the Chromium (VI) standard, 1910.1026, and OAR 437-004-9626, is stayed or is otherwise not in effect.

Oregon TABLE Z-3 – Permissible Exposure Limits (PEL-TWA) for MINERAL DUSTS		
Substance	**mppcf [(a)]**	**mg/m 3**
Silica:		
Crystalline	.....)	0.1 [(e)]
Quartz (respirable)		
Quartz (total dust)	.....	$\frac{30\ mg/m^{3(e)}}{\%SiO_2 + 2}$
Cristobalite (respirable)	.....	0.05
Tridymite: Use 1/2 the value calculated from the formulae for quartz.	.....	.....
Amorphous, including natural diatomaceous earth	20	$\frac{80\ mg/m^{3(e)}}{\%SiO_2}$
Silicates (less than 1% crystalline silica):		
Mica	20	
Soapstone	20	
Talc (not containing asbestos).....	20 [(c)]	
Talc (containing asbestos) Use asbestos limit.	.....	.....
Tremolite, asbestiform (See OAR 437-004-9050, Asbestos).	.....	.....
Portland cement	50	
Graphite (Natural).....		**5**
Coal Dust: Respirable fraction less than 5% SiO_2.....		2.4 [(e) (f)]
Coal Dust: Respirable fraction greater than 5% SiO_2		0.1 [(e)]
Inert or Nuisance Dust (PNOR): [(d)]		
Respirable fraction		5
Total dust.....		**10**

NOTES: Bold print identifies substances for which the Oregon Permissible Exposure Limits (PEL-TWAs) are different than the federal limits.

Conversion factors: mppcf x 35.3 = million particles per cubic meter = particles per c.c.

Table Z-3 FOOTNOTES:

(a) Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.

(b) Reserved

(c) Containing less than 1% quartz; if 1% quartz or more, use quartz limit.

(d) All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1.

(e) Silica sampling methods must conform to OSHA or NIOSH sampling methods for respirable quartz silica.

(f) The measurements under this note refer to the use of an AEC (now NRC) instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 mg/m3 in the table for coal dust is 4.5 mg/m3.

The following tables will be deleted and replaced with the tables shown above:

[NOTE: Bold print identifies substances for which the Permissible Exposure Limits (PELs) are different than the federal Limits.]

TABLE Z-1 — ADOPTED VALUES (IN ALPHABETICAL ORDER)				
Substance	CAS No. (c)	ppm (a)	mg/m3 (b)	Skin
Abate	3383-96-8	—	10	
Acetic Acid	64-19-7	10	25	
Acetone	67-64-1	1,000	2,400	
Acetonitrile	75-05-8	40	70	
Acetylene	74-86-2	1,000	—	
Acrolein	107-02-8	0.1	0.25	
Aldrin	309-00-2	—	0.25	X
Allyl alcohol	107-18-6	2	5	X
Aluminum Metal Dust Total Dust Respirable Fraction	7429-90-5	 — —	 10 5	
Ammonia	7664-41-7	25	18	
Ammonium Chloride Fumes	12125-02-9	—	10	
ANTU (Alpha-naphthyl-thiourea)	86-88-4	—	0.3	
Arsenic Organic Compounds (as As)	7440-38-2	—	.5	
Asbestos		(See OAR 437-004-9050)		
Azinphosmethyl	86-50-1	—	0.2	X
Benomyl Total Dust Respirable Fraction	17804-35-2	 — —	 10 5	
Benzene See Oregon Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028 (d)	71-43-2		(See OAR 437-004-9640)	
p-Benzoquinone, see Quinone				
Beryllium and Beryllium compounds	7440-41-7		(See Table Z-2)	
Biphenyl, see Diphenyl				
2-Butanone (MEK)	78-93-3	200	590	

TABLE Z-1 — ADOPTED VALUES (IN ALPHABETICAL ORDER)				
Substance	CAS No. (c)	ppm (a)	mg/m3 (b)	Skin
2-Butoxyethanol (Butyl cello-solve)	111-76-2	50	240	X
tert-Butyl chromate (as CrO3); see 1910.1026g	1189-85-1			
Cadmium dust and fume (as Cd)	7440-43-9	(See 437-004-9620)		
Calcium arsenate	7778-44-1	—	1	
Calcium carbonate Total Dust Respirable Fraction	1317-65-3	 — —	 10 5	
Carbaryl (Sevin®)	63-25-2	—	5	
Carbon dioxide	124-38-9	5,000	9,000	
Carbon disulfide	75-15-0		(See Table Z-2)	
Carbon monoxide	630-08-0	50	55	
Carbon tetrachloride	56-23-5		(See Table Z-2)	
Cellulose Total Dust Respirable Fraction	9006-34-6	 — —	 10 5	
Chlordane	57-74-9	—	0.5	X
Chlorine	7782-50-5	(C) 1	(C) 3	
Chlorobenzene	108-90-7	75	350	
1-Chloro, 2, 3-epoxypropane, see Epichlorohydrin				
Chloroform (trichloromethane)	67-66-3	(C) 25	(C) 120	
Chloropicrin	76-06-2	0.1	0.7	
Chromium (VI) compounds; see 1910.1026h				
Chromium metal & insol. salts	7440-47-3	—	1	
Copper fume Dusts and Mists	7440-50-8 7440-50-8	— —	0.1 1	
Crag® herbicide (Sesone) Total Dust Respirable Fraction	136-78-7	 — —	 10 5	
Cresol (all isomers)	1319-77-3	5	22	X
Cyclohexanone	108-94-1	50	200	
2,4-D (Dichlorophenoxyacetic acid)	94-75-7	—	10	
DDT	50-29-3	—	1	X
DDVP, see Dichlorvos				
Diazinon	333-41-5	—	0.1	X

TABLE Z-1 — ADOPTED VALUES (IN ALPHABETICAL ORDER)				
Substance	CAS No. (c)	ppm (a)	mg/m3 (b)	Skin
Dibrom®	300-76-5	—	3	
Dichlorodiphenyltrichloro-ethane (DDT)	50-29-3	—	1	X
Dichlorvos (DDVP)	62-73-7	0.1	1	X
Dieldrin	60-57-1	—	0.25	X
Dimethylphthalate	131-11-3	—	5	
Dinitrotoluene	25321-14-6	—	1.5	X
Dipropylene glycol methyl ether	34590-94-8	100	600	X
Diquat	231-36-7	—	0.5	
Endosulfan (Thiodan®)	115-29-7	—	0.1	X
Endrin	72-20-8	—	0.1	X
Ferbam Total Dust Respirable Fraction	14484-64-1	 — —	 10 5	
Formaldehyde	50-00-0		(See OAR 437-004-9760)	
Grain dust (oat, wheat, barley)		—	10	
Guthion®, see Azinphosmethyl				
Gypsum Total Dust Respirable Fraction	13397-24-5	 — —	 10 5	
Heptachlor	76-44-8	—	0.5	X
Hexane (n-hexane)	110-54-3	500	1,800	
Hydrazine	302-01-2	1	1.3	X
Hydrogen sulfide	7783-06-4		(See Table Z-2)	
Kaolin Total Dust Respirable Fraction	1332-58-7	 — —	 10 5	
Lead, inorganic (as Pb)	7439-92-1	(See 437-004-9600)		
Limestone Total Dust Respirable Fraction	1317-65-3	 — —	 10 5	
Lindane	58-89-9	—	0.5	X
L.P.G. (Liquified petroleum gas)	68476-85-7	1,000	1,800	
Malathion	121-75-5	—	10	X
Methane	74-82-8	1,000	—	

TABLE Z-1 — ADOPTED VALUES (IN ALPHABETICAL ORDER)				
Substance	CAS No. (c)	ppm (a)	mg/m3 (b)	Skin
Methoxychlor — Total Dust — Respirable Fraction	72-43-5	 — —	 10 5	
Methyl bromide	74-83-9	15 (C) 20	60 (C) 80	X
Methyl ethyl ketone (MEK), see 2-Butanone				
Methyl mercaptan	74-93-1	0.5 (C) 10	1 (C) 20	
Methyl parathion	298-00-0	—	0.2	X
Methylene Chloride	75-09-2		(See Table Z-2)	
Nickel carbonyl (as Ni)	13463-39-3	0.001	0.007	
Nicotine	54-11-5	0.075	0.5	X
Nitrotrichloromethane, see Chloropicrin				
Paraquat respirable dust	4685-14-7/ 1910-42-5/ 2074-50-2	—	0.5	X
Parathion	56-38-2	—	0.1	X
Particulates not otherwise regulated (PNOR) (f) — Total Dust — Respirable Fraction		 — —	 10 5	
Pentachlorophenol	87-86-5	—	0.5	X
Perlite — Total Dust — Respirable Fraction	93763-70-3	 — —	 10 5	
Petroleum distillates (naphtha) (Rubber Solvent)		500	2,000 (g)	
Phenol	108-95-2	5	19	X
Phosdrin (Mevinphos®)	7786-34-7	0.01	0.1	X
Phosgene (carbonyl chloride)	75-44-5	0.1	0.4	
Phosphine	7803-51-2	0.3	0.4	
Phosphoric acid	7664-38-2	—	1	
Phthalic anhydride	85-44-9	2	12	
Picloram — Total Dust — Respirable Fraction	1918-02-1	 — —	 10 5	
Portland Cement — Total Dust — Respirable Fraction	659997-15-1	 — —	 10 5	

TABLE Z-1 — ADOPTED VALUES (IN ALPHABETICAL ORDER)				
Substance	CAS No. (c)	ppm (a)	mg/m3 (b)	Skin
Propane	74-98-6	1,000	1,800	
Propylene glycol monomethyl ether	107-98-2	100	360	
Quinone	106-51-4	0.1	0.4	
Ronnel	299-84-3	—	10	
Rotenone	83-79-4	—	5	
Silica			(See Table Z-3)	
Stoddard solvent	8052-41-3	200	1,150	
Sulfuric acid	7664-93-9	—	1	
Systox, see Demeton®				
2, 4, 5-T	93-76-5	—	10	
TEDP (Sulfotepp)	3689-24-5	—	0.2	X
Temephos Total Dust Respirable Fraction	3383-96-8	 — —	 10 5	
TEPP (Tetraethyl pyrophosphate)	107-49-3	0.004	0.05	X
Tetrachloroethylene, see Perchloroethylene				
Thallium (soluble compounds) as Tl	7440-28-0	—	0.1	X
Thiram	137-26-8		(See 437-002-0373)	
Tin oxide Total Dust Respirable Fraction	1332-29-2	 — —	 10 5	
Toluene (toluol)	108-88-3		(See Table Z-2)	
Toxaphene, see Chlorinated camphene				
Triorthocresyl phosphate	78-30-8	—	0.1	
Turpentine	8006-64-2	100	560	
Vegetable oil mist Total Dust Respirable Fraction		 — —	 10 5	
Wood Dust (non-allergenic)		—	10	
Xylene (o-, m-, p-isomers)	1330-20-7	100	435	
Zinc oxide Total Dust Respirable Fraction	1314-13-2	 — —	 10 5	

[NOTE: Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal Limits.
NOTE: PNOR means "particles not otherwise regulated."
FOOTNOTES:]
[Parts of vapor or gas per million parts of contaminated air by volume at 25 degrees C and 760 torr.
Milligrams of substance per cubic meter of air. When entry is in this column only, the value is exact; when listed with a ppm entry, it is approximate.
The CAS number is for information only. Enforcement is based on the substance name. For an entry covering more than one metal compound, measured as the metal, the CAS number for the metal is given - not CAS numbers for the individual compounds.
The benzene standard in 4/Z, OAR 437-004-9640 applies to all occupational exposures to benzene except in some circumstances the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures; for the excepted subsegments, the benzene limits in Table Z-2 apply. See 4/Z, OAR 437-004-9640 for specific circumstances.
All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by the Particulates Not Otherwise Regulated (PNOR) limit that is the same as the inert or nuisance dust limit of Table Z-3.
Usually a mixture, in general the aromatic hydrocarbon content will determine which TWA applies.
If the exposure limit in 1910.1026 is stayed or is otherwise not in effect, the exposure limit is a ceiling of 0.1 mg/m3.
See Table Z-2 for the exposure limit for any operations or sectors where the exposure limit in 1910.1026 is stayed or is otherwise not in effect.]

TABLE Z-2					
Substance	8-Hour Time-Weighted Average	Acceptable Ceiling Concentration	Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-Hour Shift		Skin
			Concentration	Maximum Duration	
Benzene (a) (Z87.4-1969)	10 ppm	25 ppm	50 ppm	10 min.	
Beryllium, and beryllium compounds (Z37.29-1970)	2 µg/m3	5 µg/m3	25 µg/m3	30 min.	
Cadmium fume (b) (Z37.5-1970)	0.1 mg/m3	0.3 mg/m3			
Cadmium dust (b) (Z37.5-1970)	0.2 mg/m3	0.6 mg/m3			
Carbon disulfide (Z37.3-1968)	20 ppm	30 ppm	100 ppm	30 min.	X
Carbon tetrachloride (Z37.17-1967)	10 ppm	25 ppm	200 ppm	5 min. in any 4 hrs	
Chromic acid and chromates (Z37.7-1971) (as CrO3)c		0.1 mg/m3			
Ethylene dibromide (Z37.31-1970)	20 ppm	25 ppm	50 ppm	5 min.	X
Ethylene dichloride (Z37.21-1969)	50 ppm	100 ppm	200 ppm	5 min. in any 3 hrs	
Fluoride as dust (Z37.28-1969)	2.5 mg/m3				
Formaldehyde (see 1910.1048)					
Hydrogen fluoride (Z37.28-1969)	3 ppm				
Hydrogen sulfide (Z37.2-1966)		20 ppm	50 ppm	10 min. once, only if no other measurable exposure occurs	
Mercury (Z37.8-1971)	0.05 mg/m3	0.1 mg/m3			X
Methyl chloride (Z37.18-1969)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs	
Methylene chloride (Z37.3-1969)	25 ppm		125 ppm	15 min.	
Organo (alkyl) mercury (Z37.30-1969)	0.001 mg/m3	0.01 mg/m3			X
Styrene (Z37.15-1969)	100 ppm	200 ppm	600 ppm	5 min. in any 3 hrs.	

Tetrachloroethylene (Z37.22-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 3 hrs.	
Toluene (Z37.12-1967)	100 ppm	300 ppm	500 ppm	10 min.	
Trichloroethylene (Z37.19-1967)	100 ppm	200 ppm	300 ppm	5 min. in any 2 hrs.	

TABLE Z-2 (Continued)

Substance	8-Hour Time-Weighted Average	Acceptable Ceiling Concentration	Acceptable Max. Peak Above the Acceptable Ceiling Concentration for an 8-Hour Shift		Skin
			Concentration	Maximum Duration	
Diisocyanates					
Dicyclohexylmethane 4,4'-diisocyanate (hydrogenated MDI)	.055 mg/m .005 ppm	0.210 mg/m3 0.02 ppm			
Diphenylmethane diisocyanate (MDI)	.050 mg/m3 .005 ppm	0.200 mg/m3 0.02 ppm			
Hexamethylene diisocyanate (HDI)	.035 mg/m3 .005 ppm	0.140 mg/m3 0.02 ppm			
1,6 Hexamethylene diisocyanated Based Adduct (includes HDI-Biuret trimer, and other polymeric forms of HDI, including isocyanurates)	0.5 mg/m3	1.0 mg/m3			
Isophorone diisocyanate (IPDI)	.045 mg/m3 .005 ppm	0.180 mg/m3 0.02 ppm			
Napthalene diisocyanate (NDI)	.040 mg/m3 .005 ppm	0.170 mg/m3 0.02 ppm			
Toluene diisocyanate (TDI)	.035 mg/m3 .005 ppm	0.140 mg/m3 0.02 ppm			

[NOTE: Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal limits.
FOOTNOTES:
This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the Benzene Standard, 4/Z, OAR 437-004-9640.]

[This standard applies to any operations on sectors for which the Cadmium Standard, 4/Z, OAR 437-004-9620, is stayed or otherwise not in effect.
This standard applies to any operations or sectors for which the exposure limit in the Chromium (VI) standard, 1910.1026, is stayed or is otherwise not in effect.]

TABLE Z-3 — MINERAL DUSTS		
Substance	mppcf (a)	mg/m3
Silica:		
Crystalline		
Quartz (respirable)	$\frac{250^{(b)}}{\%SiO_2 + 5}$	$\frac{10mg/m^{3(e)}}{\%SiO_2 + 2}$
Quartz (total dust)	.....	$\frac{30mg/m^3}{\%SiO_2 + 2}$
Cristobalite: Use 1/2 the value calculated from the count or mass formulae for quartz.		
Tridymite: Use 1/2 the value calculated from the formulae for quartz.		
Amorphous, including natural diatomaceous earth	20	$\frac{80mg/m^3}{\%SiO_2}$
Silicates (less than 1 percent crystalline silica):		
Mica	20	
Soapstone	20	
Talc (not containing asbestos)	20 (c)	
Talc (containing asbestos) Use asbestos limit.		
Tremolite, asbestiform (see OAR 437, Div. 2/Z, 1910.1001, Asbestos).		
Portland cement	50	
Graphite (Natural)	15	
Coal Dust:		
Respirable fraction less than 5 percent SiO2)		2.4 mg/m3 (e)
Coal Dust:		
Respirable fraction greater than 5 percent SiO2)		$\frac{10mg/m^3}{\%SiO_2 + 2}$
Inert or Nuisance Dust: (d)		
Respirable fraction	10	5 mg/m3
Total dust	50	10 mg/m3

[NOTE: Bold print identifies substances for which the Oregon Permissible Exposure Limits (PELs) are different than the federal limits.
NOTE: Conversion factors - mppcf x 35.3 = million particles per cubic meter = particles per c.c.
FOOTNOTES:
Millions of particles per cubic foot of air, based on impinger samples counted by light-field techniques.]

[~~The percentage of crystalline silica in the formula is the amount determined from airborne samples, except in those instances in which other methods are applicable.~~
~~Containing less than 1 percent quartz; if 1 percent quartz or more, use quartz limit.~~
~~All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1.~~
~~Calculate both concentration and percent quartz for the application of this limit from the fraction passing a size-selector with the following characteristics:~~]

~~Aerodynamic Diameter (Unit Density Sphere)~~	~~Percent Passing Selector~~
~~2~~	~~90~~
~~2.5~~	~~75~~
~~3.5~~	~~50~~
~~5.0~~	~~25~~
~~10~~	~~0~~

[~~The measurements under this note refer to the use of an AEC (now NRC) instrument. If the respirable fraction of coal dust is determined with a MRE the figure corresponding to that of 2.4 mg/m3 in the table for coal dust is 4.5 mg/m3.~~]

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2001, f. 2/5/01, ef. 2/5/01.
OR-OSHA Admin. Order 9-2001, f. 9/14/01, ef. 9/14/01.
OR-OSHA Admin. Order 6-2006, f. 8/30/06, ef. 8/30/06.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9050 Asbestos.

[~~NOTE: Agricultural employers normally will not encounter asbestos during everyday operations. However, when working with old structures, pipe systems, boilers and other equipment, frequently asbestos is found in the insulation, flooring and other places.~~]

Definition**s:**[~~.~~]

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that have been chemically treated or altered.

Asbestos-containing material (ACM) means any material containing more than 1% asbestos.

Presumed asbestos containing material (PACM) means thermal system insulation and surfacing material found in buildings constructed no later than 1980. The designation of a material as "PACM" may be rebutted pursuant to Division 2/Z, 1910.1001(j)(8).

(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned to workers will **result in a potential** expos**ur**e [~~them~~]to asbestos.

(2) Work that exposes employees to asbestos must comply with **Division 2/Z,** [~~OAR 437-002-~~]**1910.**1001, Asbestos**;**[~~,~~] except [~~as in (4) below~~]**that construction activities exposing employees to asbestos must comply with Division 3/Z, 1926.1101, Asbestos**.

NOTE: Construction activities are building, altering and repairing, and include painting.

(3) **The employer**[~~You~~] must [~~do~~]periodic**ally** examin**e**[~~ations of~~] **all asbestos-containing** material **in the workplace**[~~known to contain asbestos~~] to [~~as~~]**en**sure that there is no deterioration or damage **that could** caus**e**[~~ing exposure or possible~~] **employee** exposure.

([~~a~~]**4**) If you find damage or deterioration, the material must be repaired, [~~enclosed~~]**encapsulated,** or removed **consistent with the requirements in**[~~according to~~] **Division 3/Z,** [~~OAR 437-002-~~]19[~~10~~]**26**.1[~~0~~]**1**01**, Asbestos**.

~~[(4) OAR 437-003-1926.1101 regulates worker exposure to asbestos during construction work defined in OAR 437-002-1910.12(b).]~~

NOTE**S**: [~~For your convenience, here is the definition mentioned above from 1910.12(b).~~

~~Construction work means work for construction, alteration and/or repair, including painting and decorating.~~

~~Examples. For your convenience, here are some examples of possible asbestos exposure situations. This list is not complete, just some examples:~~
~~Flooring, especially tile as found in kitchens, bathrooms and milkhouses.~~
~~Insulation –~~
~~Boilers, furnaces and heating systems~~
~~Pipe systems insulation, especially those carrying hot fluid~~
~~Roofing material (older)~~
~~Chimney and stove pipe~~
~~Old style welding gloves~~
~~Brakes shoes and clutches (older)~~
~~Fireproofing material (older)~~
~~Engine compartment insulation on old tractors and equipment~~]

Tasks or work activities that could expose employees to asbestos include the following:

- **Housekeeping or maintenance activities on workplace surfaces or systems with asbestos-containing materials (examples include flooring, ceiling tiles, roofing, siding, boilers, heaters, insulation, and fireproofing);**
- **Inspection, disassembly, repair and assembly of automotive or farm vehicle brakes and clutches;**
- **Demolition or salvage of structures where asbestos-containing materials are present;**
- **New construction, alteration, or renovation of structures, substrates, or portions thereof with asbestos-containing materials; and,**
  Routine or emergency cleanup of asbestos-containing materials.

Employers who have pipe systems that are insulated with asbestos-containing materials in their workplaces, must also comply with *Division 4/Z, OAR 437-004-9850, Pipe Labeling*.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9090 **13** Carcinogens.

Definitions:
The 13 carcinogens are:

- **4-Nitrobiphenyl, CAS 92-93-3;**
- **alpha-Naphthylamine, CAS 134-32-7;**
- **Methyl chloromethyl ether, CAS 107-30-2;**
- **3,3-Dichlorobenzidine (and its salts), CAS 91-94-1;**
- **bis-Chloromethyl ether, CAS 542-88-1;**
- **beta-Naphthylamine, CAS 91-59-8;**
- **Benzidine, CAS 92-87-5;**
- **4-Aminodiphenyl, CAS 92-67-1;**
- **Ethyleneimine, CAS 151-56-4;**
- **beta-Propiolactone, CAS 57-57-8;**
- **2-Acetylaminoflourene, CAS 53-96-3;**
- **4-Dimethylaminoazo-benzene, CAS 60-11-7; and**
- **N-Nitrosodimethylamine, CAS 62-75-9.**

(1) The employer is responsible to determine, before work begins, if any task or [~~work~~]**activity assigned to workers** will **result in a potential** expos**ur**e [~~employees~~]to any of the **13** carcinogens[~~ below~~].

(2) Work that exposes employees to **any of** the **13** carcinogens [~~below~~]must comply with [~~OAR 437-002~~]**Division 2/Z, 1910.**1003, **13** Carcinogens.

[~~4-Nitrobiphenyl beta-Naphthylamine beta-Propiolactone alpha-Naphthylamine Benzidine 2-Acetylaminoflourene Methyl chloromethyl ether 4-Aminodiphenyl 4-Dimethylaminoazobenzene 3,3-Dichlorobenzidine Ethyleneimine N-Nitrosodimethylamine bis-Chloromethyl ether~~]

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f/8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9600 Lead.

[~~(1)~~]Definition**:**[~~.~~]

Lead means [~~any~~]**elemental,** metallic lead **(chemical formula Pb)**, all inorganic lead compounds**,** and organic lead soaps. All other organic lead compounds are [not in]**ex**cluded.

([~~2~~]**1**) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in a potential** expos**ur**e [~~employees~~]to lead.

([~~3~~]**2**) Work that exposes employees to lead must comply with **Division 2/Z,**[~~OAR 437-002-~~]1910.1025**, Lead; except that construction activities exposing employees to lead must comply with Division 3/D, 1926.62, Lead**.

NOTES:
Construction activities are building, altering and repairing and include painting.

Tasks or work activities that could expose employees to lead include:

- **Demolition or salvage of structures where lead-containing materials are present;**
- **New construction, alteration, or renovation of structures, substrates, or portions thereof with lead-containing materials;**
- **Routine or emergency cleanup of lead-containing materials;**
- **Using lead-containing paints or pigments;**
- **Cutting, brazing, burning, heating, grinding or welding surfaces with lead-containing paints or pigments; and**
- **Soldering with lead-containing solder.**

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9620 Cadmium.

Definition**:**[~~.~~]

Cadmium means **the element** cadmium **(Cd);** and **all** cadmium compounds.
(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in a potential** expos**ur**e [~~employees~~]to cadmium.

(2) Work that exposes employees to cadmium must comply with [~~OAR 437-002-~~]**Division 2/Z 1910.**1027, Cadmium**:**[~~,~~] except [~~as in (3) below~~]**that construction activities exposing employees to cadmium must comply with Division 3/Z, 1926.1127, Cadmium**.

[~~(3) OAR 437-003-1926.1127 regulates worker exposure to cadmium during construction work defined in OAR 437-002-1910.12(b).~~]

NOTE: [~~For your convenience, here is the definition mentioned above from 1910.12(b).~~]
Construction [~~work means work for construction~~]**activities are building**, alter**ing,**[~~ation~~] and[~~/or~~] repair**ing**[~~,~~] **and** includ**e[**~~ing~~] painting[~~ and decorating~~].

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. X1/1/13.

437-004-9626 Chromium (VI).

Definitions:
Chromium (VI) [hexavalent chromium or Cr(VI)] means chromium with a valence of positive six, in any form and in any compound.

(1) The employer is responsible to determine, before work begins, if any task or activity assigned to workers will result in a potential exposure to hexavalent chromium.

(2) Work that exposes employees to hexavalent chromium must comply with Division 2/Z 1910.1026, Chromium (VI); except that construction activities exposing employees to hexavalent chromium must comply with Division 3/Z, 1926.1126, Chromium (VI).

NOTE:
Construction activities are building, altering and repairing and include painting.

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

Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9640 Benzene.

Definition**:**[~~.~~]

Benzene **(Chemical formula** [~~(~~]C_6H_6**.** [~~)~~] [~~(~~]CAS [~~Registry No.~~]71-43-2) means liquefied or gaseous benzene **and**[~~. It~~] includes benzene in liquid mixtures and benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene in solid materials.

(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in a potential** expos**ur**e [~~employees~~]to benzene.

(2) [~~Work~~]**Tasks or activities within the scope of the Division 2, Benzene rule** [~~that exposes employees to benzene~~]must comply with [~~OAR 437-002-~~]**Division 2/Z,** 1910.1028, Benzene.

(3) Tasks or activities that are not within the scope of the Division 2, Benzene rule must comply with the permissible exposure limits listed in Division 4/Z, OAR 437-004-9000, Table Z-2.

NOTE**S**:
An example of a task or activity that is within the scope of the Division 2, Benzene rule is an employee dispensing gasoline or motor fuels containing benzene for more than 4 hours per day in an indoor location.

Examples of task or activities that are NOT within the scope of the Division 2, Benzene rule include:

[~~This does not cover the following work situations:~~]

- [~~(i)~~] The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene after final discharge from bulk wholesale storage facilities. [~~It does cover operations where workers dispense gasoline or motor fuels more than 4 hours per day in an indoor location.~~]

- [~~(ii)~~] The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers while sealed in a way to contain benzene vapors or liquid[~~, except for 4/Z, OAR 437-004-9800 as incorporated into this section~~].

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.

OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9650 Bloodborne Pathogens.

[~~Application. This applies to all occupational exposure to blood or other potentially infectious materials defined below.~~]

Definitions**:**[~~.~~]
Blood means human blood, human blood components and products made from human blood.

Bloodborne Pathogens means pathogenic micro-organisms that are present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Contaminated means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface.

Occupational exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties.

Other Potentially Infectious Materials means:

- [~~The following h~~]**H**uman body fluids[~~: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid~~] with visible contamination of blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids;

- Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and

- HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in an occupational** expos**ur**e [~~employees~~]to bloodborne pathogens.

(2) Work that exposes employees to bloodborne pathogens must comply with [~~OAR 437-002~~]**Division 2/Z,** 1910.1030, Bloodborne Pathogens.

NOTE:

Examples of tasks or work activities with a potential for occupational exposures to bloodborne pathogens in agricultural workplaces include:

- **Employees performing janitorial duties that include cleaning up human blood or OPIM;**
- **Employees who are required, as part of their job duties, to administer first aid to others that could include contact with another person's blood or OPIM.**

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9710 Acrylonitrile.

Definition**s:**[~~.~~]

Acrylonitrile or "AN" **(Chemical formula CH_2=CHCN, CAS 107-13-1)** means acrylonitrile monomer **and includes Liquid AN**[~~, chemical formula CH_2 = CHCN~~].

Liquid AN means **acrylonitrile**[~~AN~~] monomer in liquid form, and liquid or semi-liquid polymer intermediates, including slurries, suspensions, emulsions, and solutions, made during the polymerization of AN.

(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in a potential** expos**ur**e [~~employees~~]to acrylonitrile.

(2) Work that exposes employees to acrylonitrile must comply with [~~OAR 437-002-~~]**Division 2/Z,** 1910.1045, Acrylonitrile.~~[The scope and application of that standard is below for your convenience.~~]

NOTE:
The Division 2 Acrylonitrile rule does not apply to exposures which result solely from the processing, use, and handling of the following materials:

- **ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers;**

- **Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable – under the expected conditions of processing, use, and handling which will cause the greatest possible release – of releasing AN in airborne concentrations in excess of 1 ppm as an 8-hour time-weighted average, or**

- **Solid materials made from and/or containing AN which will not be heated above 170 degrees F. during handling, use, or processing.**

[(a) Scope and application.
(1) This section applies to all occupational exposures to acrylonitrile (AN), Chemical Abstracts Service Registry No. 000107131, except as provided in paragraphs (a)(2) and (a)(3) of this section.
(2) This section does not apply to exposures which result solely from the process- ing, use, and handling of the following materials:
(i) ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers;
(ii) Materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not cap- able of releasing AN in airborne concentrations in excess of 1 ppm as an 8-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and
(iii) Solid materials made from and/or containing AN which will not be heated above 170 degrees F during handling, use, or processing.
(3) An employer relying upon exemption under paragraph (a)(2)(ii) shall maintain records of the objective data supporting that exemption, and of the basis of the employer's reliance on the data, as provided in paragraph (q) of this section.]

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9740 Ethylene Oxide.

Definition**:**[-]

[“]Ethylene oxide[”] or “EtO” means the [three-membered ring]organic compound with chemical formula C_2H_4O**, and CAS 75-21-8**.

(1) The employer is responsible to determine, before work begins, if any task or **activity**[work] assigned **to workers** will **result in a potential** expos**ur**e [employees]to ethylene oxide.

(2) Work that exposes employees to ethylene oxide must comply with [OAR 437-002-]**Division 2/Z, 1910.**1047, Ethylene Oxide.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9760 Formaldehyde.

Definition**:**[~~.~~]

Formaldehyde means the [~~chemical~~]substance **with chemical formula** [~~{~~]HCHO[~~}~~] **and** [~~{~~]CAS [~~Registry No.~~]50-00-0[~~}~~].

(1) The employer is responsible to determine, before work begins, if any task or [~~work~~]**activity** assigned **to workers** will **result in a potential** expos**ur**e [~~employees~~]to formaldehyde.

(2) Work that exposes employees to formaldehyde must comply with [~~OAR 437-002-~~]**Division 2/Z,** 1910.1048, Formaldehyde.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9780 Methylenedianiline.

Definition**:**[~~.~~]

[~~4,4'~~]Methylenedianiline or **"**MDA**"** means the chemical **substance**[~~,~~] 4,4'-[~~d~~]**D**iaminodiphenylmethane[~~,~~] **(**C[~~hemical~~]A[~~bstract~~]S[~~ervice Registry number~~] 101-77-9**)**, in the form of a vapor, liquid, or solid**.**[~~. The definition also~~] **including**[~~es~~] the salts of MDA.

(1) The employer is responsible to determine, before work begins, if any task or **activity**[~~work~~] assigned **to workers** will **result in potential** expos**ur**e [~~employees~~]to Methylenedianiline.

(2) Work that exposes employees to M**DA**[~~ethylenedianiline~~] must comply with **Division 2/Z,** [~~OAR 437-002-~~]1910.1050, Methylenedianiline**, except that construction activities exposing employees to MDA must comply with Division 3/D, 1926.60, Methylenedianiline**.

NOTE: Construction activities are building, altering and repairing and include painting.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9830 Retention of **Department of Transportation (**D[~~ot~~]**OT)** Markings, Placards and Labels.

(1) If you receive any container or vehicle containing hazardous material, marked to comply with U.S. Department of Transportation Hazardous Materials Regulations (49 CFR Parts 171 through 180), you must keep those markings in place and legible until the container is empty enough of product, residue or vapors to eliminate all hazards.

(2) Markings, placards and labels must be readily visible.

(3) For non-bulk packages that will not be reshipped, you **are in** compli**ance**[~~y~~] with this **rule**[~~section~~] if a label or other acceptable marking is affixed [~~according~~]to the **container and includes the information required by the** Hazard Communication Standard.

(4) For this **rule**[~~section~~], "hazardous material" and other terms not defined here have the same definition**s** as in the **U.S. DOT** Hazardous Materials Regulations (49 CFR Parts 171 through 180).

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

437-004-9850 Pipe Labelling.

(1) Scope and application. This **rule** applies to all pipes **that** contain[~~ing~~] hazardous substances or that use asbestos as insulation material. This **rule** does not apply to buried pipe.

(2) Definitions**:**[~~.~~]

Asbestos includes chrysoltile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos and any of these minerals that have been chemically treated or altered.

Hazardous substances: any substance that is a physical or health hazard.

Health hazard: a chemical for which there is statistically significant evidence that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosive sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents that act on the hematopoietic system, and agents that damage the lungs, skin, eyes or mucous membranes.

Physical hazard: **includes**[~~a~~] combustible liquid**s**, compressed gas**es**, explosive**s**, flammable**s**, an organic peroxide**s**, [~~or~~]oxidizer**s**, pyrophoric**s**, unstable (reactive) or water-reactive **substances**.

Pipe**s**: include[~~s~~] pipes, valves and pipe coverings.

(3) Labelling.

(a) Label pipes that contain hazardous substances or transport substances in a hazardous state according to (A), (B), (C) and (D) below or otherwise identify them according to (c) below:

(A) Positive identification of the hazardous contents of pipe must be by lettered labels. The label must give the name of the contents in full or abbreviated form.

(B) The label must identify the contents with enough detail to identify the hazard.

(C) Label wording must be brief, informative and simple.

(D) Use stenciling, tape, adhesives, markers or **effective**[~~approved~~] alternative means for labels.

(b) Label pipes with asbestos insulation according to (b)(A) below, or otherwise identify them according to (3)(c) below:

(A) The label for pipe insulation containing asbestos must include the following:

DANGER
CONTAINS ASBESTOS FIBER
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

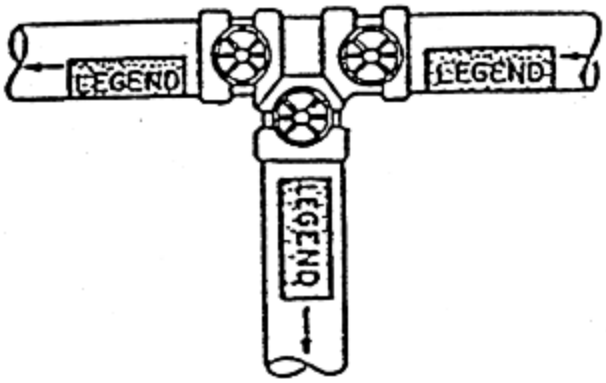
(c) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials instead of affixing labels to individual pipes, if the alternative method identifies the pipe(s) to which it is applicable and conveys the information required by this rule. The written materials must be readily accessible to the employees in their work areas during each shift.

(4) Location of labelling.

(a) Place the labelling where confusion may occur, such as near valves or flanges and adjacent to changes in direction, branches and where pipes pass through walls, floors or ceilings**:**[~~.~~]

(b) Labelling must be, at a minimum, at the beginning and end of continuous pipe runs**:**[~~.~~]
and
(c) For asbestos insulation, labelling must be at a minimum, on unobstructed continuous pipe runs, every 75 feet.

Illustration 1 - Location of Labelling



(5) Visibility.

(a) Where pipes are above or below the normal line of vision, put the lettering below or above the horizontal centerline of the pipe **to facilitate visibility**.

(b) If pipes are inaccessible and/or at a distance that precludes clear identification of the letters on labelling, use alternatives to the labelling that meet all other requirements of this rule (i.e., schematics posted on walls in work areas).

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.

Appendix A for Pipe Labelling (Non-Mandatory)

Table 1 - Classification of Hazards of Materials and Suggestions of Colors

Classification	Color Field**	Color of Letters for Legends
Materials Inherently Dangerous		
Flammable or Explosive	Yellow	Black
Chemically Active or Toxic	Yellow	Black
Extreme Temperatures or Pressures ..	Yellow	Black
Radioactive .....……	Yellow	Magenta
Materials of Inherently Low Hazard		
Liquid or Liquid Admixture	Green	White
Gas or Gaseous Admixture	Blue	White

** Alternatives to the colors suggested by Table 1 may be acceptable if they meet all other requirements of this appendix and are used consistently on all pipes in a given location.

(1) Color may be displayed on the piping by any physical means, but when it is used it must be in combination with labels.
(2) Color may be used in continuous, total length, or in intermittent displays.

Types and Sizes of Letters
(1) There must be contrast between color field and letters for readability.
(2) Use of letters of block lettering in sizes 1/2-inch (13 mm) and larger, is recommended. (Table 2)

Table 2 - Types and Styles of Letters

Outside Diameter of Pipe or Covering		Length of Color Field		Size of Letters	
in.	mm.	in.	mm.	in.	mm.
3/4 to 1 1/4	19 to 32	8	200	1/2	13
1 1/2 to 2	38 to 51	8	200	3/4	19
2 1/2 to 6	64 to 150	12	300	1 1/4	32
8 to 10	200 to 250	24	600	2 1/2	64
over 10	over 250	32	800	3 1/2	89

(3) For identification of materials in pipes less than 3/4-inch (19 mm.) in diameter, and for valve and fitting identification, the use of a legible tag is recommended.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.

437-004-9860 Hazardous Chemicals in Laboratories.

[~~OAR 437-002-1910.1450 applies to exposure of agricultural employees to hazardous chemicals in laboratories that do work other than quality control or quality assurance.~~]

Definitions:

Carcinogens are chemicals that have been determined to cause cancer by the following sources:

(a) National Toxicology Program (NTP), Annual Report on Carcinogens (latest edition);

(b) International Agency for Research on Cancer (IARC) Monographs (latest edition);

(c) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration: or

(d) National Institute for Occupational Safety and Health (NIOSH), The Registry of Toxic Effects of Chemical Substances (latest edition.)

Crop- or product-related quality control or quality assurance–type laboratory work means the testing of crops or agricultural products to uncover defects, with the goal of improving or stabilizing production standards.

Laboratory use of hazardous chemicals means handling or use of such chemicals in which all of the following conditions are met:

(a) Chemical manipulations are carried out on a "laboratory scale;"
(b) Multiple chemical procedures or chemicals are used;
(c) The procedures involved are not part of a production process, nor in any way simulate a production process; and
(d) Protective laboratory practices and equipment are available and in common use to minimize the potential for employee exposure to hazardous chemicals.

Laboratory scale means work with substances in which the containers used for reactions, transfers, and other handling of substances are designed to be easily and safely manipulated by one person. Laboratory scale does not include those workplaces whose function is to produce commercial quantities of materials.

(1) If employees are engaged only in crop- or product-related quality control or quality assurance-type laboratory work, as defined in this rule, any work with hazardous chemicals must comply with the requirements in *OAR 437-004-9800, Hazard Communication.*

(2) If employees use carcinogens in laboratory research or crop- or product-related quality control or quality assurance-type laboratory work, then Division 2/Z, OAR 437-002-0391, Additional Oregon Rules for Carcinogens in Laboratories, also applies.

(3) If employees are engaged in the laboratory use of hazardous chemicals, as defined in this rule, then Division 2/Z, 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, applies to these activities.

Stat. Auth.: ORS 654.025(2) and 656.726(4).
Stats. Implemented: ORS 654.001 through 654.295.
Hist: OR-OSHA Admin. Order 4-1998, f. 8/28/98, ef. 10/1/98.
OR-OSHA Admin. Order 4-2012, f. 9/19/12, ef. 1/1/13.
