

OAR 437, Oregon Occupational Safety and Health Division
Division 4, Agriculture
OR-OSHA Administrative Order 9-2006
Filed and effective September 22, 2006

437-004-0002
Scope.

Standard Industrial Classifications – Division 004, Agriculture, applies only to employers with the following Standard Industrial Classifications (SIC) **or North American Industrial Classification system (NAICS) codes.**

Note: If you don't know your code, contact your Workers' Compensation Insurance carrier.

(1) All of major groups 01 (**NAICS 111**), and 02 (**NAICS 112**). The following sub-groups of major groups 07 and 08 (NAICS 111).

SIC NAICS

- (a) 0711 **115112** Soil Preparation Services
- (b) 0721 **115112** Crop Planting, Cultivating, and Protection
- (c) 0722 **115113** Crop Harvesting, Primarily by Machine
- (d) 0723 **115114** Crop Preparation Services for Market: Except Cotton Ginning
- (e) 0761 **115115** Farm Labor Contractors and Crew Leaders
- (f) 0762 **115116** Farm Management Services

~~[(g) 0783 Ornamental Shrub and Tree Services]~~

~~[Only these occupations under 0783, done on agricultural establishments, are covered by this standard:]~~

~~[(A) Ornamental bush planting, pruning, bracing, spraying, removal, and surgery]~~

~~[(B) Ornamental tree planting, pruning, bracing, spraying, removal, and surgery]~~

~~[(C) Trees, ornamental: planting, pruning, bracing, spraying, removal, and surgery]~~

- (g) 0811 **111421** Christmas Tree Growing and Harvest

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.

437-004-0099
General Standards.

(1) Miscellaneous.

- (a) Conspicuously post warning signs, danger signs, warning flags, warning lights, or similar devices where hazards not otherwise adequately guarded warrant their use.
- (b) Maintain and use in an operable condition any safeguard or device required by any rule in this division to fulfill its intended purpose.
- (c) Erect protective barriers or suitable guards when covers over openings are removed or excavations made in places accessible to workers or vehicles.
- (d) Do not allow the use of intoxicating liquor or drugs on the job. Do not allow anyone to work with impaired ability to work safely.
- (e) Do not allow horseplay, scuffling, practical jokes or any other similar activity.

- (2) Supervision and competency.
 - (a) Require employees to demonstrate their ability to work safely.
 - (b) Provide enough supervision over employees to ensure and enforce compliance with safe operating procedures and practices.

NOTE: It is not the meaning of this rule to require a supervisor on every part of any operation, nor to prohibit workers from working alone.

- (c) Take all reasonable means to require employees:
 - (A) To work and act in a safe and healthful manner;
 - (B) To work in compliance with all applicable safety and health rules;
 - (C) To use all means and methods, including but not limited to, ladders, scaffolds, guardrails, machine guards, safety belts and lifelines, necessary to work safely where employees are exposed to a hazard;
 - (D) Not to remove, displace, damage, destroy or carry off any safety device, guard, notice or warning provided for use in any employment or place of employment where safety and health rules require such use.
 - (d) Use a procedure, appropriate for the work, to check on the well-being of workers whose duties require them to work alone or in isolation. Instruct all workers about the procedure.

NOTE: A two-way system of signals, thoroughly understood by both parties or other form of two-way communication is acceptable. Motor noise is not acceptable as contact or as an indication of well-being.

(e) Employers must provide all health hazard control measures necessary to protect the employees' health from harmful or hazardous conditions and must maintain those control measures in good working order and assure their use.

(f) Employers must inform their employees about the known health hazards to which they are exposed, the measures taken for the prevention and control of those hazards, and the proper methods for using the control measures.

(3) Inspections. A competent person or persons must inspect every place of employment at least quarterly. OAR 437-004-0250[(5)(g)]**(6)(e)** has other requirements related to these inspections.

(4) Investigations.

(a) The employer must investigate every work-related lost time injury. The object of the investigation is to determine how to prevent recurrence. OAR 437-004-0250[(5)(g)]**(6)(e)** has other requirements related to these investigations.

NOTE: As mentioned above, "lost time injury" is the same as the ORS 656.005(7)(c) definition of "disabling compensable injury." That is: an injury that entitles the worker to compensation for disability or death. To fall into this category the employee must miss

three consecutive calendar days beginning with the day the worker first loses time or wages from work as a result of the compensable injury. This includes weekends and holidays when they might normally be off.

(b) At the request of authorized OR-OSHA representatives, you or your superintendents, supervisors and employees must furnish all evidence and names of known witnesses to an accident.

(c) Employees in charge of work are agents of the employer in the discharge of their authorized duties, and are always responsible for:

(A) The safe performance of the work under their supervision; and

(B) The safe conduct of the crew under their supervision; and

(C) The safety of all workers under their supervision.

(5) Extraordinary hazards. When conditions arise that cause unusual or extraordinary hazards to workers, take additional means and precautions to protect workers or to control the hazardous exposure. If you cannot make the operation reasonably safe, stop work while the abnormal conditions exist or until the work is safe.

(6) Signals and signal systems.

(a) Give control signals by only one person at a time.

(A) When given, make signals clear and distinct.

(B) The person receiving the signals must understand their meaning before taking action.

(b) Act immediately on emergency stop signals from whatever source.

(c) Do not throw any type of material that can produce injury, such as rocks, wooden or metal objects, etc., as a signal.

(d) Do not give signals for the movement of materials or equipment until all persons who might be in danger by the movement are in the clear.

Employment of Minors

NOTE: Information on current regulations about the employment of minors is available from the local office of the Oregon Bureau of Labor and Industries, or by writing to: Wage and Hour Division, Oregon Bureau of Labor, 3865 Wolverine NE Rm E-1, Salem, Oregon 97310.

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.

437-004-0240

Safety Orientation for Seasonal Workers.

Seasonal Worker – a person employed in a job tied to a certain time of year by an event or pattern and for not more than 10 months in a calendar year.

(1) This applies to agricultural employers with 10 or fewer non-seasonal workers. (See the notice at the end of this page.)

(2) All seasonal workers must receive at least the following information in their orientation meeting before beginning work for the first time or when work conditions or locations change in a way that reasonably could affect their safety or health:

(a) ~~Reserved.~~ [OR-OSHA publication 1951, “Safe Practices—Working With Hazardous Agricultural Chemicals” if their work is covered by OAR 437-004-9800, Hazard Communication and/or the Worker Protection Standard for Agricultural Chemicals.]

NOTE: OAR 437-004-9800(7)(d), Hazard Communication requires you to give OR-OSHA publication 1951, “Safe Practices – Working With Hazardous Agricultural Chemicals” to every employee.

NOTE: This paragraph satisfies the training requirements under 437-004-9800, Hazard Communication for workers doing field and hand labor. It also satisfies the requirements for training under the Worker Protection Standard, 437-004-40 CFR 170.130(c). See Subdivision W.

(b) Employer’s safety and health rules for the work they will do.

(c) The employer’s procedures for workers to contact supervisors or managers in case of accident, illness or any problem related to safety or health.

(d) The employer’s procedures for treatment of injured or sick workers and the summoning of emergency assistance.

(e) The location of posted safety and health information.

NOTE: These are only minimum requirements and are not all inclusive. Other parts of the Agriculture standard require specific or general training for certain types of work. Those requirements are in addition to these general orientation requirements.

NOTICE: If you employ more than 10 non-seasonal workers, read and comply with OAR 437-004-0250 which follows this standard. If you employ 10 or fewer non-seasonal workers but have had one or more accepted disabling claims in any 12-month period, read and comply with OAR 437-004-0250 which follows this standard.

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 2-1999, f. 4/30/99, ef. 4/30/99.

OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-0250

Safety Committees.

(1) Application.

(a) Agricultural employers with more than 10 non-seasonal workers must have an effective safety committee.

(b) Agricultural employers with 10 or fewer non-seasonal workers do not need a safety committee unless they had one or more lost workday cases during a 12-month period.

Note: Under (b) above, you must have your first safety committee meeting the month after your first lost workday case during any 12-month period. You can stop the meetings after you complete a 12-month period without a lost workday case.

(c) Labor contractors must have a committee based on the number of workers over which they exercise direction and control.

(2) Purpose. The purpose of a safety committee is to bring workers and management together in a non-adversarial, cooperative effort to promote safety and health in each workplace. A safety committee assists the employer and makes recommendations for change.

(3) Effective committee. An effective committee must produce at least the following results:

(a) Workers must be aware of the committee, who is on it, how it functions, when it meets and how information passes from workers to management and from management to workers.

(b) Workers must be aware of their right to have matters placed on the committee's agenda and into the meeting minutes.

(c) Workers must know the employer's method or system for the reporting of safety and health concerns, incidents and accidents.

(d) Workers must know the committee's responsibility to review all incident and accident reports.

(4) Definitions.

(a) Management – includes all supervisors and persons who regularly exercise direction and control over workers.

(b) Seasonal Worker – a person employed in a job tied to a certain time of year by an event or pattern and employed for not more than 10 months in a calendar year.

(c) Workers – for the purposes of determining the need for a safety committee, include both full and part-time employees.

(5) General requirements.

(a) Employers who also hire seasonal workers must hold safety orientation meetings for those crews. See paragraphs OAR 437-004-0250(8).

(b) If you have more than one geographic employment location, use a combined committee only if:

(A) The locations are close enough to assure that a joint committee meets the requirements in OAR 437-004-0250(3), or;

(B) The locations employ some of the same workers; and

(C) The joint committee represents safety and health concerns of all workers at all locations.

(c) The safety committee of employers with 20 or fewer non-seasonal workers must have at least one manager and one worker. Employers with more than 20 non-seasonal workers must have at least two managers and two workers on the committee.

(A) Do not coerce workers to serve on the committee. Give all workers the opportunity to volunteer to serve on the committee. If there are no volunteers, the employer may appoint the member(s).

Note: Do not count seasonal workers when calculating the number of members needed on the committee.

(d) Employers must pay workers their regular hourly rate for attending safety committee meetings or instruction or training required as part of their safety committee duties.

(6) Duties and functions.

(a) Regular safety committee meetings must be held monthly except in months when there are inspections under OAR 437-004-0099(3). Committees for employers with 10 or fewer workers, under (1)(b), must meet quarterly in addition to their inspection months.

Note: It is acceptable to combine required safety committee meetings with seasonal worker orientation sessions if you fulfill all requirements for the committee meetings.

- (b) Keep a record of all safety committee meetings and make the records available to workers. Keep the record for 3 years for inspection by OR-OSHA.
 - (c) All reports, inspections, evaluations, recommendations and items brought before the committee must be part of the record.
 - (d) The employer must respond to safety committee recommendations in a reasonable time.
 - (e) The committee must:
 - (A) Establish procedures for the committee to do the safety inspections in OAR 437-004-0099(3).
 - (B) Review all reports of the quarterly inspections required in OAR 437-004-0099(3).
 - (C) Establish procedures for investigating all safety incidents, accidents, illnesses and deaths.
 - (D) Evaluate accident and illness prevention programs.
 - (E) Set guidelines for the training of safety committee members.
 - (7) Training.
 - (a) Discuss OAR 437-004-0250 (these rules) and the purpose and operation of the committee with safety committee members.
 - (b) Committee members must have timely access, through the employer, to all OR-OSHA standards that apply to their work.
 - (c) Committee members must receive training in hazard identification.
 - (8) Safety orientations for seasonal workers. All seasonal workers doing hand labor and field work must receive at least the following information in their safety orientation meeting before beginning work for the first time or when work conditions or locations change in a way that reasonably could affect their safety or health:
 - (a) **Reserved.** [~~OR OSHA publication 1951, "Safe Practices – Working With Hazardous Agricultural Chemicals" if their work is covered by OAR 437-004-9800, Hazard Communication and/or the Worker Protection Standard for Agricultural Chemicals.~~]
- NOTE: OAR 437-004-9800(7)(d), Hazard Communication requires you to give OR-OSHA publication 1951, "Safe Practices – Working With Hazardous Agricultural Chemicals" to every employee.**
- NOTE: This paragraph satisfies the training requirements under 437-004-9800, Hazard Communication for workers doing field and hand labor. It also satisfies the requirements for training under the Worker Protection Standard, 437-004-40 CFR 170.130(c). See Subdivision W.
- (b) Employer's safety and health rules for the work they will do.
 - (c) The employer's procedures for workers to contact supervisors or managers in case of accident, illness or any problem related to safety or health.
 - (d) The employer's procedures for treatment of injured or sick workers and the summoning of emergency assistance.
 - (e) The location of posted safety and health information.
- NOTE: These are only minimum requirements and are not all inclusive. Other parts of the Agriculture standard require specific or general training for certain types of work. Those requirements are in addition to these general orientation 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 2-1999, f. 4/30/99, ef. 4/30/99.
OR-OSHA Admin. Order 7-2000, f. 7/26/00, ef. 7/26/00.
OR-OSHA Admin. Order 1-2002, f. 2/15/02, ef. 2/15/02.
OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-0340

Portable Ladders.

(1) Definitions. Portable ladder terms mean:

(a) Check. A lengthwise separation of the wood, most of which occurs across the rings of annual growth.

(b) Compression failure. A deformation (buckling) of the fibers due to excessive compression along the grain.

(c) Decay. Disintegration of wood substance due to action of wood-destroying fungi. It is also known as dote and rot.

(d) Extension ladder. A nonself-supporting portable ladder of adjustable length. It has two or more sections that adjust to varied lengths.

(e) Extension trestle ladder. An adjustable, self-supporting portable ladder made of a trestle ladder base and a vertical extension section.

(f) Ladder. A device with steps, rungs or cleats between rails, for people to climb up or down.

(g) Low density wood. Exceptionally light in weight and usually deficient in strength for the species.

(h) Platform ladder. A fixed length, self-supporting portable ladder with a platform at the highest permissible standing level.

(i) Platform. A landing surface for working or standing.

(j) Reinforced plastic. A plastic made stronger than its base by the addition of high strength fillers, usually fibers, fabrics or mats.

(k) Section.

(A) Bottom or base section. The lowest section of a nonself-supporting portable ladder.

(B) Middle or intermediate section. The section(s) between the top (fly) and bottom (base) sections of a nonself-supporting portable ladder.

(C) Top or fly section. The uppermost section of a nonself-supporting portable ladder.

(l) Sectional ladder. A nonself-supporting, fixed length, portable ladder, with two or more sections of ladder that may combine to work as a single ladder. Its size is the length of the assembled sections.

(m) Shake. A separation along the grain, most of which occurs between the rings of annual growth.

(n) Single section ladder. A fixed length, nonself-supporting portable ladder made of one section.

(o) Stepladder. A fixed length, self-supporting portable ladder with a hinged back.

(p) Top cap. The very top part of a stepladder.

(q) Top step. The first step below the top cap of a stepladder. If the ladder has no top cap, the top step is the first one below the top of the rails.

(r) Trestle ladder. A fixed length, self-supporting portable ladder made of two sections and hinged at the top. It can be climbed by two people at once, one per side.

(s) Wane. Bark, or the lack of wood from any cause, on the corner of a piece.

(t) Wood irregularities. Natural characteristics in or on wood that may lower its durability, strength, or utility.

(u) Working Load Rating. The maximum load authorized by the manufacturer for the ladder.

(2) Application. This standard covers the selection, use and care of portable ladders used in agriculture. It does not cover orchard ladders, special ladders, combination step and extension ladders, aisle way stepladders, and shelf ladders.

(3) Ladder selection. Portable reinforced plastic (fiberglass) ladders must comply with American National Standard A14.5-1992. Wood ladders must comply with American National Standard A14.1-1994. Metal ladders must comply with American National Standard A14.2-1990.

NOTE: Unaltered and properly maintained ladders that meet the ANSI standard in effect at the time of their manufacture comply with this standard as do ladders that comply with newer versions of the particular ANSI standard.

(4) Condition of wood ladders. There must be no sharp edges or splinters on wood parts. Visual inspection must show no check, shake, wane, compression failures, decay, or other wood irregularities. Ladders may not be made of low density wood.

(5) General requirements – all ladders.

(a) Step spacing must be uniform and not more than 12 inches. Steps must be parallel and level when the ladder is in the normal use position.

(b) All joints, attachments and working parts of ladders must be tight and not worn to a point that causes a hazard. Do not use ladders with damaged or bent parts.

(c) Replace frayed or badly worn rope.

(d) Safety feet and other auxiliary equipment must in good condition.

(e) Inspect ladders and remove from use any with defects. Ladders awaiting repair must be tagged, "Dangerous, Do Not Use."

(f) There can be no dents, breaks or bends in the side rails or rungs;

(g) Do not make ladders by fastening cleats across a single rail.

(h) Portable ladders must have nonslip bases.

(6) General requirements – portable stepladders.

(a) The minimum width between side rails at the top, inside to inside, must be not less than 11 1/2 inches. From top to bottom, the side rails must spread at least 1-inch for each foot of length of the stepladder.

(b) The bottoms of the four rails must have insulating nonslip material.

(c) There must be a metal spreader or locking device strong enough to hold the ladder open. The spreader must have no sharp points or edges. For Type III ladders, the pail shelf and spreader can be one unit (a shelf-lock ladder).

(7) Use – all ladders. Use ladders only for purposes approved or recommended by the manufacturer.

(a) Do not load ladders beyond their working load rating. Do not allow more than one person at a time on ladders **not intended by the manufacturer to hold more than one person**.

- (b) Do not use ladders in front of doors that open toward the ladder without blocking, locking or guarding the door.
- (c) Do not use ladders placed on boxes, barrels, or other unstable bases to obtain additional height.
- (d) Do not use ladders with broken or missing steps, rungs, or cleats, broken side rails, or other faulty parts.
- (e) Do not splice sections of short ladders together to make a long one.
- (f) When used, metal reinforcers must be on the underside of rails of portable rung ladders.
- (g) A ladder for access to a roof must extend at least 3 feet above the top support point, at the eave, gutter, or roof line.
- (h) Secure ladders as necessary when used on surfaces that may allow slipping or movement. Use one of the following methods:
 - (A) non-slip bases on the ladder feet; or,
 - (B) steel points or safety shoes on the ladder feet, designed for the type of surface the ladder is on; or
 - (C) nail the ladder to the floor, or set it against secured blocks or chocks.
- NOTE: Non-slip bases are not a substitute for care in safely placing, lashing, or holding a ladder on oily, metal, concrete, or slippery surfaces.
- (i) Use portable ladders only on a surface that gives stable, level footing.
- (j) The climber must face the ladder and have free use of both hands when climbing up or down.
- (k) Do not step or jump between erected ladders.
- (l) There must be only one person at a time on a ladder unless its labeling specifically allows use by more than one person.
- (m) Do not use ladders as planks or bridges between walking surfaces or in other horizontal applications.
- (n) Do not use ladders to gain additional height from elevated surfaces like scaffolds, truck beds, vehicle bodies, tractor scoops or boom truck buckets.
- (o) Do not use metal ladders or wood ladders with vertical metal parts for electrical work or where they may contact electric conductors. This type ladder must have markings reading "WARNING – do not use around energized electrical equipment" or words of equal meaning.
- (8) Use of specific types of ladders.
 - (a) Portable stepladders. Do not use stepladders more than 20 feet long.
 - (A) Do not climb on the back section of the ladder unless it has steps meant for climbing. Do not stand on the top step or top cap of stepladders.
 - (B) There must be only one person at a time on the ladder.
 - (C) Do not use stepladders in freestanding positions when not fully opened. Do not use them as supports for working platforms or scaffolding planks.
 - (b) Portable rung ladders.
 - (A) Single ladder.
 - (i) Do not use single ladders more than 30 feet long.
 - (ii) Place these ladders at an angle shown in Figure 1.
 - (iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Single ladders are acceptable as fixed ladders only when they comply with 437-004-0360.

(B) Two-section ladder.

(i) Do not use two-section extension ladders more than 60 feet long. All ladders of this type must have two sections, one to fit within the side rails of the other, and arranged so that the upper section will raise and lower.

(ii) Set up and use extension ladders so that the top section or fly is resting on the bottom section or base. Rung locks must be in the proper position.

(iii) Place these ladders at an angle shown in Figure 1.

(iv) The tops must be tied down or secured if there is a possibility of sliding or movement.

(v) On two-section extension ladders the minimum overlap for the two sections in use must be as follows:

graphic

C is the top support

E is the foot of the ladder

$EB = 1/4 EC$

Figure 1. Diagram of proper ladder pitch

(C) Sectional ladder.

(i) Do not use assembled combinations of sectional ladders longer than lengths allowed in this subdivision.

(ii) Place these ladders at an angle shown in Figure 1.

(iii) The tops must be tied down or secured if there is a possibility of sliding or movement.

(iv) Do not use three section extension ladders longer than 72 feet.

(D) Trestle and extension trestle ladder. Do not use trestle ladders, or extension sections or base sections of extension trestle ladders more than 20 feet long.

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.

437-004-0405

Exits and ~~[Exit Routes]~~ **Emergency Action Plan.**

(1) Application. This does not apply to agricultural labor housing, agricultural buildings or mobile workplaces, such as vehicles or vessels. This applies to non-agricultural type buildings like offices and warehouses where employees spend most of their work time.

(2) Definitions.

(a) Exit. The part of the exit route, separate from other areas, that is a protected way out of a work area.

(b) Exit route. A continuous, unobstructed path from anywhere in a work area to a safe outside place. Exit routes are three dimensional.

(3) General.

- (a) There must be permanent, unobstructed exit routes to get out of work areas safely during emergencies.
 - (b) There must be two or more exit routes depending on the size and layout of the work area and the number of people involved. A single exit route is acceptable only if all workers can get out through it safely during an emergency. Locate multiple exit routes apart from each other.
- (4) Design.
- (a) There must be a clear and unobstructed access and exit to any location more than 4 feet above or below the floor. Access may be by a ladder, stairs or ramp that complies with these standards.
 - (b) There must be unobstructed access to exit routes.
 - (A) Exit routes must not pass through or into lockable rooms or dead ends.
 - (B) Exit routes must be mostly level or have stairs or ramps.
 - (c) Exits must open from the inside without keys, tools or special knowledge. Devices that lock only from the outside are acceptable. There must be nothing on an exit door that could hinder its use during an emergency.
 - (d) An exit route must be able to handle the maximum number of persons allowed in the area it serves. Exit capacity must not decrease if the direction of travel changes.
 - (e) Exit routes must be at least 6 feet 8 inches high at all points.
 - (f) Exit routes must be at least 28 inches wide between handrails and wider if needed to handle the expected occupant load.
 - (g) Nothing can project into an exit route that reduces its minimum height or width.
 - (h) Exit routes must minimize danger to workers during emergencies.
 - (i) Exit routes must have adequate lighting.
- (5) Marking.
- (a) There must be exit signs at all emergency exits, except those that are obviously and clearly identifiable. Install additional directional signs to exits where necessary.
 - (b) If workers could mistake a nonexit for an exit, mark it, "Not an Exit" or mark it to indicate its real use.
- (6) Special situations.
- (a) Exit doors serving hazardous areas must swing in the direction of exit and open in a way that does not obstruct exit passageways. Do not allow anything to obstruct or prevent the use of an exit. During fire or panic, it must be easy to open all escape exit doors and windows from the inside.
 - (b) Rooms subject to extremes in temperature or with toxic atmospheres must have at least one door that opens from the inside. If this door is lockable from the outside, lighting and a set of instructions for opening the door must be inside the room on or near the door. It must be easy to find equipment needed to open the door from the inside. Also, inside the room there must be a way to communicate or a control that operates an alarm outside the building, or if other employees are on duty 24 hours a day, outside the room.

Stat. Auth.: ORS 654.025(2) 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.

437-004-0630

Noise Exposure.

(1) You must have a noise monitoring program (see (3) below) when an employee's exposure equals or is more than an 8-hour time-weighted average (TWA) of 85 decibels (dB).

NOTE: Most large or older farm machines and tractors, especially those without cabs, have the potential to produce more than 85 decibels of noise. Audiologists often say that if you have to shout or significantly raise your voice to talk with somebody 2 feet away, the noise is probably at the action level of 85 decibels.

(2) Noise classified as impulse or impact noise cannot be more than 140 dB peak sound pressure level.

NOTE: These noises are sudden and sharp and include such things as the firing of a weapon and sudden release of pressurized air.

(3) Noise Monitoring

Employers must use a noise sampling strategy that determines which employees need to be part of a hearing conservation program. This sampling will also determine their need for hearing protection or when to consider engineering controls.

(a) Use a sound level meter or a dosimeter to do noise level surveys over an 8-hour period to get a time-weighted average. When the employees are mobile or there are significant changes in the sound level or impulse noise components, you must use representative personal sampling unless area samples produce equal results.

(b) Repeat the noise surveys when there is a change in production, process, equipment or controls that increases noise levels or exposures to or above the action level. Also repeat the surveys if the increase in noise may require additional noise reduction from hearing protectors already in use.

(c) Notify each monitored employee of the noise monitoring results if the exposure was at or above the 85 decibel TWA.

(d) The employer must give affected employees or their representatives the opportunity to observe the noise survey process.

WARNING: Employer responsibilities in this standard require special knowledge and equipment to be done successfully. In most cases it is advisable and in some cases mandatory to have these tests done by a professional. See OAR 437-004-0630(5)(c).

(4) Engineering Controls

If the noise survey results are more than in Table 1 below, use administrative or engineering controls to reduce the noise, if feasible. If not feasible or if the engineering or administrative controls fail to reduce the noise to levels within Table 1 limits, provide appropriate training and enforce the use of hearing protection to reduce the noise to levels within the Table 1.

(a) You must provide all hearing protection equipment and devices without cost to the employee. Employees may voluntarily elect to use their own equipment but the employer is responsible to assure that it provides adequate protection.

(b) All hearing protection equipment and devices must be kept serviceable and clean according to the manufacturer's recommendations or accepted audiological practices.

Table 1

(5) Hearing Conservation Program

Establish and maintain an effective hearing conservation program for employees whose noise exposure equals or is more than an 8-hour TWA of 85 decibels, or an equivalent dose, before attenuation by hearing protectors. The program must include an audiometric (hearing) testing program, employee training and personal hearing protection.

(a) All parts of the hearing conservation program must be without charge to employees.

(b) You must tell the employees to avoid high levels of non-occupational noise exposure during the 14-hour period before any hearing test. Also, you must assure that the employee uses hearing protection or avoids noise exposure on the job for 14 hours before getting a baseline hearing test.

(c) Only a technician certified by the Council of Accreditation in Occupational Hearing Conservation, a licensed or certified audiologist, otolaryngologist or other physician may do a hearing test. Certified technicians must be responsible to an audiologist, otolaryngologist or physician.

NOTE: Audiograms must meet the requirements of OAR 437-002-1910.95, Appendix C, Audiometric Measuring Instruments. The background noise in the test room must comply with OAR 437-002-1910.95, Appendix D, Audiometric Test Rooms. The audiometers used for the test and the methods must comply with the American National Standard Specifications for Audiometers, S3.6-1969. Oregon OSHA strongly suggests that employers hire a professional to provide services required by this standard.

(6) There are two types of hearing tests required by this standard.

(a) A baseline hearing test must be done within 6 months of the employees first exposure to noise at or above the action level. This test is the comparison base for future tests.

(b) After the baseline audiogram is done, each employee still exposed at or above the 8-hour TWA must have annual hearing tests. Compare the annual tests to the baseline tests to determine if there has been a standard threshold shift.

(c) The audiologist, otolaryngologist or physician evaluation of the audiogram may revise the baseline when the standard threshold shift in hearing revealed by the test is persistent or the hearing threshold shows an improvement over the baseline audiogram.

(7) For purposes of this standard a standard threshold shift of hearing compared to the baseline hearing test is called a standard threshold shift and is an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. In Oregon there is no allowance from age correction charts for this calculation.

(8) Follow-Up

The qualified person doing the hearing test will compare the results of the annual hearing test to the baseline audiogram to see if it is valid and if there has been a standard threshold shift change in hearing as in (7) above.

(a) The employer may retest to assure validity within 30 days and use that as the annual test.

(b) An audiologist, otolaryngologist or physician must review all problem audiograms to determine the need for more evaluation. This may include follow up as described below.

(c) The employer is responsible to pay for this evaluation.

(d) The employer must assure that the reviewing audiologist, otolaryngologist or physician has the following information:

(A) A copy of the requirements for hearing conservation in this section.

(B) The employees baseline and most recent audiogram.

(C) Measurements of the noise levels in the audiometric test room.

(D) Records of audiometer calibrations as required by this section.

(9) If an employee's hearing test reveals a standard threshold shift, the employer must do (a) through (d) below unless the physician determines that the shift is not work-related or aggravated by work-related noise exposure.

(a) Fit employees with hearing protection, train them in its use and care. Require them to use it.

(b) Refit and retrain employees already using hearing protectors. Give them hearing protectors that offer more noise reduction.

(c) Refer the employee for a clinical audiological evaluation or an otological examination, as appropriate, if additional testing is necessary. Also refer the employee to the physician if the wearing of hearing protectors causes or aggravates a medical problem of the ear.

(d) Inform the employee of the need for an otological examination if a medical pathology of the ear could be unrelated to the use of hearing protectors.

(10) If future hearing tests show that the standard threshold shift of hearing is not persistent and the noise exposure is less than a 8-hour TWA of 90 decibels the employer must tell the employee of the new results and may end the required use of hearing protectors.

(11) Training

All employees exposed at or above the 8-hour TWA of 85 decibels must receive initial and annual training. Update the training program if there are changes in the hearing protection or work processes. The training program must include:

(a) The effects of noise on hearing.

(b) The purpose of hearing protectors, the advantages, disadvantages and attenuation of various types and instructions on selection, fitting, use and care.

(c) The purpose of the hearing test and an explanation of the test procedures.

(12) Hearing Protection

Hearing protection must be available at no cost to all employees exposed to an 8-hour TWA of 85 dB. Wearing of hearing protection that offers adequate noise reduction is mandatory for employees exposed at 90 dB TWA. In addition, if an employee has had a standard threshold shift, they must wear hearing protection at 85 decibels or more.

(a) The employer must ensure proper initial fitting of the hearing protectors, supervise the correct use of them, and provide training in the use and care of the hearing protectors.

(b) The employees must have the chance to select the hearing protectors from a variety of appropriate hearing protectors and the hearing protectors must reduce the noise to at least an 8-hour TWA of 90 decibels.

(c) When noise exposure increases enough that the hearing protectors may no longer give proper protection, reevaluate the adequacy of the protectors noise reduction. Provide more effective hearing protection where necessary.

(13) Recordkeeping

The employer must keep employees noise exposure records [~~for 2 years and audiometric test records until the worker leaves the company~~] **according to the Access to Employee Exposure and Medical Records standard OAR 437-004-0005**. The records must be available to employees, former employees, representatives designated by the employee and Oregon OSHA. The test record must include:

- (a) Name and job classification of the employee.
- (b) Date of the audiogram.
- (c) The examiner's name.
- (d) Date of the last acoustic or exhaustive calibration of the audiometer.
- (e) Employees most recent noise exposure assessment.

(14) If you sell your business, give the buyer all records required by this section.

NOTE: The professional who does your audiometric work will supply most of the records required by this section.

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.

437-004-0800

Storage and Handling of Anhydrous Ammonia.

(1) Scope.

(a) This standard applies to the operation of anhydrous ammonia systems including refrigerated ammonia storage systems.

(b) This standard does not apply to applications that use ammonia solely as a refrigerant.

(2) Definitions.

(a) Appurtenances – All devices such as pumps, compressors, safety relief devices, liquid-level gaging devices, valves and pressure gages.

(b) Capacity – Total volume of the container in standard U.S. gallons.

(c) Certified – See universal definitions in Subdivision 4/B, OAR 437-004-0100.

(d) Code – The Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels of the American Society of Mechanical Engineers (ASME) – 1968.

(e) Container – Includes all vessels, tanks, cylinders, or spheres used for transportation, storage, or application of anhydrous ammonia.

(f) Cylinder – A container of 1,000 pounds of water capacity or less built according to Department of Transportation specifications.

(g) Design pressure – is identical to the term "Maximum Allowable Working Pressure" used in the Code.

(h) DOT – U.S. Department of Transportation.

(i) DOT specifications – Regulations of the Department of Transportation in 49 CFR Chapter I.

(j) Farm vehicle (implement of husbandry) – A vehicle for use on a farm with a container of not more than 1,200 gallons water capacity on it.

(k) Labeled – See universal definitions in Subdivision 4/B, OAR 437-004-0100.

- (l) Listed – See universal definitions in Subdivision 4/B, OAR 437-004-0100.
- (3) Basic rules.
- (a) Approval of equipment and systems. All systems, equipment and appurtenances must comply with one of the following three paragraphs.
- (A) If installed before February 8, 1973, it must comply with American National Standard for the Storage and Handling of Anhydrous Ammonia, K61.1-~~[1966 or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M-1 in effect at the time of construction]~~ **1999 or CGA G-2.1-1999.**
- (B) It must be listed and labeled by a nationally recognized testing laboratory as defined in 29 CFR 1910.7.
- (C) A registered engineer may test and certify custom designed and custom built systems as meeting the criteria in OAR 437-004-0800(3)(a)(A). This certification must be on file with the employer for agency review. The certification must detail the test criteria, data and results along with the qualifications of the person doing the test.
- (b) Requirements for construction, original test and recertification of non-refrigerated containers.
- (A) Only competent persons and/or companies may design, install and maintain non-refrigerated containers.
- (B) Containers used with systems in OAR 437-004-0800(4), (7), (8) and (9) must comply with the Code (Boiler and Pressure Vessel Code, Sec VIII, Unfired Pressure Vessels of the American Society of Mechanical Engineers (ASME) – 1968). Construction under Table UW 12 at a basic joint efficiency of less than 80 percent is not authorized.
- (C) Containers more than 36 inches in diameter or 250 gallons water capacity must comply with one or more of the following:
- (i) Containers must be stress relieved after fabrication according to the Code, or
- (ii) Cold-form heads must be stress relieved, or
- (iii) Use only hot-formed heads.
- (D) Paragraph (B) above does not prohibit the continued use or reinstallation of containers constructed and maintained according to the 1949, 1950, 1952, 1956, 1959, and 1962 editions of the Code or any revisions in effect at the time of fabrication.
- (E) Welding to the shell, head or any other part of the container subject to internal pressure must comply with the Code. Other welding is permitted only on saddle plates, lugs or brackets attached to the container by the container manufacturer.
- (F) Containers used with systems in OAR 437-004-0800(5) must comply with DOT specifications.
- (c) Marking of containers. Keep the original markings on refrigerated and non-refrigerated containers as they were at the time of installation.
- (d) Location of containers.
- (A) When selecting the location for the storage container consider the physiological effects as well as adjacent fire hazards. Locate containers outside buildings unless the building was built for this purpose.
- (B) Locate permanent storage containers 50 feet from a dug well or other sources of potable water supply, unless the container is a part of a water-treatment installation.
- (C) Keep storage areas free of readily ignitable materials such as waste, weeds and long dry grass.

(e) Container appurtenances.

(A) Design appurtenances to stand the maximum working pressure of that part of the system on which they are installed. Make appurtenances from material proved suitable for anhydrous ammonia service.

(B) All connections to containers except safety relief devices, gaging devices, or those fitted with a .0550-inch orifice must have shutoff valves as close to the container as practicable.

(C) Excess flow valves where required by these standards must close automatically at the rated flows of vapor or liquid specified by the manufacturer. The connections and line including valves and fittings protected by an excess flow valve must have a larger capacity than the rated flow of the excess flow valve so that the valve will close in case of failure of the line or fittings.

(D) Liquid-level gaging devices that require bleeding of the product to the atmosphere and are built so that outward flow will not be more than that passed by a .0550-inch opening do not need excess flow valves.

(E) Openings from the container or through fittings attached directly on the container to which pressure gage connections are made need do not need excess flow valves if they are not larger than .0550-inch.

(F) Excess flow and back pressure check valves where required by this section must be inside the container or if outside as close as practicable to where the line enters the container. In the latter case installation must prevent strain beyond the excess flow or back pressure check valve from causing a break between the container and the valve.

(G) Excess flow valves must have a bypass not to exceed a .0400-inch opening to allow equalization of pressures.

(H) All excess flow valves must have plain and permanent markings with the name or trademark of the manufacturer, the catalog number, and the rated capacity.

(f) Piping, tubing and fittings.

(A) All piping, tubing and fittings must be made of material suitable for anhydrous ammonia service.

(B) All piping, tubing and fittings must be designed for a pressure not less than the maximum pressure under which they might operate.

(C) All refrigerated piping must conform to the Refrigeration Piping Code, American National Standard, B31.5-1966 with addenda B31.5a-1968 as it applies to ammonia.

(D) Piping on non-refrigerated systems must be at least American Society for Testing and Materials (ASTM) A-53-69 Grade B Electric Resistance Welded and Electric Flash Welded Pipe or equal. For welded or welded and flanged joints the pipe must be at least schedule 40. For threaded joints the pipe must be at least schedule 80. Do not back-weld threaded connections. Do not use brass, copper or galvanized steel pipe.

(E) Do not use tubing made of brass, copper, or other material subject to attack by ammonia.

(F) Do not use cast iron fittings but this does not prohibit the use of fittings made specifically for ammonia service or malleable, nodular, or high strength gray iron meeting American Society for Testing and Materials (ASTM) A47-68, ASTM 395-68 or ASTM A126-66 Class B or C.

(G) Use joint compounds that are resistant to ammonia.

(g) Hose specifications.

(A) Hose used in ammonia service must conform to the joint Agricultural Ammonia Institute – Rubber Manufacturers Association Specifications for Anhydrous Ammonia Hose.

(B) Hose subject to container pressure must be designed for a minimum working pressure of 350 p.s.i.g. and a minimum burst pressure of 1,750 p.s.i.g. Hose assemblies, when made up, must be capable of withstanding a test pressure of 500 p.s.i.g.

(C) Hose and hose connections on the low-pressure side of flow control or pressure-bleeding valves must have a bursting pressure rating of not less than five times the pressure setting of the safety relief devices protecting that part of the system but not less than 125 p.s.i.g. All connections must not leak when connected.

(D) Where using hose to transfer liquid from one container to another, “wet” hose is recommended. Such hose must have approved shutoff valves at the discharge end. Prevent excessive pressure in the hose.

(E) On all hose 1/2-inch outside diameter and larger, used for the transfer of anhydrous ammonia liquid or vapor, there must be etched, cast, or impressed at 5-foot intervals the following information.

NOTE: “Anhydrous Ammonia” xxx p.s.i.g. (maximum working pressure), manufacturer’s name or trademark, year of manufacture.

NOTE: In place of this requirement the same information may be on a nameplate permanently attached to the hose.

Table 1

Footnotes

(h) Safety relief devices.

(A) Every container in systems covered by OAR 437-004-0800(4), (7), (8) and (9) must have one or more safety relief valves of the spring-loaded or equivalent type. The discharge from safety-relief valves must vent away from the container, upward and unobstructed to the atmosphere. All relief-valve discharge openings must have suitable rain caps that allow free discharge of the vapor and prevent entrance of water. Accumulated condensation must drain away. The rate of the discharge must comply with Table 1.

(B) Container safety-relief valves must be set to start-to-discharge as follows, with relation to the design pressure of the container:

Table

(C) Safety relief devices in systems covered by OAR 437-004-0800(4), (7), (8) and (9) must discharge at not less than the rates in (3)(h)(A) above before the pressure is in excess of 120 percent (not including the 10 percent tolerance in (3)(h)(B) above) of the maximum permitted start-to-discharge pressure setting of the device.

(D) Arrange safety relief valves to minimize the possibility of tampering. If the pressure setting adjustment is external, the relief valves must have a means of sealing the adjustment.

(E) Shutoff valves must not be between the safety relief valves and the container; except, that a shutoff valve may be where the arrangement of this valve is such as to always afford full required capacity flow through the relief valves.

(F) Safety relief valves must have direct communication with the vapor space of the container.

(G) Each container safety relief valve used with systems covered by OAR 437-004-0800(4), (7), (8) and (9) must have plain and permanent markings with the symbol "NH3" or "AA"; with the pressure in pounds-per-square-inch at which the valve is set to start-to-discharge; with the actual rate of discharge of the valve at its full open position in cubic feet per minute of air at 60 degrees F. and atmospheric pressure; and the manufacturer's name and catalog number.

Example: "NH3 250-4050 Air" indicates that the valve is suitable for use on an anhydrous ammonia container, is set to start-to-discharge at a pressure of 250 p.s.i.g., and that its rate of discharge at full open position is 4,050 cubic feet per minute of air.

(H) There must be no connection on either the upstream or downstream side that restricts the flow capacity of the relief valve.

(I) A hydrostatic relief valve must be between each pair of valves in the liquid ammonia piping or hose to relieve into the atmosphere at a safe location.

(i) General.

(A) All stationary storage installations must have at least two readily accessible suitable gas masks. Full face masks with ammonia canisters, **not cartridges**, approved by the [~~Bureau of Mines, U.S. Department of the Interior~~] **National Institute of Occupational and Safety and Health (NIOSH)**, are suitable for emergency action for most leaks, particularly those that are outdoors. For protection in concentrated ammonia atmospheres the use of self-contained breathing air apparatus is mandatory. Refer to **OAR 437-004-1041 Respiratory Protection, Division 4/I** for additional requirements for personal protective equipment.

(B) Stationary storage installations must have an easily accessible shower or a 50-gallon drum of water.

(C) Each vehicle transporting ammonia in bulk except farm applicator vehicles must carry a container of at least 5 gallons of water and a full face mask.

(j) Charging of containers.

(A) The filling densities for unrefrigerated containers must not be more than the following:

Table

(B) Aboveground uninsulated containers may be charged 87.5 percent by volume if the temperature of the anhydrous ammonia being charged is not lower than 30 degrees F. or if the charging of the container stops at the first indication of frost or ice formation on its outside surface and does not resume until the frost or ice is gone.

(k) Transfer of liquids.

(A) Anhydrous ammonia must always be at a temperature suitable for the material of construction and the design of the receiving container.

(B) The employer must require the continuous presence of an attendant in the vicinity of the operation during ammonia transfer.

(C) Charge and use containers only with authorization of the owner.

(D) Gage and charge containers only in the open atmosphere or in buildings or areas for that purpose.

(E) Pumps used for transferring ammonia must be made for that purpose.

(i) Pumps must be designed for at least 250 p.s.i.g. working pressure.

(ii) Positive displacement pumps must have, installed off the discharge port, a constant differential relief valve discharging into the suction port of the pump through a line of

sufficient size to carry the full capacity of the pump at relief valve setting, which setting and installation must be according to the pump manufacturer's recommendations.

(iii) On the discharge side of the pump, before the relief valve line, there must be a pressure gage graduated from 0 to 400 p.s.i.

(iv) Plant piping must have shutoff valves as close as practical to pump connections.

(F) Compressors for transferring or refrigerating ammonia must be recommended for ammonia service by the manufacturer.

(i) Compressors must be designed for at least 250 p.s.i.g. working pressure.

(ii) Plant piping must have shutoff valves located as close as practical to compressor connections.

(iii) A relief valve large enough to discharge the full capacity of the compressor must be connected to the discharge before the shutoff valve.

(iv) Compressors must have pressure gages at suction and discharge graduated to at least 1 1/2 times the maximum pressure.

(v) Adequate means, such as a drainable liquid trap, must be on the compressor suction to minimize the entry of liquid into the compressor.

(G) In case the hose breaks, loading and unloading systems must have suitable devices to prevent emptying of the storage or supply container. Backflow check valves or properly sized excess flow valves must be where necessary to provide this protection. If such valves are not practical, remotely operated shutoff valves may be acceptable.

(I) Tank car unloading points and operations.

(A) Unloading of tank cars must conform to the applicable recommendations in DOT regulations.

(B) The employer must insure that unloading operations are done by reliable persons properly instructed and with the authority to monitor careful compliance with all applicable procedures.

(C) Caution signs must be on the track or car to give warning to people approaching the car from the open end or ends of the siding. They must be left up until after the car is empty and disconnected from discharge connections. Signs must be metal or other suitable material, at least 12 inches by 15 inches and bear the words "STOP – Tank Car Connected" or "STOP – Men at Work" the word, "STOP," being in letters at least 4 inches high and the other words in letters at least 2 inches high.

(D) The track of a tank car siding must be substantially level.

(E) Set the brakes and block the wheels on cars during unloading.

(m) Liquid-level gaging device.

(A) Each container except those filled by weight must have an approved liquid-level gaging device. A thermometer well must be in containers without a fixed liquid-level gaging device.

(B) All gaging devices must be arranged so that the maximum liquid level to which the container is filled is readily determined.

(C) Gaging devices that require bleeding of the product to the atmosphere such as the rotary tube, fixed tube, and slip tube devices must have a maximum opening of the bleed valve not larger than .0550-inch unless they have an excess flow valve. (This requirement does not apply to farm vehicles used for the application of ammonia as in OAR 437-004-0800(9).)

- (D) Gaging devices must have a design pressure equal to or greater than the design pressure of their host container.
- (E) Fixed tube liquid-level gages must indicate the container's 85 percent fill level of its water capacity.
- (F) Use columnar gage glasses only on stationary storage installations. They must have shutoff valves with metallic handwheels, excess-flow valves and extra heavy glass adequately protected with a metal housing applied by the gage manufacturer. They must be shielded from the direct rays of the sun.
- (n) Electrical equipment and wiring.
 - (A) Electrical equipment and wiring for use in ammonia installations must be general purpose or weather resistant as appropriate.
 - (B) Electrical systems must comply with 4/S.
- (4) Systems using stationary, non-refrigerated storage containers.
 - (a) Applies to all storage containers except portable DOT containers.
 - (A) The minimum design pressure and construction for non-refrigerated containers is 250 p.s.i.g.
 - (B) Each filling connection must have a combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.
 - (C) All liquid and vapor connections to containers except filling pipes, safety relief connections, and liquid-level gaging and pressure gage connections with orifices not larger than .0550-inch required in OAR 437-004-0800(3)(e)(D) and (E) must have excess-flow valves.
 - (D) Each storage container must have a pressure gage graduated from 0 to 400 p.s.i. Gages must be designated for use in ammonia service.
 - (E) All containers must have vapor return valves.
 - (b) Safety-relief devices.
 - (A) Every container must have one or more safety-relief valves of the spring-loaded or equivalent type according to OAR 437-004-0800(b)(9).
 - (B) The rate of discharge of spring-loaded safety relief valves on underground containers may be a minimum of 30 percent of the rate of discharge in Table 1. After installation, do not uncover containers with this protection until empty of liquid ammonia. Consider containers that may contain liquid ammonia before being installed underground and before being completely covered with earth to be aboveground containers when determining the rate of discharge requirements of the safety-relief valves.
 - (C) On underground installations where there is a probability of the manhole or housing becoming flooded, the discharge from vent lines must be above the high water level. All manholes or housings must have ventilated louvers or their equivalent, the area which equal or exceed the combined discharge areas of safety-relief valves and vent lines that discharge their content into the manhole housing.
 - (D) Do not restrict vent pipes. They may not be a smaller diameter than the relief-valve outlet connection.
 - (E) Vent pipes from two or more safety-relief devices on the same unit, or similar lines from two or more different units may run into a common discharge header, if

the capacity of the header is at least equal to the sum of the capacities of the individual discharge lines.

(c) Reinstallation of containers.

(A) Containers that were installed underground must not be reinstalled above- ground or underground, unless they withstand hydrostatic pressure retests at their original rating required by the code under which they were made. They must show no serious corrosion.

(B) Containers reinstalled aboveground, must have safety devices or gaging devices that comply with OAR 437-004-0800(i) and this paragraph respectively for above-ground containers.

(d) Installation of storage containers.

(A) Aboveground containers, except as in (4)(d)(E) below must have substantial concrete or masonry supports, or structural steel supports on firm concrete or masonry foundations. All foundations must extend below the frost line.

(B) Horizontal aboveground containers must be on foundations that permit expansion and contraction. Containers must have supports that prevent the concentration of excessive loads on the supporting portion of the shell. That part of the container in contact with foundations or saddles must have corrosion protection.

(C) The top of underground containers must be below the frost line and at least 2 feet below the surface. If ground conditions make compliance with these requirements impracticable, installation methods must prevent physical damage. It is not necessary to cover the part of the container where there are manhole and other connections.

Anchor or weight containers when necessary to prevent floating.

(D) Underground containers must be on a firm foundation (firm earth is OK) and surrounded with compacted earth or sand. The container must have a corrosion resisting protective coating. This coating must remain undamaged when placing the container into the ground.

(E) Containers with foundations (portable or semi-portable tank containers with suitable steel "runners" or "skids" and commonly known in the industry as "skid tanks") must comply with OAR 437-004-0800(4)(a)(A).

(F) There must be secure anchorage or adequate pier height to prevent container flotation where high flood water might occur.

(G) The distance between underground containers of over 2,000 gallons capacity must be at least 5 feet.

(e) Protection of appurtenances.

(A) Protect valves, regulators, gages and other appurtenances against tampering and physical damage. This also applies during transit of containers.

(B) All connections to underground containers must be within a dome, housing, or manhole and with access by means of a substantial cover.

(f) Damage from vehicles. Protect ammonia systems from vehicle damage.

(4) Refrigerated storage systems.

(a) Container design.

(A) The design temperature must be the minimum temperature to which the container will be refrigerated.

(B) Containers with a design pressure more than 15 p.s.i.g. must comply with OAR 437-004-0800(3)(b), and the materials must be from those in API Standard 620,

Recommended Rules for Design and Construction of Large, Welded, Low-Pressure Storage Tanks, Fourth Edition, 1970, Tables 2.02, R2.2, R2.2(A), R2.2.1, or R2.3.

(C) Containers with a design pressure of 15 p.s.i.g. and less must comply with the applicable requirements of API Standard 620 including its Appendix R.

(D) Use the Code as a guide to select austenitic steels or non-ferrous materials to build containers for use at the design temperature.

(E) The filling density for refrigerated storage containers must be such that the container will not be liquid full at a liquid temperature corresponding to the vapor pressure at the start-to-discharge pressure setting of the safety-relief valve.

(b) Installation.

(A) Containers must be on suitable non-combustible foundations.

(B) There must be adequate protection against flotation or other water damage where high flood water might occur.

(C) Containers for product storage at less than 32 degrees F. must have protection from freezing and consequent frost heaving.

(c) Shutoff valves. When operating conditions make it advisable, there must be a check valve on the fill connection and a remotely operated shutoff valve on other connections below the maximum liquid level.

(d) Safety relief devices.

(A) Set safety relief valves to start-to-discharge at a pressure not more than the design pressure of the container. The valves must prevent a maximum pressure in the container of more than 120 percent of the design pressure. Relief valves for refrigerated storage containers must be self-contained spring-loaded, weight-loaded, or self-contained pilot-operated type.

(B) The total relieving capacity must be the larger of:

(i) Possible refrigeration system upset such as (1) cooling water failure, (2) power failure, (3) instrument air or instrument failure, (4) mechanical failure of any equipment, (5) excessive pumping rates.

(ii) Fire exposure determined by Compressed Gas Association (CGA) S-1, Part 3, Safety Relief Device Standards for Compressed Gas Storage Containers, 1959, except that "A" must be the total exposed surface area in square feet up to 25 feet above grade or to the equator of the storage container if it is a sphere, whichever is greater. If the relieving capacity required for fire exposure is greater than that required by OAR 437-004-0800(a), the additional capacity may be provided by weak roof to shell seams in containers operating at essentially atmospheric pressure and having an inherently weak roof-to-shell seam. The weak roof-to-shell seam is not to provide any of the capacity required in OAR 437-004-0800(a).

(C) If vent lines conduct the vapors from the relief valve, the back pressure under full relieving conditions must not be more than 50 percent of the start-to-discharge pressure for pressure balanced valves or 10 percent of the start-to-discharge pressure for conventional valves. The vent lines must prevent accumulation of liquid in the lines.

(D) The valve or valve installation must provide weather protection.

(E) Atmospheric storage must have vacuum breakers. Ammonia gas, nitrogen, methane, or other inert gases are acceptable to provide a pad.

(e) Protection of container appurtenances. Protect appurtenances against tampering and physical damage.

- (f) Reinstallation of refrigerated storage containers. When reinstalling containers that require field fabrication, reconstruct and reinspect them according to their original construction requirements. Pressure retest the containers and if rerating is necessary, it must comply with applicable requirements.
- (g) Damage from vehicles. Protect containers from damage by vehicles.
- (h) Refrigeration load and equipment.
 - (A) Compute the total refrigeration load as the sum of the following:
 - (i) Load imposed by heat flow into the container caused by the temperature differential between design ambient temperature and storage temperature.
 - (ii) Load imposed by heat flow into the container caused by maximum sun radiation.
 - (iii) Maximum load imposed by filling the container with ammonia warmer than the design storage temperature.
 - (B) A single refrigeration system may serve more than one storage container.
 - (i) Compressors.
 - (A) There must be a minimum of two compressors either of which must be large enough to handle the loads. Where there are more than two compressors, there must be minimum standby equipment equal to the largest normally operating equipment. Filling compressors are acceptable as standby equipment for holding compressors.
 - (B) Compressors must be able to operate with a suction pressure at least 10 percent below the minimum setting of the safety valve(s) on the storage container and must withstand a suction pressure at least equal to 120 percent of the design pressure of the container.
 - (j) Compressor drives.
 - (A) Each compressor must have its individual driving unit.
 - (B) There must be an emergency power source that can handle the loads unless facilities are available to safely dispose of vented vapors while the refrigeration system is not operating.
 - (k) Automatic control equipment.
 - (A) The refrigeration system must have suitable controls to govern the compressor operation.
 - (B) There must be an emergency alarm system to function in case the container pressure rises to the maximum allowable operating pressure.
 - (C) An emergency alarm and shut-off must be in the condenser system to respond to excess discharge pressure caused by failure of the cooling medium.
 - (D) All automatic controls must be prevent operation of alternate compressors unless the controls will function with the alternate compressors.
 - (l) Separators for compressors. An entrainment separator of suitable size and design pressure must be in the compressor suction line of lubricated compression. The separator must have a drain and gaging device.
 - (m) Condensers. The condenser system may be air or water cooled or both. The condenser must have minimum design pressure of at least 250 p.s.i.g. There must be a way to purge noncondensibles either manually or automatically.
 - (n) Receiver and liquid drain. A receiver must have a liquid-level control to discharge the liquid ammonia to storage. The receiver must be able to operate at least 250 p.s.i.g. and have the necessary connections, safety valves, and gaging device.

- (o) Insulation. Insulated refrigerated containers and pipelines must have covers of a material of suitable quality and thickness for the temperatures. Weatherproofing must be flame retardant.
- (5) Systems using portable DOT containers.
 - (a) Cylinders must comply with DOT specifications and must comply with 49 CFR Chapter I and Marking Portable Compressed Gas Containers to Identify the Material Contained, ANSI Z48.1-1954 (R1970).
 - (b) Store cylinders in an area free from ignitable debris and in such manner as to prevent external corrosion. Storage may be indoors or outdoors.
 - (c) Cylinders filled according to DOT regulations will become liquid full at 145 degrees F. Protect cylinders from heat sources such as radiant flame and steam pipes. Do not apply heat directly to cylinders to raise the pressure.
 - (d) Store cylinders in a way that protects them from vehicles or external damage.
 - (e) Any cylinder designed to have a valve protection cap must have the cap securely in place when the cylinder is not in service.
- (6) Tank motor vehicles for the transportation of ammonia.
 - (a) This paragraph applies to containers and equipment on tank motor vehicles including semitrailers and full trailers used to transport ammonia. This paragraph does not apply to farm vehicles. For requirements covering farm vehicles, refer to OAR 437-004-0800 (8) and (9). Paragraph (b) below applies to this paragraph unless otherwise noted. Containers and pertinent equipment for tank motor vehicles for the transportation of anhydrous ammonia, must also comply with DOT requirements.
 - (b) Design pressure and construction of containers.
 - (A) The minimum design pressure for containers must comply with DOT regulations.
 - (B) The shell or head thickness of containers must be at least 3/16-inch.
 - (C) All container openings, except safety relief valves, liquid-level gaging devices, and pressure gages, must have labels that designate whether they communicate with liquid or vapor space.
 - (c) Container appurtenances.
 - (A) Protect appurtenances from physical damage.
 - (B) All connections to containers, except filling connections, safety relief devices, and liquid-level and pressure gage connections, must have suitable automatic excess flow valves, or may have quick-closing internal valves, that must remain closed except during delivery operations. The control mechanism for such valves may have a secondary control remote from the delivery connections and such control mechanism must have a fusible section (melting point 208 degrees F. to 220 degrees F.) that permits the internal valve to close automatically in case of fire.
 - (C) Filling connections must have automatic back-pressure check valves, excess-flow valves, or quick-closing internal valves, to prevent back-flow in case the filling connection breaks. You do not need an automatic valve where the filling and discharge connect to a common opening in the container shell and that opening has a quick-closing internal valve as in OAR 437-004-0800(f)(3)(ii).
 - (D) All containers must be capable of spray loading (filling in the vapor space) or with an approved vapor return valve of adequate capacity.
- (d) Piping and fittings.

- (A) Securely mount all piping, tubing, and fittings and protect them from damage. Protect hoses while the vehicle is moving.
- (B) Fittings must comply with OAR 437-004-0800(3)(e). Pipe must be Schedule 80.
- (e) Safety relief devices.
- (A) The discharge from safety relief valves must vent upward away from the container and to the open air in such a manner as to prevent any impingement of escaping gas. Use loose-fitting rain caps. Size of discharge lines from safety valves must not be smaller than the nominal size of the safety-relief valve outlet connection. Condensate that accumulates in the discharge pipe must drain off.
- (B) Any part of liquid ammonia piping that may close at both ends must have a hydrostatic relief valve.
- (f) Transfer of liquids.
- (A) Determine the content of tank motor vehicle containers by weight, by a suitable liquid-level gaging device, or other approved methods. If using a liquid-level measurement, the container must have a thermometer well. This volume when converted to weight must not be more than the filling density specified by the DOT.
- (B) Any pump, except a constant speed centrifugal pump, must have a suitable pressure actuated bypass valve permitting flow from discharge to suction when the discharge pressure rises above a pre-determined point. Pump discharge must also have a spring-loaded safety relief valve set at a pressure not more than 135 percent of the setting of the bypass valve or more than 400 p.s.i.g., whichever is larger.
- (C) Compressors must have manually operated shutoff valves on both suction and discharge connections. Pressure gages of bourdon-tube type must be on the suction and discharge of the compressor before the shutoff valves. The compressor must not operate if either pressure gage is removed or is inoperative. A spring-loaded, safety-relief valve capable of discharging to atmosphere the full flow of gas from the compressor at a pressure not more than 300 p.s.i.g. must be between the compressor discharge and the discharge shutoff valve.
- (D) Valve functions have clear and legible identification by metal tags or nameplates permanently affixed to each valve.
- (g) Full trailers and semitrailers.
- (A) Securely attach full trailers to the vehicle drawing them with suitable drawbars and a safety chain (or chains) or safety cables.
- (B) Every full trailer or semitrailer must have reliable brakes that operate from the driver's seat.
- (C) Every full trailer must have self-energizing brakes.
- (D) Full trailers must follow substantially in the path of their towing vehicle and will not whip or swerve dangerously from side to side.
- (E) Where using a fifth wheel, securely fasten it to both units, and use a positive locking mechanism that prevents separation of the two units except by manual release.
- (h) Protection against collision. Each tank motor vehicle must have properly attached bumpers or chassis extension that protects the tank, piping, valves, and fittings from physical damage.
- (i) Chock blocks. There must be at least two chock blocks. Use these blocks to prevent rolling during loading and unloading.

- (j) Portable tank containers (skid tanks). Where these tanks are for farm storage they must comply with OAR 437-004-0800(4)(a)(A). When portable tank containers substitute for cargo tanks and are permanently on tank motor vehicles for the transportation of ammonia, they must comply with the requirements of this paragraph.
- (7) Systems on farm vehicles other than for the application of ammonia.
- (a) Application. This paragraph applies to containers of 1,200 gallons capacity or less and equipment on farm vehicles (implements of husbandry) not used to apply ammonia to the soil. OAR 437-004-0800(4) applies unless otherwise noted.
- (b) Design pressure and classification of containers.
- (A) The minimum design pressure for containers is 250 p.s.i.g.
- (B) Container shell or head thickness must be at least 3/16-inch.
- (c) Mounting containers.
- (A) A suitable "stop" or "stops" must be on the vehicle or on the container so that the container does not be come loose from its mounting.
- (B) At one or more places on each side of the container, a "hold down" device must anchor the container to the vehicle.
- (C) When containers are on four-wheel trailers, the weight must be even over both axles.
- (d) Container appurtenances.
- (A) All containers must have a fixed liquid-level gage.
- (B) All containers with a capacity more than 250 gallons must have a pressure gage with a dial graduated from 0-400 p.s.i.
- (C) The filling connection must have a combination back-pressure check valve and excess-flow valve; one double or two single back-pressure check valves; or a positive shutoff valve in conjunction with either an internal back-pressure check valve or an internal excess flow valve.
- (D) All containers with a capacity more than 250 gallons must be equipped for spray loading or have an approved vapor return valve.
- (E) All vapor and liquid connections except safety-relief valves and those specifically exempted in ANSI K61.1-1966, must have approved excess-flow valves or quick-closing internal valves that, except during operating periods, must be closed.
- (F) Fittings must have protection from damage by a metal box or cylinder with an open top fastened to the container or by rigid guards welded to the container on both sides of the fittings or by a metal dome. If there is a metal dome, the relief valve must vent through the dome.
- (G) If there is a liquid withdrawal line in the bottom of a container, its connections, including hose, must not be lower than the lowest horizontal edge of the vehicle axle.
- (H) Secure both ends of the hose while in transit.
- (e) Marking the container. The words, "Caution – Ammonia" must be on each side and the rear end of the container in letters at least 4 inches high or its markings must comply with DOT regulations.
- (f) Farm vehicles. All vehicles must carry a container of at least 5 gallons of water for washing ammonia from the skin.
- (8) Systems on farm vehicles for the application of ammonia.
- (a) This applies to systems using containers of 250 gallons capacity or less on farm vehicles (implements of husbandry) used to apply ammonia to the soil. OAR 437-004-

0800(4) applies unless otherwise noted. Larger containers must comply with ANSI K61.1-1966.

(b) Design pressure and classification of containers.

(A) The minimum design pressure for containers is 250 p.s.i.g.

(B) The shell or head thickness of a container is less than 3/16-inch.

(c) Mounting of containers. All containers and flow-control devices must have secure mountings.

(d) Container valves and accessories.

(A) Each container must have a fixed liquid-level gage.

(B) The filling connection must have a combination back-pressure check valve and an excess-flow valve; one double or two single back-pressure check valves; or a positive shut-off valve in conjunction with an internal back-pressure check valve or an internal excess-flow valve.

(C) You can fill the applicator tank by venting to open air if the bleeder valve orifice is not more than 7/16-inch in diameter.

(D) Regulation equipment may connect directly to the tank coupling or flange only with a flexible connection between the regulating equipment and the rest of the liquid withdrawal system. Otherwise, connect the regulating equipment flexibly to the container shutoff valve.

(E) There need be no excess flow valve in the liquid withdrawal line if the controlling orifice between the contents of the container and the outlet of the shutoff valve is not more than 7/16-inch in diameter.

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.

437-004-1030

Work Clothing.

(1) General requirements.

(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.

(c) Do not wear clothing soaked with enough flammable liquids to be hazardous.

NOTE: See OAR 437-004-2230 for requirements for PPE while 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 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-1305

Medical Services and First Aid.

(1) Definitions.

(a) Emergency medical service is care by a medically trained person such as in a hospital, clinic, ambulance or rescue vehicle.

(b) Qualified first aid person has evidence to show valid first aid and CPR training within the last 2 years.

(2) First aid supplies.

(a) You must provide first aid supplies based on the types of injuries that could occur at the place of employment. The first aid supplies must be available to all workers on all shifts immediately when needed. Do not lock up or otherwise restrict access to first aid supplies.

(b) Protect first aid supplies from damage, deterioration or contamination. Clearly mark containers. First aid containers may be sealed to protect the contents from contamination.

Note: Supplies such as gloves and a mouth barrier device are personal protective equipment covered by Subdivision I, Personal Protective Equipment.

(3) Medical treatment and services. Emergency medical services for injured or sick employees must be available **and summoned** in time to give appropriate treatment for the circumstances.

NOTE: These services can be by outside sources such as the local 911 response system or by employees who are qualified first aid persons.

(4) Emergency medical plan.

(a) To determine the appropriate type of medical service for each place of employment, you must do a survey and develop an emergency medical plan. You must evaluate these areas:

(A) Determine the types of injuries and/or illnesses that could occur at the work site.

(B) Contact the local emergency response system and get information about their ability to handle these types of emergencies and in what time frame they can respond.

Consider such things as nearness of the responding teams, traffic, equipment, average response times and whether the system is staffed by volunteers or full time people.

(C) Based on this information, decide whether the local response system can handle your situation or whether you need your own qualified first aid persons.

(b) If the local response system is adequate then the minimum emergency medical plan must contain your instruction to employees for action in case of an injury or illness and the emergency phone number they are to use. Post this emergency medical plan where employees gather or are most likely to read it.

(c) If the response system is not able to handle your potential injuries and/or illnesses then your plan must also contain clear and specific instructions for employees' actions in case of injury or illness. The plan of action must have:

(A) The names, locations and phone numbers of people trained and authorized to give first aid and other treatment.

(B) Any special instructions about communications like two-way radios, telephones or other provisions for emergency communication to contact the emergency medical services.

(C) Availability of transportation to a point where an ambulance can be met or to the nearest suitable medical facility.

(D) Train all employees to know the information in the medical plan and their responsibilities during an emergency.

(5) Emergency eyewash and shower facilities. This does not apply to [~~agricultural field work and work covered by the Worker Protection Standard~~]**early entry work**

170.112(c)(8) or agriculture field work covered under 170.150 which requires provision of an “emergency eyeflush” container as per the pesticide label. Where the pesticide label specifies an “emergency eyewash” be provided when handling the pesticide concentrate, as in mixing and loading activities, these rules apply.

(a) When there are substances that could injure workers by getting into their eyes or onto their bodies, provide them with a system to decontaminate themselves.

(b) Where plumbed water is available at fixed work sites, you must provide a plumbed eyewash station that meets the following:

(A) Locate it so that exposed employees can reach it and begin treatment in 10 seconds or less. The path must be unobstructed and cannot require the opening of doors or passage through obstacles unless other employees are always present to help the exposed worker.

(B) Install the equipment according to the manufacturer’s instructions.

(C) The system must have valves that stay open without the use of the hands.

(D) Water temperature must be appropriate for the anticipated types of exposures. Water pressure must be 15 to 25 psi with a flow of .4 gallons per minute for 15 minutes. If the system manufacturer’s instructions require different criteria, follow them to assure proper operation of the system.

(c) Where plumbed water is available at fixed work sites you must provide a plumbed full body shower that meets the following:

(A) Locate it so that exposed employees can reach it and begin treatment in 10 seconds or less. The path must be unobstructed and cannot require the opening of doors or passage through obstacles unless other employees are always present to help the exposed worker.

(B) Install the equipment according to the manufacturer’s instructions.

(C) The system must have valves that stay open without the use of the hands.

(D) Water temperature must be appropriate for the anticipated types of exposures. Water flow must be at least 30 gallons per minute. If the system manufacturer’s instructions require different criteria, follow them to assure proper operation of the system.

(d) For mobile work sites and sites without plumbed water, self-contained systems are acceptable. These systems must provide clean, fresh water at flow rates adequate to provide complete decontamination of the eyes or body. Follow the manufacturer’s instructions for use and inspection.

(e) If the MSDS or other information about the expected contaminant gives treatment instructions different from those required in this section, follow them. If the manufacturer requires specific decontaminants or procedures, you must provide them in addition to the eyewash or shower. Certain substances like acids, chlorine and anhydrous ammonia require special treatment. The employer must assure this treatment is available.

(f) If fountains or showers can freeze, take protective measures to prevent freezing.

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, 9/22/06, ef. 9/22/06.

437-004-1470

Training.

If workers are expected or required to fight fires, their level of training and the fire fighting equipment they use must be adequate for the level of fire fighting involvement expected or required by the employer. The employer must provide all needed equipment and training at no cost to employees **and be in compliance with Division 2/L, OAR 437-002-0182 Oregon Rules for Fire Fighters, 1910.155 Fire Protection, and 1910.156 Fire Brigades.**

Stat. Auth.: ORS 654.025(2) 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.

437-004-1700

Forklifts and Other Powered Industrial Trucks.

(1) General requirements.

(a) This section has safety requirements for the maintenance and use of fork trucks, forklifts, platform lift trucks, motorized hand trucks, and other specialized industrial trucks used in agriculture. These are considered vehicles and additional standards are found in Division 4/U. This does not apply to compressed air or non-flammable compressed gas-operated industrial trucks, nor to agricultural vehicles defined elsewhere in this standard, nor to vehicles intended primarily for earth moving or over-the-road hauling.

(b) Modifications and additions that affect capacity and safe operation must have the manufacturer's prior written approval. Change the capacity, operation and maintenance instruction plates, tags or decals to reflect any changes to the vehicle.

(c) If the truck has front-end attachments not installed by the factory, the truck markings must identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with the load laterally centered.

(d) Keep nameplates and markings in place and legible.

(2) Safety guards.

(a) Overhead guards.

(A) If a lift truck operator could be struck by falling, or stacked objects, the truck must have an overhead guard. The guard must be strong enough to support impact load tests in Table 1:

Table 1

(B) Guards that pass the test must have a metal tag permanently attached to the canopy where reading it from the ground is easy. This tag must show the impact test load, in foot-pounds to which similar guards have been tested.

Note: Guards required by (2)(a)(A) through (C), or by the following rules, do not have to withstand the impact of a capacity load falling from any height.

(C) Untested guards ~~may~~ **must** be made of material in Table 2 or material of equivalent strength **or stronger**.

Table 2

(D) The construction of canopy guards built to comply with (C) above presumes four upright members. Guards with less than four upright members must be equally strong.

(i) Canopy type overhead guard frames must have structural rigidity.

(ii) All guard mountings or attaching brackets must provide adequate support to the upright members of the canopy type overhead guard.

(iii) Cantilever overhead guards must be of equivalent strength.

(E) Guards must not interfere with good visibility. Openings in the top must not be more than 6 inches in one of their two dimensions. Guards must be large enough to extend over the operator under all normal circumstances of operation, including forward tilt.

(i) If the mast-tilting mechanism fails, the overhead guard must not injure the operator.

(ii) There must be at least 39 inches of clear vertical space between the operator's seat when depressed and the underside of the guard. There must be at least 74 inches of clear vertical space between the platform for standing operators and the underside of the guard.

Note: Where overall height of truck with forks in lowered position is limited by head room conditions and there is insufficient space for vertical clearance or for the operator to assume a normal driving position, normal overhead guard heights may be reduced, or the overhead guard may be omitted. The height and stability of stacks of piled material, the weight of individual units handled, and the operating space available must provide reasonable safety for the operator if removing the overhead guard is necessary.

(b) Back rest. Lift trucks that handle small objects or loose units must have a vertical load back rest.

(A) It must be strong enough to prevent the load or any part of it from falling toward the operator.

(B) It must not interfere with good visibility.

(C) Size of openings must not be more than 6 inches in one dimension.

(c) Shear point guards. Shear points on forklift loaders and similar type vehicles must have guards.

(3) Fuel handling and storage.

(a) Store and handle liquid fuels according to 4/H, OAR 437-004-0720.

(b) Store and handle liquefied petroleum gas fuel according to 4/H, OAR 437-004-0780.

(4) Changing and charging storage batteries.

(a) Battery chargers must be in areas that are safe for that purpose.

(b) There must be facilities for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage and for adequate ventilation.

(c) Use a conveyor, overhead hoist or equivalent material handling equipment to handle large batteries that power electric forklifts.

- (d) Use only a carboy tilter or siphon to handle electrolyte.
- (e) Pour acid into water not water into acid when servicing batteries.
- (f) Set truck brakes before changing or charging batteries.
- (g) Vent caps must function and the battery compartment cover(s) must be open to dissipate heat.
- (h) There must be no smoking in the charging area.
- (i) Prevent open flames, sparks, or electric arcs in battery charging areas.
- (j) Keep tools and other metallic objects away from the top of uncovered batteries.
- (5) Lighting for operating areas. Where general lighting is too dim, the vehicle must have its own directional lighting.
- (6) Dockboards (bridge plates). See 4/D, OAR 437-004-0390(1).
- (7) Trucks~~[-and railroad cars]~~.
- (a) Set the brakes on trucks or chock the rear wheels to prevent them from rolling while they are boarded with powered industrial trucks.
- (b) Use nose jacks when necessary to support a semitrailer and prevent a nose dive during the loading or unloading.
- (8) Operator training.
 - (a) Develop and use a training program for operators of powered industrial trucks. The employer or an outside training entity may give the training. It must contain at least the following:
 - (A) A study and test portion covering at least the rules in this standard, the information provided by the manufacturer for operation of the equipment and any special information dictated by the operating environment.
 - (B) A behind-the-wheel driving portion, supervised by a person competent in the operation of the particular equipment and familiar with the area and circumstances of its use.
 - (C) Tailor both parts to the specific type of equipment, the material being handled and the location of its use.
 - (b) Only fully trained workers may operate powered industrial trucks, except those under direct supervision as part of the behind-the-wheel training program.
 - (c) Conduct refresher training for drivers annually or when their driving record indicates the need for additional training, whichever is more frequent.
 - (d) Employers may not consider a new worker trained and qualified based on experience from a previous employer unless the previous experience was on the same type of equipment under substantially the same operating circumstances and the worker had a safe operating record acceptable to the new employer.
- (9) Truck operations.
 - (a) Do not drive a powered industrial truck up to anyone standing in front of a fixed object.
 - (b) Do not stand or pass under the elevated part of a powered industrial truck.
 - (c) Only the operator may ride on a powered industrial truck unless it has a second seat or area intended for another rider.
 - (d) Do not put any part of the body between or reach through the uprights of the mast or outside the running lines of the truck.
 - (e)

- (A) Fully lower the forks or platform on an unattended powered industrial truck. Also, neutralize the controls, turn off the power, and set the brakes. Block the wheels if it is on an incline.
- (B) Unattended is when the operator is 25 feet or more away but vehicle remains in view or anytime the vehicle is not in view.
- (C) When the operator gets off the truck but is within 25 feet and can still see it, the forks or platform must be down, the controls in neutral and the brakes set, unless loading or unloading items to or from the forks or platform.
- (f) Keep a safe distance from the edge of ramps or platforms while on an elevated dock, platform or freight car.
- (g) Whenever a truck has vertical only, or vertical and horizontal controls that elevate with the lifting carriage or forks for lifting personnel, do the following:
 - (A) Use a safety platform secured to the lifting carriage and/or forks.
 - (B) Have a way for people on the platform to shut off power to the truck.
 - (C) Provide protection from falling objects as necessary by the operating conditions.
- (h) When using a forklift to lift people, take the following precautions:
 - (A) Use a platform with standard guardrails secured to the lifting carriage or forks.
 - (B) The hydraulic system must not be able to drop faster than 135 feet per minute if any part of the system fails.
 - (C) Someone must be in the operator's station while workers are on the platform.
 - (D) Someone must be in the normal operating position while raising or lowering the platform.
 - (E) Other than very slow inching, do not move the truck from point-to-point with the platform raised more than 4 feet while workers are on it.
 - (F) There must be a guard on the area between the platform and the mast to prevent contact with chains or other shear points.
- (10) Traveling.
 - (a) Climb or descend grades slowly.
 - (A) Drive loaded trucks with the load upgrade if the incline is steep enough to spill the load.
 - (B) Tilt the load back and raise the forks or platform only as far as necessary to clear the road surface.
 - (b) Drive only as fast as conditions permit, leaving enough time to stop.
 - (c) Slow down on wet and slippery surfaces.
 - (d) Do not run over loose objects.
- (11) Loading.
 - (a) Do not handle loads heavier than the rated capacity of the truck.
 - (b) Treat trucks with attachments as partially loaded trucks when not handling a load.
 - (c) The forks or platform must be under the load as far as possible and the mast tilted backward to stabilize the load.
 - (d) Do not tilt forward with forks or platform elevated except to pick up a load. Do not tilt an elevated load forward except when it is in a deposit position over a rack, chute or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.
- (12) Maintenance of powered industrial trucks.
 - (a) If a powered industrial truck needs repair, take it out of service until repairs are done.
 - (b) Do not add fuel while the engine is running.

- (c) Clean up spilled oil or fuel or allow it to completely evaporate before restarting the engine. Do not use the vehicle without the fuel filler cap in place.
- (d) Do not use a flame to check the electrolyte level in batteries or the level in fuel tanks.
- (e) Only authorized persons may repair powered industrial trucks.
- (f) Disconnect the battery before working on the electrical system.
- (g) Use only replacement parts that assure equivalent safety as the originals.
- (h) Do not change the relative positions of parts from what they were when the vehicle was made. Do not remove parts except as in (l) below. Do not add counter weighting to fork trucks without approval by the manufacturer.
- (i) Check powered industrial trucks daily before using them. Do not use them if any condition is found that adversely affects the vehicle's safety.
- (j) Remove from service any vehicle that gives off hazardous sparks or flames.
- (k) Keep powered industrial trucks clean, free of lint, excess oil, and grease. Clean the trucks with noncombustible cleaners. Do not use low flash point (below 100 degrees F.) solvents. Follow the directions on the cleaner's label.
- (l) You may convert powered industrial trucks from gasoline to liquefied petroleum gas fuel if the converted truck complies with the specifications for LP or LPG trucks. Use only approved conversion equipment.
- (13) Control of gases and fumes. Take effective measures to keep the concentration levels of carbon monoxide gas created by powered industrial trucks below the levels in 4/Z, OAR 437-004-9000.
- (14) ROPS requirements. Rollover protective structures are covered in 4/U, OAR 437-004-3650.

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.

437-004-2000

Powered Saws.

(1) Scope – This applies to [~~band saws, radial arm saws and table saws~~] **nonportable powered saws.**

(2) General.

(a) Machines must not vibrate when the tool is run at full speed.

(b) Arbors and mandrels must have firm and secure bearing and be free from play.

(c) Do not use any automatic cutoff saw that strokes continuously without operator control of each stroke.

(d) Saw frames and tables must have lugs cast on the frame or an equivalent way to limit the size of the saw blade to avoid overspeed.

(e) Circular saw fences must attach to the table or table assembly without changing their alignment with the saw. The fences for tilting tables or tilting arbors must remain parallel with the saw regardless of the angle of the saw with the table.

- (f) Circular saw gages must slide in accurately machined grooves or tracks to insure exact alignment with the saw for all positions of the guide.
 - (g) Hinged saw tables must be lockable in any position and in alignment with the saw.
 - (h) Guard all belts, pulleys, gears, shafts, and moving parts to comply with OAR 437-004-1970, Division 4/O.
 - (i) Electrically ground all equipment to comply with OAR 437-004-2810, Division 4/S.
 - (j) A guard must cover the rear portion of the saw beneath or behind the table when exposed to contact. An exhaust hood may serve this purpose if appropriate.
 - (k) Do not mount any saw, cutter head or tool collar on a machine not made to work with them.
 - (l) There must be combs (featherboards) or suitable jigs to use when a standard guard cannot be used, like for dadoing, grooving, jointing, moulding, and rabbeting.
- (3) Machine controls and equipment.
- (a) There must be a mechanical or electrical power control switch so the operator does not have to leave the point of operation to shut off the machine.
 - (b) Use a locking-type belt shifter or other positive device on machines driven by belts and shafting.
 - (c) Provide a positive method to prevent a machine from automatically restarting after a power failure.
 - (d) Locate power and operating controls within reach of the operator. Do not allow the operator to reach over the cutter head to make adjustments. This does not apply to constant pressure controls used only for setup.
 - (e) Provide a positive means to make electric motor driven machine controls and devices inoperable during repairs or adjustments.
 - (f) Protect foot-operated controls from unexpected or accidental activation.
 - (g) Cover feed rolls, of feeder attachments, to protect the operator from contacting hazardous parts.
- (4) Band saws.
- (a) Completely enclose band wheels. Construct guards of at least No. 14 U.S. gauge metal, nominal 2-inch wood material, or mesh or perforated metal of not less than U.S. gauge No. 20 with 3/8-inch or smaller openings.
 - (b) Enclose all portions of the band saw blade except the working side of the blade between the guide and the table.
- (5) Radial arm saws.
- (a) Radial arm saws must have a hood that completely encloses the upper portion of the blade down to a point that includes the end of the saw arbor.
 - (b) The saw blade must not extend beyond the front edge of the table or roll case.
 - (c) A lower blade guard must guard the lower part of the blade and stay in contact with the material during the entire cut.
 - (d) When ripping, radial arm saws must have anti-kickback fingers on each side of the saw.
 - (e) Mark the direction of saw rotation on the hood.
 - (f) Attach a permanent warning sign prohibiting rip or plough cuts from the rear of the guard. Rip and plough only against the direction of blade rotation.
 - (g) Blades or cutting heads on radial arm saws must automatically return gently and stay at the back of the table.

NOTE: Use a counterweight or other effective means, a retractor device, or tilt the arm sufficiently to keep the saw at the back when released by the operator.

(6) Table saws.

(a) Circular crosscut table saws must have a hood that covers the saw at least to the depth of the teeth.

(b) The hood must automatically adjust itself to the thickness of and remain in contact with, the material being cut. When the guard may mar the surfaces of material, it may be raised slightly to avoid contact.

(c) The hood must protect the operator from flying splinters and broken saw teeth.

(d) Fully guard rip table saws, and combination rip and crosscut table saws as required in OAR 437-004-2000(4)(a) and (b). They must have a spreader and anti-kickback fingers. The spreader is not necessary when rabbeting, ploughing, grooving or for cutting dados.

(e) Fully guard the part of the table saw beneath the table.

(f) Use push sticks to guide short stock and ends through table saws without self-feeding devices.

(7) Wobble saws. Do not insert wedges between a saw disk and its collar to form a "wobble saw" for rabbeting.

NOTE: This rule does not apply to properly designed and adjustable rabbeting blades.

(8) Cracks in blades. Do not use a circular saw blade with a crack greater in length than those in the following table:

Table

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.

437-004-2230

Guarding **and Operation** of Portable Powered Tools.

(1) Portable powered tools.

(a) Portable circular saws.

(A) All portable, power-driven circular saws with a blade diameter greater than 2 inches must have guards above and below the base plate or shoe. The upper guard must cover the saw to the depth of the teeth, except for the minimum arc to permit tilting the base for bevel cuts. The lower guard must cover the saw to the depth of the teeth, except for the minimum arc that allows proper retraction and contact with the work.

When the tool is taken out of the work, the lower guard must automatically and quickly return to covering position. This does not apply to meat cutting saws.

(B) In addition to the provisions in (1)(a)(A) above, the lower guard must have a lug or lever, remote from the blade teeth, that allows the operator to safely lift the guard for starting unusual cuts.

(b) Switches and controls.

(A) All hand-held powered circular saws with a blade diameter more than 2 inches, electric, hydraulic or pneumatic chain saws and percussion tools without positive accessory holding means must have a constant pressure switch or control that will shut off the power when pressure is released.

(B) The following hand-held powered tools must have a constant pressure control switch. They may have a lock-on control if a single motion of the same finger or fingers that turns it on can turn it off.

(i) Tappers, drills, fastener drivers, horizontal, vertical and angle grinders with wheels more than 2 inches in diameter. Disc sanders with discs more than 2 inches in diameter. Belt sanders, reciprocating saws, saber, scroll and jig saws with blade shanks more than a nominal 1/4-inch and other similarly operating powered tools.

(C) All other hand-held powered tools may have either a positive "on-off" control, or other controls as in (1)(b)(A) and (B) above.

(i) Saber, scroll and jig saws with non-standard blade holders may use blades with shanks which are non-uniform in width, if the narrowest part of the shank is an integral part in mounting the blade.

(ii) Measure the blade shank width at the narrowest part of the blade when saber, scroll and jig saws have non-standard blade holders.

(iii) "Nominal" in this subparagraph means +0.05-inch.

(D) Exclusions. This subparagraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, garden appliances, household and kitchen appliances, personal care appliances or to fixed machinery.

(c) Power chain saws.

(A) In addition to (1)(b)(A) above, all power chain saws must meet American National Standard B175.1-1991, Safety Code for Power Chain Saws.

(B) Inspect power chain saws daily when in use and always keep them in good repair. Do not use saws with cracked or loose handle bars or defective parts.

(C) Stop power chain saw engines before fueling.

(D) Power chain saws must have a working chain brake if originally equipped with one.

(E) Chain brakes and other safety features must always work correctly.

(F) All hand-held gasoline powered chain saws must have a constant pressure throttle control that will shut off power to the saw chain when the pressure is released.

(G) Employees using chain saws must wear flexible ballistic nylon pads, chaps or other equivalent protection in a manner that protects the legs from the thigh to the top of the boot. Employers must provide and pay for this equipment.

(H) Do not drop-start chain saws or other power saws.

NOTE: Drop-starting saws is permitted outside of the basket of an aerial lift only after ensuring that the area below the aerial lift is clear of people.

(I) The operator must have secure footing when starting the saw.

(J) Start and operate the saw only when all other workers are clear.

(K) Stop the engine when carrying the power saw but not between cuts during consecutive felling, bucking, limbing or cutting operations.

(i) The chain must not be turning and the operator's hand must be off the throttle lever while moving between work locations.

(ii) Carry small chain saws at your side with the bar of the saw pointed to the rear.

(L) Stop the engine for all cleaning, refueling, adjustments, and repairs to the motor.

(d) Portable belt sanders. Belt sanders must have guards at each nip point where the sanding belt runs onto a pulley. These guards must prevent the operator's hands or fingers from contacting the nip points. The unused run of the sanding belt must have guards against accidental contact.

(e) Cracked saws. Do not use cracked saws.

(f) Grounding. Portable electric powered tools must meet the requirements of Subdivision 4/S.

(2) Pneumatic tools and hose.

(a) Only use compressed air supply hose and hose connections rated for the pressure and service required by the tools they serve.

(b) There must be a shut-off valve at the manifold or permanent pipe outlet of the compressed air supply.

(c) Do not couple or uncouple hose without first shutting off the compressed air supply unless the couplers have check valves that automatically shut it off.

(d) Pneumatic fastener-driving tools and other power-driven fastener tools, except as allowed in (e) below, must have a safety device to prevent ejection of nails, staples or fasteners when the tool is not in firm contact with the work.

(e) You may use power-driven fastener-driving tools without the safety device only when using staples with a diameter of .0475-inch (18 gauge A.W.G.) or less and the operator and all workers within 15 feet are wearing suitable eye protection. This does not apply to office staplers.

(f) Do not use oxygen or combustible gases to drive pneumatic tools.

(g) Direct the exhaust from pneumatic power tools away from the operator.

(3) Portable abrasive wheels.

(a) Definitions.

(A) Mounted wheels. Mounted wheels of 2-inch diameter or smaller, of various shapes. They may be either organic or inorganic bonded abrasive wheels. They are secured to plain or threaded steel mandrels.

(B) Organic bonded wheels. Organic wheels are wheels bonded by an organic material such as resin, rubber, shellac or other similar bonding agent.

(C) Portable grinding. A grinding operation where the grinding machine is hand-held and may move easily from one location to another.

(D) Reinforced wheels. The term "reinforced" as applied to grinding wheels defines a class of organic wheels that contain strengthening fabric or filament. The term "reinforced" does not cover wheels using such mechanical additions as steel rings, steel cup backs or wire or tape winding.

(E) Safety guard. A safety guard is an enclosure to restrain the pieces of the grinding wheel if it breaks while in use.

(F) Tuck pointing. Removal, by grinding, of cement, mortar or other non-metallic jointing material.

(G) Tuck pointing wheels. Tuck pointing wheels, Type 1, reinforced organic bonded wheels have diameter, thickness and hole size dimension. They are subject to the same limitations of use and mounting as Type 1 wheels.

Limitation: Wheels used for tuck pointing should be reinforced, organic bonded.

(H) Type 11 flaring cup wheels. Type 11 flaring cup wheels have double diameter dimensions D and J, and in addition have thickness, hole size, rim and back thickness dimensions. Grinding is always done on the rim face, W dimension. Type 11 wheels are subject to all limitations of use and mounting listed for Type 6 straight sided cup wheels.

Figure 1

Side grinding wheel with a wall flared or tapered outward from the back. Wall thickness at the back is normally greater than at the grinding face (W).

Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. Also, when unthreaded hole wheels are specified the inside flat, K dimension, must be large enough to hold a suitable flange.

(I) Type 6 straight cup wheels. Type 6 cup wheels have diameter, thickness, hole size, rim thickness and back thickness dimensions. Grinding is always done on the rim face, W dimension.

Type 6 Straight Cup Wheels

Figure 2

Side grinding wheel with a diameter, thickness and hole with one side straight or flat and the opposite side recessed. This type, differs from Type 5 in that the grinding is on the wall of the abrasive created by the difference between the diameter of the recess and the outside diameter of the wheel. Therefore, the wall dimension "W" takes precedence over the diameter of the recess as an essential intermediate dimension to describe this shape type.

Limitation: Minimum back thickness, E dimension, should not be less than one-fourth T dimension. In addition, when unthreaded hole wheels are specified, the inside flat, K dimension, must be large enough to hold a suitable flange.

(J) Type one straight wheels. Type 1 straight wheels have diameter, thickness and hole size dimensions and should be used only on the periphery. Mount type 1 wheels between flanges.

Figure 3

Peripheral grinding wheel with a diameter, thickness and hole.

Limitation: Hole dimension (H) should not be greater than two-thirds of wheel diameter dimension (D) for precision, cylindrical, centerless or surface grinding applications.

Maximum hole size for all other applications should not exceed one-half wheel diameter.

(b) General requirements. Use abrasive wheels only on machines with safety guards as in OAR 437-004-2230(3)(a) through (d).

(A) Exceptions. The requirements of paragraph OAR 437-004-2230(3)(a) do not apply to the following classes of wheels and conditions.

(i) Wheels for internal work while within the work being ground;

(ii) Mounted wheels, 2 inches and smaller in diameter, used in portable operations (see definition of Mounted Wheel); and

(iii) Types 16, 17, 18, 18R, and 19 cones and plugs and threaded hole pot balls where the work offers protection.

(B)

- (i) A safety guard must cover the spindle end, nut and flange projections. Mount the safety guard so as to maintain proper alignment with the wheel. The strength of the fastenings must exceed the strength of the guard.
- (ii) Exception. If the work provides a suitable measure of protection to the operator, safety guards may allow exposure to the spindle end, nut and outer flange. Where the work entirely covers the side of the wheel, you may omit the side covers of the guard.
- (iii) Exception. On portable machines designed for and used with, type 6, 11, 27, and 28 abrasive wheels, cutting off wheels and tuck pointing wheels, you may leave the spindle end, nut and outer flange exposed.
- (c) Cup wheels. Protect cup wheels (Types 6 and 11) by:
 - (A) Using safety guards in OAR 437-004-2230(3)(a); or,
 - (B) Using special "revolving cup guards" that mount behind the wheel and turn with it. They must be steel or other material with adequate strength and must enclose the wheel sides upward from the back for one-third of the wheel thickness. The mounting features must conform with all regulations. (See OAR 437-004-2230 (3)(e).) Keep a maximum clearance of 1/16-inch between the wheel side and the guard; or,
 - (C) Using another form of guard that insures protection equal to that provided by the guards in OAR 437-004-2230(3)(a)(A) or (B).
- (d) Vertical portable grinders. Safety guards on machines known as right angle head or vertical portable grinders must have a maximum exposure angle of 180 degrees. Place the guard between the operator and the wheel during use. Adjust the guard to deflect pieces of a broken wheel away from the operator.

Figure 4

- (e) Other portable grinders. The maximum angular exposure of the grinding wheel periphery and sides for safety guards used on other portable grinding machines must not exceed 180 degrees. Enclose the top half of the wheel. (See Figures 5 and 6.)

Figure 5

Figure 6

- (f) Mounting and inspection of abrasive wheels.
 - (A) Immediately before mounting, inspect all wheels to make sure they are not damaged. Check the spindle speed of the machine before mounting the wheel to be sure it does not exceed the maximum operating speed marked on the wheel.
 - (B) Grinding wheels must fit freely on the spindle and remain free under all grinding conditions. Keep a controlled clearance between the wheel hole and the machine spindle (or wheel sleeves or adaptors) to avoid excessive pressure from mounting and spindle expansion.
 - (C) All contact surfaces of wheels, blotters and flangers must be flat and free of foreign matter.
 - (D) When using a bushing in the wheel hole it must not exceed the width of the wheel nor contact the flanges.
 - (E) Do not operate an abrasive wheel designed to be held by flanges unless it is properly mounted between suitable flanges. Flanges must be at least one-third the diameter of the wheel, except for those types requiring flanges of a special design.
 - (F) Install blotters (compressible washers) between flanges and abrasive wheel surfaces to insure uniform distribution of flange pressure.

- (g) Excluded machinery. OAR 437-004-2230(3) does not cover natural sandstone wheels and metal, wooden, cloth or paper discs with a layer of abrasive on the surface.
- (4) Tools driven by internal combustion engines.
 - (a) Tools driven by internal combustion engines must have a positive “On” and “Off” ignition switch that will remain in either position.
 - (b) Tools driven by internal combustion engines must have effective means to control power except those that operate at constant speed. Throttle controls must return the engine to idling speed when released.
 - (c) Tools driven by internal combustion engines must have a self-rewinding starting device or be equally safe.
 - (d) Exhaust ports on tools driven by internal combustion engines must have mufflers and deflect exhaust fumes away from the operator when the tool is in use in its normal operating position.
 - (e) Stop the engine before fueling tools driven by an internal combustion engine.
 - (f) You must be able to quickly remove sling-carried tools powered by attached portable internal combustion engines.
 - (g) Inspect the fuel system of sling-carried tools before each use. Fix any defect immediately.
- (5) Explosive actuated fastening tools.
 - (a) Definitions.
 - (A) Angle control. A safety feature designed to prevent a tool from operating when tilted beyond a pre-determined angle.
 - (B) Cased Power Load. A power load with the propellant contained in a closed case.
 - (C) Caseless Power Load. A power load with the propellant in solid form not requiring containment.
 - (D) Direct-Acting Tool. A tool in which the expanding gas of the power load acts directly on the fastener to be driven.
 - (E) Explosive power load, also known as load. Any form of any substance that can produce a propellant force.
 - (F) Fixture. A special shield that gives equal protection where the standard shield is not usable.
 - (G) Hammer-operated piston tool – low-velocity type. A tool that uses a heavy mass hammer and a load to move a captive piston to drive a stud, pin or fastener into a work surface. It always starts the fastener at rest and in contact with the work surface. Its design must limit the mean velocity of the stud, pin or fastener to a maximum of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.
 - (H) Head. That part of a fastener that extends above a work surface after being properly driven.
 - (I) High-velocity tool. A tool or machine that uses a load to propel or discharge a stud, pin or fastener, at velocities greater than 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.
 - (J) Indirect-Acting Tool. A tool in which the expanding gas of the powder load acts directly on a captive piston that in turn drives the fastener.
 - (K) Low-velocity piston tool. A tool that uses a load and captive piston to drive a stud, pin or fastener into a work surface. Its design must limit the mean velocity to a

maximum of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel.

(L) Misfire. A condition in which the powder load fails to ignite after an attempt to fire the tool.

(M) Powder-Actuated Fastening System. A method comprising the use of a powder-actuated tool, a power load and a fastener.

(N) Powder-Actuated Tool, also known as Tool. A tool that uses the expanding gases from a power load to drive a fastener.

(O) Protective shield or guard. A device or guard to confine flying particles, attached to the muzzle end of the tool.

(P) Stud, pin, or fastener. A fastening device specifically designed and manufactured for use in explosive-actuated fastening tools.

(Q) Test Velocity. A series of deliberately free-flighted fasteners whose velocities are measured 6 1/2 feet from the muzzle end of the tool using accepted ballistic test methods.

(R) To chamber. To fit properly without the use of excess force and without being loose in the chamber.

(S) Tool. Unless indicated otherwise, an explosive-actuated fastening tool and all its accessories.

(b) General requirements.

(A) Explosive-actuated fastening tools actuated by explosives or any similar means that propel a stud, pin, fastener or other object to affix it to another object must meet the design requirements in "American National Standard Safety Requirements for Explosive-Actuated Fastening Tools," ANSI A10.3-1995. This requirement does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard and the like or to stud welding equipment.

(B) Operators and assistants using tools must wear eye protection. If required by the working conditions, use head and face protection as required under Personal Protective Equipment (4/I).

(c) Inspection, maintenance, and tool handling.

(A) High-velocity tools. High velocity tools must have these characteristics:

(i) The muzzle end of the tool must have a protective shield or guard at least 3 1/2 inches in diameter, mounted perpendicular to and concentric with the barrel. It must confine any flying fragments or particles that might be a hazard when fired.

(ii) Where a standard shield or guard will not work or where it does not provide adequate protection, an alternate device is acceptable. It must be built by the manufacturer of the tool, and provide an equal degree of protection.

(iii) It must be impossible to fire the tool unless it has a standard protective shield or guard, or the special device in (ii) above.

(iv)

(I) The firing mechanism must prevent the tool from firing during loading or preparation to fire, or if dropped while loaded.

(II) Firing of the tool must require at least two separate and distinct actions of the operator. The final firing movement must be separate from the action of bringing the tool into the firing position.

- (v) The tool must not work unless the operator is holding the tool against the work surface with a force at least 5 pounds more than the total weight of the tool.
 - (vi) The tool must not be operable with the standard guard indexed to the center position if any bearing surface of its guard tilts more than 8 degrees from contact with the work surface.
 - (vii) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.
- (B) Tools of the low-velocity piston type must have the characteristics in (i) through (iv) below.
- (i) The muzzle end of the tool must allow suitable protective devices, designed and built by the manufacturer of the tool, to be mounted perpendicular to the barrel. There must be a standard spall shield with each tool.
 - (ii)
 - (I) In ordinary use the tool must not propel or discharge a stud, pin or fastener while loading or during preparation to fire or if dropped while loaded.
 - (II) Firing of the tool must depend on at least two separate and distinct actions of the operator. The final firing movement must be separate from the operation of bringing the tool into the firing position.
 - (iii) The tool must not be operable unless the operator is holding it against the work surface with a force at least 5 pounds greater than the total weight of the tool.
 - (iv) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.
- (C) Hammer operated piston tools, low-velocity type, must have the characteristics in (i) through (iv) below.
- (i) The muzzle end of the tool must allow suitable protective devices, designed and built by the manufacturer of the tool, to be mounted perpendicular to the barrel. There must be a standard spall shield with each tool.
 - (ii) In ordinary use the tool must not propel or discharge a stud, pin or fastener while loading or during preparation to fire or if dropped while loaded.
 - (iii) Firing of the tool must depend on at least two separate and distinct actions of the operator. The final firing movement must be separate from the operation of bringing the tool into the firing position.
 - (iv) The tool must have a positive way of varying the power or there must be some other way for the operator to select a power level adequate to perform the work without excessive force.
- (d) Requirements for loads and fasteners.
- (A) There must be a standard way to identify the power levels of loads.
- (B) Do not use a load (cased or caseless) that will accurately chamber in any existing approved commercially available low-velocity piston tool or hammer operated piston tool, low-velocity type, if it will cause a fastener to have a mean velocity greater than 300 feet per second when measured 6.5 feet from the muzzle end of the barrel. No individual test firing of a series can exceed 300 feet per second by more than 8 percent.
- (C) Only use fasteners specifically made for a given tool.

(e) Operating requirements.

(A) Before using a tool, inspect it to see that it is clean, all moving parts operate freely and that the barrel is free of obstruction.

(B) When a tool develops a defect during use, immediately stop using it.

(C) Do not load tools until just prior to the intended firing time. Do not point loaded or empty tools at anyone.

(D) Do not leave loaded tools unattended.

(E) If the tool misfires, hold it in the operating position for at least 30 seconds. Then try to operate the tool a second time. Wait another 30 seconds with the tool in the operating position. If it still does not fire remove the explosive load according to the manufacturer's instructions.

(F) Do not leave tools unattended where they are available to unauthorized persons.

(G) Do not drive fasteners into very hard or brittle materials like cast iron, glazed tile, surface-hardened steel, glass block, face brick or hollow tile.

(H) Do not drive fasteners into soft materials so that the projectile could exit the other side.

(I)

(i) Do not drive fasteners directly into materials such as brick or concrete closer than 3 inches from the unsupported edge or corner or into steel surfaces closer than 1/2-inch from the unsupported edge or corner, unless the tool has a special guard. (Exception: Low-velocity tools may drive no closer than 2 inches from an edge in concrete or 1/4-inch in steel.)

(ii) When fastening other materials, such as a 2-inch by 4-inch wood section to a concrete surface, it is permissible to drive a fastener of no greater than 7/32-inch shank diameter not closer than 2 inches from the unsupported edge or corner of the work surface.

(J) Do not drive fasteners through existing holes unless you use a positive guide for accurate alignment.

(K) Do not drive a fastener into a spalled area caused by an unsatisfactory fastening.

(L) Do not use explosive actuated tools in an explosive or flammable atmosphere.

(M) Use all tools with the correct shield, guard or attachment recommended by the manufacturer.

(N) Take damaged or defective tools out of service. Inspect tools at regular intervals and repair them according to the manufacturer's specifications.

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.

437-004-2260

Other Portable Tools and Equipment.

(1) Jacks.

(a) Definitions.

- (A) Jack. A jack is an appliance for lifting and lowering or moving horizontally a load by pushing.
- (B) Rating. The maximum safe load throughout its course of travel.
- (b) Loading and marking.
 - (A) Do not use a jack with a rating less than the weight of the intended load.
 - (B) Keep the rated load legibly and permanently marked on the jack.
- (c) Operation and maintenance.
 - (A) If the jack is not on a firm foundation, block its base. If the cap might slip, place a block between it and the load.
 - (B) Watch the stop indicator and do not go past the limit of travel.
 - (C) Quickly crib, block or otherwise secure the load after raising it.
- NOTE: This does not apply when changing wheels on 4-wheeled vehicles when only one wheel is raised and the employee does not place any part of their body under the vehicle.
- (D) Hydraulic jacks exposed to freezing temperatures must contain an adequate antifreeze liquid.
- (E) Inspect jacks often enough to assure safe operation but at least:
 - (i) Once every 6 months for constant or intermittent use; or
 - (ii) Immediately after an abnormal load or shock.
- (F) Mark defective jacks and do not use them until repairs are made.
- (2) Abrasive blast cleaning nozzles. Blast cleaning nozzles must have an operating valve that must be held open manually. Provide a support on which the nozzle may rest when it is not in use.
- (3) Hand-powered equipment.
 - (a) Each hand-powered hoist must have an effective brake or equivalent and a ratchet and pawl strong enough to hold the maximum load in any position.
 - (b) Do not allow hand crank handles to work loose from the drive shaft.
- (4) Wheelbarrows, hand trucks, dollies, pallet jacks.
 - (a) Wheelbarrows, hand trucks, dollies and pallet jacks must be appropriate for the specific work. Do not load them beyond safe capacity. Bodies and frames must be metal or strong wood and able to withstand severe handling and the intended loads.
 - (b) Keep wheelbarrows, hand trucks, dollies and pallet jacks in good repair.
 - (c) Do not leave wheelbarrows, hand trucks, dollies, and pallet jacks where they can tip, fall or roll.
- (5) Varmint Killers (Explosive Gas and Oxygen) A device for injecting a mix of propane (LPG) and oxygen into ground holes and then igniting it to kill varmints.**
- Note: OAR 437-004-0710 Compressed Gases apply to all cylinders of gas.**
- (a) Follow all manufacturer instructions for use and maintenance of this equipment or this standard, whichever is safest.**
- (b) When transporting these devices in vehicles (other than in the field of use), or when done using them for more than one hour, back out the regulator pressure control screws.**
- (c) Employees under 18 years old may not operate this equipment.**
- (d) Employers must train all employees to operate this equipment safely and according to the manufacturer's instructions and these rules.**
- (e) Operating procedures.**

(A) Tanks, valves, couplings, regulators, hose, and apparatus must be free from oily or greasy substances. Do not handle oxygen tanks or apparatus with oily hands or gloves. Never allow a jet of oxygen to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

(B) Handling tanks.

(i) Unless tanks are secured on a special truck, remove regulators and install valve-protection caps, when provided, before moving tanks.

(ii) Close tank valves when work is done.

(iii) Close valves of empty tanks.

(iv) Do not use a hammer or wrench to open tank valves. If opening the valve by hand does not work, check with the supplier.

(v) Do not repair or tamper with tank valves. Notify the supplier if you have trouble with a tank and follow their instructions as to its disposition.

(vi) Do not remove the stem from a diaphragm-type tank.

(C) Attachments and use.

(i) Fuel-gas tanks must have the valve end up when they are in use. Store and ship liquefied gases with the valve end up.

(ii) Before removing a regulator from a tank valve, close the tank valve and release the gas from the regulator.

(iii) Do not use regulators with cracked, broken, or defective parts.

(iv) Before attaching the regulator to a tank, fully release the regulators pressure adjusting screw.

(v) Close the tank valve and release the gas from the regulator before removing it from the tank.

Stat. Auth.: ORS 654.025(2) 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.

437-004-2810

General Requirements.

(1) Scope. This standard (4/S) covers electrical work and equipment in buildings and on premises. It applies to all work and equipment covered by other sections of Subdivision 4/S.

(2) Unless stated otherwise in OAR 437-004-2810 through 437-004-3075, all electrical work, equipment and systems must comply with standards under the jurisdiction of the Oregon Building Codes Division, Department of Consumer and Business Services.

(3) Do not allow employees to work near live power sources without protection from shock.

(4) Isolate exposed live electrical conductors from contact by persons or equipment.
NOTE: Paragraphs (3) and (4) above do not apply to electric fences or containment devices.

(5) Lights 7 feet or closer to the floor or work surface must have a guard, fixture or holder to protect the bulb or tube from breakage.

- (6) Only qualified persons, authorized by the employer may make electrical repairs. (See Subdivision 4/B.)
- (7) Install or remove fuses from live terminals only with special tools insulated for the voltage.
- (8) When the exact location of underground electric power lines is unknown, workers using jackhammers, bars or other hand tools that may contact a line must use insulated protective gloves.
- (9) Before beginning work near exposed lines or equipment, the employer must determine if they are live. If they are, you must advise the employees of the position of the lines, the hazards involved and the protective measures they must use.
- (10) Before beginning work like digging, drilling or remodeling, that may lead to hidden power sources the employer must locate them and determine their voltage. Locate underground lines by calling 1-800-332-2344 or in the Portland Metropolitan area 246-6699. The employer must then:
- (a) Post and maintain proper warning signs where such circuits exist; and
 - (b) Advise the employees of the position of the lines, the hazards involved and the protective measures they must use.
- NOTE: If the work covered by (8) and (9) above might involve voltages over 750v, see OAR 437-004-3050.
- (11) There must be sufficient space near electrical equipment to permit safe operation and maintenance.
- (a) Near exposed parts, the minimum clearance from floor to ceiling must be at least 76 inches. There must be a clear radius of at least 36 inches in front of the panel.
 - (b) There must be enough clearance to permit at least a 90 degree opening of all doors or hinged panels.
 - (c) Do not store anything in front of electrical panels.
- (12) There must be suitable barriers or other means to ensure that work space for electrical equipment is not used as a passageway when energized parts are exposed.
- (13) Require workers to report all electric shocks to management or supervisors immediately.
- (a) Check the equipment causing the shock and remove from service or repair it before further use.
- (14) Electrical equipment must be free from recognized hazards that may cause death or serious physical harm. Use the criteria below to determine the safety of equipment.
- (a) Electrical equipment must be listed or labeled, except custom-made components and utilization equipment. (See Division 4/B, OAR 437-004-0100, for definitions of listed and labeled.)
 - (b) Mechanical strength and durability, and for parts that enclose and protect other equipment, the adequacy of the protection.
 - (c) Classification by type, size, voltage, current capacity or specific use.
 - (d) Other factors that contribute to the practical safeguarding of employees using or likely to contact the equipment.
- (15) Follow manufacturer's instructions or recommendations when installing listed or labeled equipment.

(16) In wet or damp locations, use only fixtures approved for that purpose. Install them so that water cannot enter or accumulate in wireways, lampholders, or other electrical parts.

(17) All pull boxes, junction boxes and fittings must have approved covers. Metal covers must be grounded.

(18) All wall plugs and switches must have approved, unbroken covers or faceplates and no broken parts.

(19) Receptacles, plugs, fixtures, lamp-holders lamps and other holders and outlets must have no exposed live parts.

NOTE: Rosettes and cleat-type lamp-holders may have exposed parts if they are 8 feet or higher above the floor.

Stat. Auth.: ORS 654.025(2) 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.

437-004-3100

Excavation.

(1) Definition.

Excavation – A man-made cut, hole, pit, trench or depression in the earth.

NOTE: Before any digging you must comply with Oregon's "Call Before You Dig" law. Call 1-800-332-2344.

(2) Five feet or more. Employees must not enter any excavation 5 feet or deeper unless protective systems are in place to protect from cave-in or sloughing.

(3) Less than 5 feet. Employees must not enter any excavation less than 5 feet deep when the sides are losing their shape, are loose or show other signs of being unstable unless protective systems are in place to protect from cave-in or sloughing.

(4) Strength. Systems installed in the excavation must be strong enough and engineered to provide protection from hazards of the particular excavation.

(5) Design. Systems must be as follows:

(a) Designed by a registered professional engineer.

(b) Designed using the manufacturer's or other tabulated data.

(6) Follow instructions. When using manufactured systems, follow the instructions and do not exceed the limitations of the system.

(7) System size. Systems must extend from the bottom of the excavation to at least the top edge.

(8) Sloping. Sloping is an acceptable system to protect workers. Sloping must be at a ratio of at least 1 1/2 to 1. That means a horizontal setback of 1 1/2 feet for every 1-foot of trench depth.

(9) Access/Exit. There must be a safe way, such as a ladder or steps, to get into and out of excavations 4 or more feet deep. In trenches, these exits must be at least every 25 linear feet.

(10) Water. Workers will not enter excavations where there is accumulating water, either from ground seepage or surface run-off, unless there are adequate protections from hazards caused by the water.

(11) Inspect daily. A person familiar with these rules and the work must inspect all excavations daily, before workers enter or reenter.

(12) Spoils and equipment. Keep soil and material removed from the excavation (spoils) at least two feet away from the edge of the excavation or restrained. Equipment that could roll or fall into the excavation must also be at least two feet back or restrained.

Stat. Auth.: ORS 654.025(2) 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.

437-004-3410

Agricultural, Commercial and Industrial Vehicles.

(1) Scope. This applies to all motor vehicles used by employees.

(2) Definitions.

(a) Agricultural vehicle – A vehicle specifically designed or modified for use exclusively in agricultural operations, and not licensed for use on public roads under Oregon laws. NOTE: Included in this definition is farm field equipment such as tractors, harvesters, planters or any combination thereof; unlicensed trucks and wagons or trailers such as feeder trucks or wagons and specialized crop handling vehicles; and mobile elevating and rotating work platforms such as orchard aerial lift devices.

(b) Commercial-type vehicles – Motor vehicles primarily for the transportation of persons or material on roads.

Commercial type vehicles used to transport workers are:

(A) Class 'A' vehicle – A bus type vehicle **or van** that can carry 12 or more workers; or the "work crew" vehicle built or altered for carrying passengers.

(B) Class 'B' vehicle – A vehicle **or van** especially built for transporting work crews in compartments separate from the space used to transport supplies, tools and equipment.

(C) Class 'C' vehicle – A flatbed, pickup body or dump truck type vehicle, or vehicle of similar open body construction.

(D) Class 'D' vehicle – A passenger car or station wagon type.

NOTE: Typically a bus type vehicle has two axles and six tires or three or more axles. This does not include vans.

(c) Industrial-type vehicles – Vehicles designed for non-highway use, primarily for pulling trailers or other mobile loads, straddle trucks such as lumber carriers, power industrial trucks, and other types of vehicles especially designed for handling materials.

NOTE: When this rule uses "vehicle" by itself, it includes all the above definitions.

(3) General requirements.

(a) Operation of vehicles.

(A) Nobody may operate any unsafe vehicle. Fix unsafe conditions before using it.

- (B) Only trained and authorized employees may operate any vehicle.
 - (C) Only the operator may ride on vehicles unless there are safe riding facilities for additional riders. Persons are never to ride on fenders, axles, hitches, tongues, buckets, forks, drawbars or any other area not intended to carry passengers.
 - (D) Do not drive a vehicle up to anyone who is in front of a stationary object.
 - (E) The operator must look in the direction of travel, and have a clear view of the path of travel, unless guided by a signal person with a clear view of the route.
 - (F) Except when using a towbar, keep manual control over vehicles under tow.
 - (G) Do not stand or walk under an elevated part of a vehicle whether loaded or empty unless it is blocked or cribbed according to OAR 437-004-3410(5)(d).
 - (H) Workers may not be under loads or units of materials during movement.
 - (I) Do not overload any vehicle. Keep loads stable and well balanced.
 - (J) Employees must not ride in a loaded or partially loaded cargo space while the vehicle is moving unless the load is adequately shored, braced, or otherwise secured.
 - (K) Do not drive a vehicle with an unstable or insecure load.
 - (L) ~~Block the wheels and set the brakes when loading vehicles that might move. This does not apply when loading vehicles "on the go."~~ **Block the wheels and set the brakes when loading Agricultural Vehicles, Class C, Commercial –Type Vehicles and Industrial-Type Vehicles who's movement might cause a hazard. This does not apply when loading "on the go."**
 - (M) The parking brake must be set on parked commercial and industrial vehicles. Block or turn to a curb the wheels of vehicles parked on an incline.
 - (N) Do not put arms or legs between working parts or outside the running lines of vehicles.
 - (O) Vehicles must have a safe way of access and exit.
 - (P) Do not jump on or off moving vehicles.
 - (Q) There must be no stunt driving or horseplay.
- NOTE: Appendix A is a reprint of Oregon Revised Statutes that govern the use of some agricultural vehicles and equipment on public highways and roads. While Oregon OSHA has the legal authority to cite these sections, law enforcement officers are the usual source of enforcement. We offer these laws here as a courtesy to Oregon agricultural employers and in the interest of employee safety.**
- (b) Hauling of explosives. Only a driver and one other person may ride in a vehicle hauling explosives.
 - (c) Operating near power lines. For requirements when operating vehicles around high voltage power lines, see Subdivision 4/S.
 - (d) Parking. When the operator of a commercial or industrial vehicle is not at the controls, the brakes must be set or the wheels blocked to prevent movement. Also, fully lower or block elevated attachments or components against descent. Unattended vehicles must be shut off. If parked on a slope, the wheels of commercial and industrial vehicles must be blocked or chocked.
 - (e) When towing, there must be a pin or other positive method of keeping the hitch pin in the hitch.**

NOTE: Unattended is when the operator cannot see the vehicle or when they are more than 25 feet from it.

(4) Vehicle components.

(a) General.

(A) The engine shut-off device must be within reach of the operator when in their normal operating position.

(B) There must be steps, ladders, handholds, or grab bars on vehicles for safe access. Steps must have slip-resistant surfaces.

(C) The operator's station and work platforms on all agricultural vehicles must have guardrails or other fall protection when any of the following conditions exist:

(i) The operator is standing or not protected from falling by the framework, body, or design of the equipment; or

(ii) The floor of the operator's station is more than 22 inches above the adjacent floor level; or

(iii) The operator's station, regardless of height, is located so that a worker could fall into the path of equipment or into moving parts.

NOTE: For guardrails or similar barricades, the toprail must be 36 inches to 44 inches above the deck; the railing must have a midrail except when it would impair the operator's view to crop gathering or other functions.

(D) All vehicles loaded by cranes, power shovels, loaders or similar equipment must have a cab shield or canopy adequate to protect the operator from shifting or falling materials.

(E) The backs of vehicle cabs exposed to shifting loads must have a substantial bulkhead or similar device.

(F) Loads must not prevent doors of vehicle cabs from opening.

(G) When transporting workers and materials simultaneously, there must be a barrier to protect the workers and driver from the hazards of the materials. Otherwise, anchor or restrain the load.

(H) Class "A" and "B" commercial vehicles and industrial vehicles must have seats and back rests firmly secured in place, and such sides and ends as necessary to prevent riders from falling off the vehicle.

(I) The operator's platform must have a slip-resistant floor.

(J) Operating levers controlling hoisting or dumping devices on haulage bodies must have a latch or other device that prevents accidental starting or tripping of the mechanism.

(K) Trip handles for tailgates of dump trucks must work without endangering the operator.

(L) Surfaces of foot pedals must be slip resistant or have slip resistant coverings.

(b) Passenger compartments.

(A) Floors and decks must have safe footing.

(B) Floors and interior of sides and ends and tops of compartments used for transporting workers must be free of protruding objects that might cause injury.

(c) Windshields – windows.

(A) Windshields and windows must be safety glass that meets the requirements for safety glazing material for use anywhere in a motor vehicle as defined in the American National Standard, Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1990, or a material that will furnish equivalent safety.

(B) Replace defective or broken glass that impairs the vision of the operator. Remove and replace broken or shattered glass that could cause injury to occupants.

NOTE: There is no requirement to change non-safety glass installed as "original equipment" in agricultural vehicles acquired before March 31, 1975 if it is unbroken. However, when it is replaced, the replacement glass must be approved safety glass.

(d) Brakes.

(A) All commercial and industrial vehicles must have brakes that can control them while fully loaded on any grade over which they might run.

(B) Parking brakes must be able to hold the loaded vehicle on any grade on which it may park, on any surface free of ice or snow.

(C) Brakes must be in safe working condition.

(e) Steering. Use steering or spinner knobs only if the steering mechanism is a type that prevents road reactions from causing the steering wheel to spin. The steering knob must be within the periphery of the wheel.

(f) Lights. Vehicles operated at night must have sufficient light at the operator's station.

(5) Inspection, testing, maintenance, and repair.

(a) Check vehicles as often as needed to assure that they are in safe operating condition and free of damage that could cause failure while in use.

(b) Before using it, fix defects that affect the safe operation of the vehicle.

(c) Do not continue to use a vehicle that becomes unsafe during use.

(d) Block or crib heavy machinery, equipment, elevated parts or parts supported by slings, hoists, jacks, or other devices, to prevent falling or shifting before employees work under or between them.

(A) Fully lower or block bulldozer and scraper blades, end-loader, end-loader buckets, dump bodies, and similar equipment when working on them or when they are not in use.

(B) All controls must be in neutral with motors off and brakes set, unless the work requires otherwise.

(e) Vehicles with dump bodies or other elevating parts must have positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body. This device must support a raised body during maintenance or inspection work.

(f) Disconnect the battery when repairing a vehicle electrical system if accidental closing of the circuit could cause injury.

(6) Transportation of workers.

(a) Do not transport workers in flatbed trucks, dump trucks and pickups unless:

NOTE: This does not apply to field work or loading or unloading moving vehicles.

(A) Tilting, sliding or otherwise movable decks or bodies are secured to prevent accidental movement. Secure dump truck bodies or lock the hoist lever.

(B) Flatbed vehicles without seats must have sides and end gates at least 24 inches high. Workers must sit on the floor.

(b) Close pickup and dump truck tailgates and make workers sit on the floor unless there are seats secured in place and sides at least 42 inches high. A chain or rope must be across the rear of such vehicles with seats.

(c) When workers sit on low boxes or similar equipment, there must be side rails that increase the height of pickup and dump truck bodies to at least 36 inches. Omit the side rails when there is heavy canvas secured as a top and sides.

(d) In Class “A” and “B” commercial vehicles with seats workers must not sit on the floor in the aisles while the vehicle is moving. Not more than one worker per row of seats may stand. No workers may stand or sit in the driver’s area ahead of the front row of seats. Never place boards across an aisle to provide additional seating space. Do not put seats in an aisle. Standing workers must use handholds.

(e) When transporting workers in any vehicle, nobody may stand for more than 1-hour or for more than 45 miles of travel, whichever is less. After that, they must get a rest period of at least 15 minutes or be given a seat.

(7) Fueling.

(a) When fueling vehicles there may be no smoking within 35 feet.

(b) Stop vehicle engines, except diesels, while fueling.

(c) Do not fuel vehicles within 35 feet of any open fires, flame or other sources of ignition.

(d) Refilling of vehicle tanks that use liquefied petroleum gases must be done outside. Do not overfill the tanks.

(8) Hauling of gasoline and other flammables.

(a) Do not transport gasoline and other ~~[low flash point]~~ **flammable** liquids on [Class “A”, “B” and “D”] commercial vehicles carrying workers except: ~~[when in U.L. approved, closed safety containers of not more than 5 gallons capacity and if the containers are outside the passenger compartment. Secure the containers to prevent shifting and put them in well-ventilated compartments or racks.]~~

(A) In closed containers of not more than 5 gallons capacity, and

(B) The containers must be accepted, labeled or listed. (As per definitions in OAR 437-004-0100 Universal Definitions), and

(C) Do not carry containers inside the passenger compartment, and

(D) Secure the containers to prevent shifting and put them in well-ventilated compartments or racks.

(b) You can haul gasoline in containers of more than 5 gallons in Class “C” commercial vehicles if all workers ride in the cab of the vehicle or in a separate compartment.

NOTE: Appendix A is a reprint of Oregon Revised Statutes that govern the use of some agricultural vehicles and equipment on public highways and roads. While Oregon OSHA has the legal authority to cite these sections, law enforcement officers are the usual source of enforcement. We offer these laws here as a courtesy to Oregon agricultural employers and in the interest of employee safety.

(9) Warning devices.

(a) All commercial and industrial vehicles must have an audible warning (horn) device that can be clearly heard above the surrounding noise near the vehicle.

(b) Vehicles with obstructed view to the rear must have a backup alarm audible above the surrounding noise level, unless:

(A) The vehicle backs up only when an observer signals that doing so is safe; or

(B) The vehicle operator first verifies that no person is in the path of the reverse travel, or can enter it unobserved.

(c) When towing mobile farm equipment, if the driver cannot see the workers in or on the towed unit, there must be a way to communicate with them. Otherwise, there must be a way for the riders in the towed unit to stop it in case of an emergency.

(10) Control of exhaust gases.

- (a) Exhaust pipes must direct the exhaust gases away from the operator and passengers.
- (b) Insulate or isolate exhaust pipes exposed to contact.
- (11) Safety equipment – vehicles operated on public roads.
 - (a) There must be a first aid kit on Class A and B commercial type vehicles that transport workers. First aid kits must be clean, stocked and readily available to the driver or crew.
 - (b) There must be a B/C fire extinguisher on Class A and B commercial type vehicles that transport workers.
 - (c) Vehicles designed to run less than 25 mph must display a “slow moving vehicle” emblem as in 4/J, OAR 437-004-1180, Accident Prevention Signs, Symbols, Tags of the Oregon Occupational Safety and Health Code and in ORS 483.457, “Slow Moving Vehicle Emblem.”

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.

Appendix A to 437-004-3410, Specific Equipment

815.110 Requirements for and use of slow-moving vehicle emblem. This section establishes requirements for ORS 815.115. The requirements under this section are in addition to any other requirements for lighting equipment provided by law. Except as specifically provided by an exemption under ORS 815.120, a person violates ORS 815.115 if the person does not comply with any of the following requirements:

(1) The following types of vehicles must display slow-moving vehicle emblems described under ORS 815.060:

(a) Vehicles or combinations of vehicles designed for customary use at speeds of less than 25 miles per hour.

(b) Golf carts or similar vehicles when operated by a disabled person.

(c) Class I all-terrain vehicles operated on a highway under ORS 821.191 (1).

(2) Slow-moving vehicle emblems must meet the requirements for such emblems established by the Department of Transportation by rule under ORS 815.060.

(3) Slow-moving vehicle emblems shall be displayed on the rear of the power unit. When a combination of vehicles is being operated in a manner that obscures the emblem mounted on the power unit, an additional emblem shall be displayed on the rear of the rearmost vehicle in the combination. [1983 c.338 §469; 2001 c.529 §5]

815.120 Exemptions from emblem requirements. This section establishes exemptions from the requirements of ORS 815.110 and 815.115. The exemptions under this section are in addition to any exemptions under ORS 801.026. The exemptions under this section are partial or complete as described in the following:

(1) Vehicles of special interest that are registered under ORS 805.020 are deemed to comply with the requirements if:

(a) The vehicles are equipped with original manufacturer's equipment and accessories, or their equivalent, and are maintained in safe operating condition; or

(b) The vehicles are street rods that conform to ORS 815.107.

(2) Antique vehicles are not subject to the standards if the vehicles are maintained as collectors' items and used for exhibitions, parades, club activities and similar uses, but not used primarily for the transportation of persons or property.

(3) Road machinery, road rollers and farm tractors are not subject to the requirements except as provided in this subsection. Such vehicles or combinations thereof are subject to the requirements if the vehicles are designed for use at speeds less than 25 miles per hour, except when such vehicles are engaged in actual construction or maintenance work and guarded by a flagger or by clear visible warning signs. [1983 c.338 §470; 1985 c.16 §246; 1985 c.69 §8; 1997 c.402 §8]

IMPLEMENTS OF HUSBANDRY

820.400 Unlawful operation of implement of husbandry; penalty.

(1) A person commits the offense of unlawful operation of an implement of husbandry if the person operates an implement of husbandry in violation of any of the following:

(a) Such vehicle must be driven as closely as is practicable to the right-hand edge of the roadbed, including the shoulders, if any.

(b) Such vehicle, if the movement of the vehicle occurs during the hours of darkness, must be equipped and operating two headlights, clearance lights and reflectors marking the overall width as far as practical and visible from the front, rear and sides and a taillight.

(c) No television viewer, screen or other means of visually receiving a television broadcast shall be operated in an implement of husbandry at any time while the implement of husbandry is being operated on a highway.

(d) Such vehicle must display, when driven, a slow-moving vehicle emblem described in ORS 815.060.

(2) The offense described in this section, unlawful operation of an implement of husbandry, is a Class D traffic violation. [1983 c.338 §779; 1985 c.69 §7; 1985 c.393 §55; 1995 c.383 §101]

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-3600

Roll-Over Protective Structures (ROPS) for Tractors in Agriculture.

(1) Definitions.

(a) Agricultural tractor – A two- or four-wheel drive type vehicle, or track vehicle, of more than 20 engine horsepower, designed to furnish the power to pull, carry, propel, or drive implements designed for agriculture. Self-propelled implements are excluded.

(b) Low profile tractor – A wheeled tractor with these characteristics:

(A) The front wheel spacing equals the rear wheel spacing, measured from the centerline of each right wheel to the centerline of the opposite left wheel;

(B) The clearance from the bottom of the chassis to the ground is less than 18 inches;

(C) The highest point of the hood is 60 inches or less; and

(D) The tractor is designed so that a seated operator straddles the transmission.

(c) Tractor weight – Includes the protective frame or enclosure, all fuels, and other components required for normal use of the tractor. Add ballast as necessary to get a minimum total weight of 110 pounds (50.0 kilograms) per maximum power takeoff horsepower at the rated engine speed or the maximum gross vehicle weight specified by the manufacturer, whichever is the greatest. Front end weight must be at least 25 percent of the tractor test weight. If power takeoff horsepower is not available, use 95 percent of net engine flywheel horsepower.

(2) General requirements. Agricultural tractors manufactured after October 25, 1976 **and before January 1, 2007**, must meet these requirements:

(a) Roll-over protective structures (ROPS) for tractors used in agriculture. A roll-over protective structure must be on each tractor operated by an employee. Except as in OAR 437-004-3600(5), ROPS on wheel-type tractors must meet the test and performance requirements of one of these:

The American Society of Agricultural Engineers Standard (ASAE) S306.3-1974, “Protective Frame for Agricultural Tractors – Test Procedures and Performance Requirements” and Society of Automotive Engineers (SAE) Standard J334-1970, “Protective Frame Test Procedures and Performance Requirements.”

ASAE Standard S336.1-1974, “Protective Enclosures for Agricultural Tractors – Test Procedures and Performance Requirements” and SAE J1194-1994.

These ASAE and SAE standards are incorporated by reference. Get copies from:

American Society of Agricultural Engineers

2950 Niles Road, PO Box 229

St Joseph MI 49085

Society of Automotive Engineers

485 Lexington Avenue

New York NY 10017

Copies are available for review at the Oregon OSHA Resource Center, 350 Winter Street NE, Salem, Oregon 97301-3882.

(b) Agricultural tractors manufactured on or after January 1, 2007, must meet these requirements:

(A) Roll-over protective structures (ROPS) for tractors used in agriculture. A roll-over protective structure must be on each tractor operated by an employee.

Except as in OAR 437-004-3600(5), ROPS on wheel-type tractors must meet the test and performance requirements of:

(i) 29 CFR 1928.52 Protective frames for wheel-type agricultural tractors – test procedures and performance requirements.

Link:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARD&p_id=13076

And

(ii) 29 CFR 1928.53 Protective enclosures for wheel-type agricultural tractors – test procedures and performance requirements.

Link:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARD&p_id=13077

Copies of Federal OSHA rules are available at the Oregon OSHA Resource Center, 350 Winter Street NE, Salem, Oregon 97301-3882.

(3) Seat belts.

(a) When these rules require ROPS, the employer must:

(A) Have a seat belt that meets the requirement of this rule on each tractor;

(B) Ensure that workers use a seat belt while the tractor is moving; and

(C) Ensure that the worker tightens the seat belt enough to hold them in the protective area of the ROPS.

(b) Each seat belt must meet the requirements in Society of Automotive Engineers Standard J114-1994, J140-1995, J141-1995, J339-1994, and J800-1994, except;

(c) On suspended seats, fasten the seat belt to the movable part of the seat to accommodate the ride motion of the operator.

(d) The seat belt anchorage must be able to withstand a static tensile load of 1,000 pounds (453.6 kilograms) at 45 degrees to the horizontal equally divided between the anchorages. The seat mounting must be able to withstand this load plus a load equal to four times the weight of all applicable seat components applied at 45 degrees to the horizontal in a forward and upward direction. In addition, the seat mounting must be able to withstand a 500-pound (226.8 kilograms) belt load plus twice the weight of all applicable seat components both applied at 45 degrees to the horizontal in an upward and rearward direction. Floor and seat deformation is acceptable if there is no structure failure or release of the seat adjusted mechanism or other locking device.

(e) The seat belt webbing material must be resistant to acids, alkalis, mildew, aging, moisture, and sunlight.

(4) Protection from sharp surfaces. Sharp edges and corners at the operator's station must not contribute to operator injury in case of a tip over or roll-over.

(5) Exempted uses. OAR 437-004-3600(2) and (3) do not apply to the following uses:

(a) "Low profile" tractors used in orchards, vineyards or hop yards where the vertical clearance would interfere with normal use, and while their use is incidental to the work done in that location.

(b) "Low profile" tractors used inside a farm building or greenhouse where the vertical clearance does not allow a tractor with ROPS to operate, and while their use is incidental to the work done in that location.

(c) Tractors with mounted equipment that is incompatible with ROPS (e.g., corn pickers, cotton strippers, vegetable pickers and fruit harvesters);

(d) Track-type agricultural tractors whose overall width (as measured between the outside edges of the tracks) is at least three times the height of their rated center of gravity, and whose rated maximum speed in either forward or reverse is not greater than 7 mph, when used only for tillage or harvesting operations and while their use is incidental thereto, and that:

(A) Does not involve operating on slopes more than 40 percent from the horizontal, and

(B) Does not involve operating on piled crop products or residue, such as, silage in stacks or pits, and

(C) Does not involve operating near irrigation ditches, or other excavations more than 2 feet deep which contain slopes more than 40 percent from the horizontal; and

(D) Does not involve construction type work, such as bulldozing, grading or land clearing.

(6) Remounting. When ROPS is removed for any reason, remount it to meet the requirements of these rules.

(7) Labeling. Each ROPS must have a permanent label that gives the:

(a) Manufacturer's or fabricator's name and address;

(b) ROPS model number, if any;

(c) Tractor makes, models, or series numbers that it is designed to fit; and

(d) That the ROPS model was tested according to the requirements of these rules.

Stat. Auth.: ORS 654.025(2) 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.

437-004-6000

Adoption by Reference of Federal Standard.

In addition to, and not in lieu of, any other safety and health codes contained in OAR Chapter 437, the Department adopts by reference the following federal regulations printed as part of the Code of Federal Regulations, 40 CFR 170, in the Federal Register on 8/21/92, vol. 57, no. 163:

Subpart A – GENERAL PROVISIONS

40 CFR 170.1 Scope and purpose, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.3 Definitions, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.5 Effective date and compliance dates, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.7 General duties and prohibited actions, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.9 Violations of this part, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

Subpart B – STANDARD FOR WORKERS

40 CFR 170.102 Applicability of this subpart, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 5/3/95, FR vol. 60, no. 85, p. 21952.

40 CFR 170.103 Exceptions, published 8/21/92, Federal Register, vol. 57, p. 38151; 5/3/95, FR vol. 60, no. 85, p. 21952.

40 CFR 170.104 Exemptions, published 8/21/92, Federal Register, vol. 57, p. 38151; 5/3/95, FR vol. 60, no. 85, p. 21952.

40 CFR 170.110 Restrictions associated with pesticide applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.112 Entry restrictions, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 6/10/94, FR vol. 59, p. 30264; 5/3/95, FR vol. 60, no. 85, p.21952; 9/1/04, FR vol. 69, no. 169, p.53341.

40 CFR 170.120 Notice of applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 6/26/96, FR vol. 61, no. 124, p. 33207.

40 CFR 170.122 Providing specific information about applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.124 Notice of applications to handler employers, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.130 Pesticide safety training, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 5/3/95, FR vol. 60, no. 85, p. 21947 and 21952.

40 CFR 170.135 Posted pesticide safety information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.150 Decontamination, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 6/26/96, FR vol. 61, no. 124, p. 33212.

40 CFR 170.160 Emergency assistance, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

Subpart C – STANDARD FOR PESTICIDE HANDLERS

40 CFR 170.202 Applicability of this subpart, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.203 Exceptions, published 8/21/92, Federal Register, vol. 57, p. 38151; 5/3/95, FR vol. 60, no. 85, p. 21952.

40 CFR 170.204 Exemptions, published 8/21/92, Federal Register, vol. 57, p. 38151; 5/3/95, FR vol. 60, no. 85, p. 21953.

40 CFR 170.210 Restrictions during applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.222 Providing specific information about applications, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.224 Notice of applications to agricultural employers, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.230 Pesticide safety training, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 5/3/95, FR vol. 60, no. 85, p. 21953

40 CFR 170.232 Knowledge of labeling and site-specific information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.234 Safe operation of equipment, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.235 Posted pesticide safety information, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

40 CFR 170.240 Personal protective equipment, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 6/26/96, FR vol. 61, no. 124, p. 33213; 9/1/04, FR

vol. 69, no. 169, p. 53341; OR-OSHA note added with AO 9-2006, filed and effective 9/22/06.

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(f) Cleaning and Maintenance

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(8)

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NOTE: [The requirements for a respirator program as required under OAR 437, Division 2/I, 1910.134, Respiratory Protection, would also apply.] The requirements for a respirator program in OAR 437-004-1041 Respiratory Protection standard would apply.

40 CFR 170.250 Decontamination, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176; 6/26/96, FR vol. 61, no. 124, p. 33213; OR-OSHA note added with AO 9-2006, filed and effective 9/22/06.

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(b) General Conditions.

NOTE: The following applies at the mixing/loading site for all employees who mix and/or load any chemical whose key alert word is “danger” 170.250(b)(1).

NOTE: Any and all protection called for by the manufacturer’s label would apply at least an eyewash facility that complies with OAR 437-004-1305(5)(b)(A) through (D).

40 CFR 170.260 Emergency assistance, published 8/21/92, Federal Register, vol. 57, no. 163, pp. 38102-38176.

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

Stat. Auth.: ORS 654.025(2) 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 7-2004, f. 12/30/04, ef. 12/30/04.

OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-9010

Fumigated Areas.

(1) Scope: Covers pesticides which when applied, forms a gas to control pests.

(2) Definitions:

(a) Types of fumigants include aluminum phosphide, methyl bromide, chloropicrin, 1,3-D (Telone), dazomet, metam sodium and iodomethane.

(b) Types of fumigations include soil, space (warehouse), vertical storage, flat storage, tarpaulin, spot (includes grain handling equipment, empty tanks and empty silos), chamber, vehicle and rodent burrows.

(3) All work with fumigants must follow the instructions and precautions in the manufacturer's application manual and on the product label and MSDS.

(4) All entry points into fumigated interior areas must have signs that identify the area as fumigated and prohibit entry.

(5) Leave the signs posted according to the instructions of the manufacturer of the fumigating chemical or until the hazard resulting from the fumigation is gone, whichever is the longer time.

(6) After fumigation, there must be a way to aerate the fumigated area without contaminating other areas where there are employees.

(7) If the fumigation process requires the worker to be in the fumigated area, there must be at least one other person present to assist during an emergency. That person must have the same training and access to the same personal protective equipment as the first worker.

(8) Fumigation chambers or areas must not allow the toxic fumigants to escape or otherwise enter other areas where they can be hazardous to other workers.

(9) If the fumigant concentration can exceed 10 percent of the lower explosive limit (LEL), all electrical equipment, fittings, and connections must be vapor proof.

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

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 9-2006, f. 9/22/06, ef. 9/22/06.

437-004-9600

Lead.

NOTE: Paragraphs (1) through (17) have been repealed. New paragraphs (1) through (3) have been added.

(1) Definition. Lead means any metallic lead, all inorganic lead compounds and organic lead soaps. All other organic lead compounds are not included.

(2) The employer is responsible to determine, before work begins, if any task or work assigned will expose employees to lead.

(3) Work that exposes employees to lead must comply with OAR 437-002-1910.1025.

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.

437-004-9720

Thiram.

(1) Scope and application.

(a) These rules apply where worker exposure to thiram may occur during manufacture, storage, packaging, tree application, treated seedling handling, or use of thiram or thiram treated seedlings.

(b) These rules apply to the transportation of thiram or thiram treated trees except to the extent that the U. S. Department of Transportation may regulate the hazards covered by these rules.

(2) Definitions.

(a) Clean – The absence of dirt or materials that may be harmful to a worker's health.

(b) Large seedlings – Seedlings long enough or wide enough that during normal planting avoiding mouth of face contact with the thiram treated plant is difficult.

(3) General requirements.

(a) Permissible exposure limits.

(A) Do not expose workers to thiram at atmospheric concentrations more than 0.15 mg/m³ over any 8-hour period; and

(B) Do not expose workers to thiram at atmospheric concentrations more than 0.30 mg/m³ averaged over any period not longer than 15 minutes.

(C) Workers must not work more than 5 days in any 7-day period with or around thiram or thiram treated seedlings.

(D) Paragraph (3)(a)(C) above is not applicable if there is a specific thiram control program, beyond these rules and approved by the Administrator.

(b) Washing and worker hygiene.

(A) Workers must wash their hands before eating or smoking and when done working.

(B) At fixed work sites or planting units, provide warm (at least 85 degrees F, 29.4 degrees C) wash water and single use hand wiping materials for washing.

(C) Where warm water is not available within, or the means to access within, a 15 minutes travel time, provide [~~non-alcoholic based waterless hand cleaner~~] **clean water, soap and single-use towels.**

(D) Advise every planter or nursery worker to bathe or shower daily.

(E) Wash or vacuum and wipe down the inside of crummies or other worker carrying vehicles at least weekly during thiram use.

(c) Personal protective measures.

(A) Workers must wear clothing that reduces skin contact with thiram on the legs, arms and torso.

(B) For those workers with thiram skin irritations, protect exposed areas with a suitable barrier cream.

(C) Workers may wear only impervious gloves.

(D) Workers' hands must be clean of thiram before placing them into gloves.

(E) Provide nursery applicators with approved respirators, disposable coveralls or rubber slickers or other impervious clothing, rubberized boots, head covers and rubberized gloves. They must use the respirators according to 4/I, OAR 437-004-104[0]1, Respiratory Protection.

(F) Other than applicators, nursery workers who may suffer thiram exposure must have and use disposable coveralls or rubber slickers or other impervious clothing, impervious footwear and gloves, and head covers unless they use showers that comply with 4/J, OAR 437-004-1105, Sanitation.

(G) Provide eye protection that complies with 4/I, OAR 437-004-1035. Workers exposed to thiram such as during spraying, plug bundling, belt line grading and plugging or other operations must wear this eye protection.

(d) Respiratory protection.

(A) **When worker exposure is more than the Permissible Exposure Limit (PEL),** [P] provide [workers] **them** with applicable, certified respiratory protection approved by NIOSH.

(B) Use and maintain respirators according to 4/I, OAR 437-004-104[0]1, Respiratory Protection.

(C) Workers must wear respirators when planting large seedlings to avoid mouth and face contact with the thiram treated plant unless they use equally effective measures or planting practices.

(e) Food handling.

(A) Do not store or consume food, snacks, beverages, smoking materials, or any similar items in the packing area of the nursery.

(B) Crummies or other worker carrying vehicles must have a clean area for carrying lunches.

(C) The clean area of the vehicle must be above from the floor and not used to carry other than food or other consumable items.

(D) Do not carry lunches, food or other consumable items in tree planting bags.

(E) Minimize or eliminate worker exposure to thiram spray, including downwind driftings.

(F) Workers must stand upwind when burning bags that contained thiram or thiram treated seedlings.

(f) Thiram use and handling.

(A) Nurseries must develop a quality control program approved by the Administrator to ensure that they apply only the minimum amount of thiram necessary to achieve the desired anti-browsing results to the tree seedlings.

(B) Thiram treated seedlings must set between the time of spraying and packing.

(C) Keep seedlings moist during packing and when possible during planting.

(D) Vacuum or wash floors daily where thiram is used, do not sweep them.

(E) Remove silica chips covering seedling plugs at the nursery.

(g) Labeling.

(A) Rules enforced by the Oregon Department of Agriculture, or the U.S. Environmental Protection Agency (EPA), about the labeling of thiram treated seedlings, apply.

(B) If the Oregon Department of Agriculture, or EPA, has no thiram labeling rules, each container, bundle or wrapping of thiram treated seedlings must have a clearly legible and visible tag or label, of waterproof material and printing, on which is the following in English and Spanish:

CAUTION

These seedlings are treated with an animal repellent containing Thiram (tetra- methyl thiuram disulfide) that may flake off during handling. Consumption of alcoholic beverages or use of alcohol-base creams or lotions during a time span from 12 hours before to 7 days after exposure to Thiram may result in nausea, headache, vomiting, fatigue, or flushness. Exposure to Thiram may also cause irritation of the eyes, nose, throat, or skin.

Thiram may interfere with or render ineffective medications taken by epileptics or heart patients with blood-clotting difficulties. Animal studies at very high concentrations (more than 250 mg/kg) suggest that Thiram may cause birth defects.

SAFETY PRECAUTIONS

1. Keep treated seedlings moist.
2. Wear clothing to reduce skin contact with Thiram to the legs, arms and torso.
3. A fiber or cloth face mask (respirator) may be worn at the planter's discretion, except that when planting large seedlings, you must wear a respirator to avoid mouth and face contact with thiram treated plants, unless you use equally effective measures
4. Wash exposed skin areas thoroughly after handling treated seedlings and before smoking, drinking, eating or going to the bathroom.
5. If Thiram flakes contact eyes, immediately flush eyes freely with water.
6. Bathe daily and change work clothes at least every other day.

PRECAUCION

Estas plantas han sido tratadas con un replente contra animales que tiene la substancia Thiram (tetramethyl thiuram disulfide) que puede desaparecer en manoseo. La consuncion de bebidas alcoholicas o el uso de cremas o lociones con base de alcohol dentro de 12 horas antes de ser expuesto o hasta 7 dias despues de ser expuesto a Thiram puede resultar en sintomas de nausea, dolor de cabeza, vomito, faiga o rubor. Contacto con Thiram puede causar irritacion de los ojos, nariz, garganta o piel. Thiram puede interferir o desvalidar en completa las medicinas de los epilepticos o personas con condiciones de la corazon con dificultades de coagulacion de la sangre. Estudios con animals en concentraciones muy altas (mas que 250 mg/ kg) indican que Thiram puede causar deformaciones fetales. Sin que cuando se sembra plantas de semillas grandes macaras estaran requerido a evitar contacto con la boca y la cara con plantas tratado con Thiram excepto cuando otros metodos igualmente efecaz estarah usados.

MEDIAS DE PRECAUCION

1. Guardar mojados las platas siempre.
2. El trabajador necesita usar ropa para reducir el contacto de Thiram con las piernas, brazos, y el torso.
3. Una mascara de fibre o garra (mascara) se puede usar a la discrecion del plantador.
4. Lavese bien los parten expuestos cuando trate los semillos antes de fumar, tomar, comer e ir al bano.
5. Se acaso el Thiram cae en sus ojos, imediatamente lavese los ojos libremente con agua.
6. Banese todos los dias y cambiese de ropa de trabajo por lo menos cada otro dia.

(C) Other containers or thiram handling areas must have signs and labels that comply with 4/J, OAR 437-004-1150 and 1180.

(h) Training.

(A) Where exposures to thiram may occur, train each worker about the hazards of thiram and precautions for its safe use and handling.

(B) The training must be approved by the Administrator.

(C) The training must include:

- (i) The health hazard(s) of chronic exposure to thiram including the potential for birth defects, alcohol intolerance, and drug interaction.
 - (ii) The specific nature of work that could result in exposure to thiram and the necessary protective steps;
 - (iii) The purpose for, proper use, and limitations of protective devices including respirators and clothing;
 - (iv) The acute toxicity and skin irritation effects of thiram, and the necessary protective steps;
 - (v) The need for and requirements of excellent personal hygiene;
 - (vi) A review of the thiram rules at the worker's first training and indoctrination, and annually thereafter.
- (D) Give each worker a copy of these thiram rules.

Stat. Auth.: ORS 654.025(2) 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.