

AMENDATORY SECTION (Amending WSR 01-11-038, filed 5/9/01, effective 9/1/01)

WAC 296-304-010 Scope and application. (1) The provisions and standards of the general safety and health standards, chapters 296-24, 296-62 (~~and~~), 296-800, and 296-880 WAC, and such other codes and standards as are promulgated by the department of labor and industries which are applicable to all industries, shall be applicable in the ship repairing, shipbuilding, or shipbreaking industries whenever the employees are covered under the Washington State Industrial Safety and Health Act, chapter 49.17 RCW. The rules of this chapter and the rules of the aforementioned chapters 296-24, 296-62, (~~and~~) 296-800, and 296-880 WAC are applicable to all ship repairing, shipbuilding, and shipbreaking industries and operations, provided that such rules shall not be applicable to those operations under the exclusive safety jurisdiction of the federal government.

(2) The responsibility for compliance with these regulations is placed upon "employers" as defined in WAC 296-304-01001.

(3) It is not the intent of these regulations to place additional responsibilities or duties on owners, operators, agents or masters of vessels unless such persons are acting as employers, nor is it the intent of these regulations to relieve such owners, operators, agents or masters of vessels from responsibilities or duties now placed upon them by law, regulation or custom.

(4) The responsibilities placed upon the competent person herein shall be deemed to be the responsibilities of the employer.

AMENDATORY SECTION (Amending WSR 20-12-091, filed 6/2/20, effective 10/1/20)

WAC 296-304-01001 Definitions. (1) **Additional safety measure.** A component of the tags-plus system that provides an impediment (in addition to the energy-isolating device) to the release of energy or the generalization or start-up of the machinery, equipment, or system being serviced. Examples of additional safety measures include, but are not limited to, removing an isolating circuit element; blocking a controlling switch; blocking, blanking, or bleeding lines; removing a valve handle or wiring it in place; opening an extra disconnecting device.

(2) **Affected employee.** An employee who normally operates or uses the machinery, equipment, or system that is going to be serviced under lockout/tags-plus or who is working in the area where servicing is being performed under lockout/tags-plus. An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.

(3) **Alarm.** A signal or message from a person or device that indicates that there is a fire, medical emergency, or other situation that requires emergency response or evacuation. At some shipyards, this may be called an "incident" or a "call for service."

(4) **Alarm system.** A system that warns employees at the worksite of danger.

(5) **Anchorage.** A secure point of attachment for lifelines, lanyards, or deceleration devices which is capable of withstanding the forces specified in this chapter.

(6) **Authorized employee:**

(a) An employee who performs one or more of the following lockout/tags-plus responsibilities:

(i) Executes the lockout/tags-plus procedures;

(ii) Installs a lock or tags-plus system on machinery, equipment, or systems; or

(iii) Services any machine, equipment, or system under lockout/tags-plus application.

(b) An affected employee becomes an authorized employee when the employer assigns the employee to service any machine, equipment, or system under a lockout/tags-plus application.

(7) **Auto-darkening helmet.** A welding helmet which is equipped with a light sensor, ultra-violet filter/infra-red filter and a series of liquid crystal and aluminized or silver layers; which is capable of adjusting the lens to an appropriate shade automatically upon initiating welding arc, without input from the wearer.

(8) **Body belt.** A strap with means to both secure it around the waist and to attach it to a lanyard, lifeline, or deceleration device. Body belts may be used only in fall restraint or positioning device systems and may not be used for fall arrest. Body belts must be at least one and five-eighths inches (4.13 cm) wide.

(9) **Body harness.** Straps to secure around an employee so that fall arrest forces are distributed over at least the thighs, shoulders, chest and pelvis with means to attach it to other components of a personal fall arrest system.

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

(11) **Class II standpipe system.** A one and one-half inch (3.8 cm) hose system which provides a means for the control or extinguishment of incipient stage fires.

(12) **Cold work.** Work that does not involve riveting, welding, burning, or other fire-producing or spark-producing operations.

(13) **Contract employer.** An employer, such as a painter, joiner, carpenter, or scaffolding subcontractor, who performs work under contract to the host employer or to another employer under contract to the host employer at the host employer's worksite. This excludes employers who provide incidental services that are not directly related to shipyard employment (such as mail delivery or office supply and food vending services).

(14) **Competent person.** A person who can recognize and evaluate employee exposure to hazardous substances or to other unsafe conditions and can specify the necessary protection and precautions necessary to ensure the safety of employees as required by these standards.

(15) **Confined space.** A small compartment with limited access such as a double bottom tank, cofferdam, or other small, confined space that can readily create or aggravate a hazardous exposure.

(16) **Connector.** A device used to connect parts of a personal fall arrest system or parts of a positioning device system together. It may be:

(a) An independent component of the system (such as a carabiner);
or

(b) An integral component of part of the system (such as a buckle or D-ring sewn into a body belt or body harness or a snaphook spliced or sewn to a lanyard or self-retracting lanyard).

(17) Dangerous atmosphere. An atmosphere that may expose employees to the risk of death, incapacitation, injury, acute illness, or impairment of ability to self-rescue (i.e., escape unaided from a confined or enclosed space).

(18) Deceleration device. A mechanism, such as a rope grab, rip stitch lanyard, specially woven lanyard, tearing or deforming lanyard, or automatic self-retracting lifeline/lanyard, that serves to dissipate a substantial amount of energy during a fall arrest, or to limit the energy imposed on an employee during fall arrest.

(19) Deceleration distance. The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured from the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, to the location of that attachment point after the employee comes to a full stop.

(20) Designated area. An area established for hot work after an inspection that is free of fire hazards.

(21) Director. The director of the department of labor and industries or a designated representative.

(22) Drop test. A method utilizing gauges to ensure the integrity of an oxygen fuel gas burning system. The method requires that the burning torch is installed to one end of the oxygen and fuel gas lines and then the gauges are attached to the other end of the hoses. The manifold or cylinder supply valve is opened and the system is pressurized. The manifold or cylinder supply valve is then closed and the gauges are watched for at least ((~~sixty~~)) 60 seconds. Any drop in pressure indicates a leak.

(23) Dummy load. A device used in place of an antenna to aid in the testing of a radio transmitter that converts transmitted energy into heat to minimize energy radiating outward or reflecting back to its source during testing.

(24) Emergency operations. Activities performed by fire response organizations that are related to: Rescue, fire suppression, emergency medical care, and special operations or activities that include responding to the scene of an incident and all activities performed at that scene.

(25) Employee. Any person engaged in ship repairing, ship building, or ship breaking or related employment as defined in these standards.

(26) Employer. An employer with employees who are employed, in whole or in part, in ship repair, ship building and ship breaking, or related employment as defined in these standards.

(27) Enclosed space. A space, other than a confined space, that is enclosed by bulkheads and overhead. It includes cargo holds, tanks, quarters, and machinery and boiler spaces.

(28) Energy-isolating device. A mechanical device that, when utilized or activated, physically prevents the release or transmission of energy. Energy-isolating devices include, but are not limited to, manually operated electrical circuit breakers; disconnect switches; line valves; blocks; and any similar device used to block or isolate ener-

gy. Control-circuit devices (for example, push buttons, selector switches) are not considered energy isolating devices.

(29) Equivalent. Alternative designs, materials, or methods to protect against a hazard which the employer can demonstrate and will provide an equal or greater degree of safety for employees than the methods, materials, or designs specified in this standard.

(30) Fire hazard. A condition or material that may start or contribute to the spread of fire.

(31) Fire protection. Methods of providing fire prevention, response, detection, control, extinguishment, and engineering.

(32) Fire response. The activity taken by the employer at the time of an emergency incident involving a fire at the worksite, including fire suppression activities carried out by internal or external resources or a combination of both, or total or partial employee evacuation of the area exposed to the fire.

(33) Fire response employee. A shipyard employee who carries out the duties and responsibilities of shipyard firefighting in accordance with the fire safety plan.

(34) Fire response organization. An organized group knowledgeable, trained, and skilled in shipyard firefighting operations that responds to shipyard fire emergencies, including: Fire brigades, shipyard fire departments, private or contractual fire departments, and municipal fire departments.

(35) Fire suppression. The activities involved in controlling and extinguishing fires.

(36) Fire watch. The activity of observing and responding to the fire hazards associated with hot work in shipyard employment and the employees designated to do so.

(37) Fixed extinguishing system. A permanently installed fire protection system that either extinguishes or controls fire occurring in the space it protects.

(38) Flammable liquid. Means any liquid having a flashpoint at or below 199.4°F (93°C). Flammable liquids are divided into four categories as follows:

(a) Category 1 shall include liquids having flashpoints below 73.4°F (23°C) and having a boiling point at or below 95°F (35°C).

(b) Category 2 shall include liquids having flashpoints below 73.4°F (23°C) and having a boiling point above 95°F (35°C).

(c) Category 3 shall include liquids having flashpoints at or above 73.4°F (23°C) and at or below 140°F (60°C). When a Category 3 liquid with a flashpoint at or above 100°F (37.8°C) is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint below 100°F (37.8°C).

(d) Category 4 shall include liquids having flashpoints above 140°F (60°C) and at or below 199.4°F (93°C). When a Category 4 flammable liquid is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 3 liquid with a flashpoint at or above 100°F (37.8°C).

(e) When liquid with a flashpoint greater than 199.4°F (93°C) is heated for use to within 30°F (16.7°C) of its flashpoint, it shall be handled in accordance with the requirements for a Category 4 flammable liquid.

(39) Free fall. To fall before a personal fall arrest system begins to apply force to arrest the fall.

(40) Free fall distance. The vertical displacement of the fall arrest attachment point on the employee's body harness between onset

of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before the device operates and fall arrest forces occur.

(41) Gangway. A ramp-like or stair-like means to board or leave a vessel including accommodation ladders, gangplanks and brows.

(42) Hazardous energy. Any energy source, including mechanical (for example, power transmission apparatus, counterbalances, springs, pressure, gravity), pneumatic, hydraulic, electrical, chemical, and thermal (for example, high or low temperature) energies, that could cause injury to employees.

(43) Hazardous substance. A substance likely to cause injury, illness or disease, or otherwise harm an employee because it is explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful.

(44) Health care professional. A physician or any other health care professional whose legally permitted scope of practice allows the provider to independently provide, or be delegated the responsibility to provide, some or all of the advice or consultation this subpart requires.

(45) Hose systems. Fire protection systems consisting of a water supply, approved fire hose, and a means to control the flow of water at the output end of the hose.

(46) Host employer. An employer who is in charge of coordinating work or who hires other employers to perform work at a multiemployer workplace.

(47) Hot work. Riveting, welding, burning or other fire or spark producing operations.

(48) Incident management system. A system that defines the roles and responsibilities to be assumed by personnel and the operating procedures to be used in the management and direction of emergency operations; the system is also referred to as an "incident command system (ICS)."

(49) Incipient stage fire. A fire, in the initial or beginning stage, which can be controlled or extinguished by portable fire extinguishers, Class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

(50) Inerting. The displacement of the atmosphere in a permit space by noncombustible gas (such as nitrogen) to such an extent that the resulting atmosphere is noncombustible. This procedure produces an IDLH oxygen-deficient atmosphere.

(51) Interior structural firefighting operations. The physical activity of fire response, rescue, or both involving a fire beyond the incipient stage inside of buildings, enclosed structures, vessels, and vessel sections.

(52) Isolated location. An area in which employees are working alone or with little assistance from others due to the type, time, or location of their work. Such locations include remote locations or other work areas where employees are not in close proximity to others.

(53) Lanyard. A flexible line of webbing, rope, or cable used to secure a positioning harness or full body harness to a lifeline or an anchorage point usually two, four, or six feet long.

(54) Lifeline. A vertical line from a fixed anchorage or between two horizontal anchorages, independent of walking or working surfaces, to which a lanyard or device is secured. Lifeline as referred to in this text is one which is part of a fall protection system used as

back-up safety for an elevated worker or as a restraint for workers on a flat or sloped surface.

(55) **Lock.** A device that utilizes a positive means, either a key or combination lock, to hold an energy isolating device in a "safe" position that prevents the release of energy and the start-up or energization of the machinery, equipment, or system to be serviced.

(56) **Lockout.** The placement of a lock on an energy-isolating device in accordance with an established procedure, thereby ensuring that the energy-isolating device and the equipment being controlled cannot be operated until the lock is removed.

(57) **Lockout/tags-plus coordinator.** An employee whom the employer designates to coordinate and oversee all lockout and tags-plus applications on vessels or vessel sections and at landside work areas when employees are performing multiple servicing operations on the same machinery, equipment, or systems at the same time, and when employees are servicing multiple machinery, equipment, or systems on the same vessel or vessel section at the same time. The lockout/tags-plus coordinator also maintains the lockout/tags-plus log.

(58) **Lockout/tags-plus materials and hardware.** Locks, chains, wedges, blanks, key blocks, adapter pins, self-locking fasteners, or other hardware used for isolating, blocking, or securing machinery, equipment, or systems to prevent the release of energy or the start-up or energization of machinery, equipment, or systems to be serviced.

(59) **Lower levels.** Those areas or surfaces to which an employee can fall. Such areas or surfaces include but are not limited to ground levels, floors, ramps, tanks, materials, water, excavations, pits, vessels, structures, or portions thereof.

(60) **Motor vehicle.** Any motor-driven vehicle operated by an employee that is used to transport employees, material, or property. For the purposes of this subpart, motor vehicles include passenger cars, light trucks, vans, motorcycles, all-terrain vehicles, small utility trucks, powered industrial trucks, and other similar vehicles. Motor vehicles do not include boats, or vehicles operated exclusively on a rail or rails.

(61) **Motor vehicle safety equipment.** Systems and devices integral to or installed on a motor vehicle for the purpose of effecting the safe operation of the vehicle, and consisting of such systems or devices as safety belts, airbags, headlights, tail lights, emergency/hazard lights, windshield wipers, defogging or defrosting devices, brakes, horns, mirrors, windshields and other windows, and locks.

(62) **Multiemployer workplace.** A workplace where there is a host employer and at least one contract employer.

(63) **Normal production operations.** The use of machinery or equipment, including, but not limited to, punch presses, bending presses, shears, lathes, keel press rollers, and automated burning machines, to perform a shipyard-employment production process.

(64) **Personal alert safety system (PASS).** A device that sounds a loud signal if the wearer becomes immobilized or is motionless for ((~~thirty~~)) 30 seconds or more.

(65) **Personal fall arrest system.** A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, a deceleration device, a lifeline, or a suitable combination.

(66) **Physical isolation.** The elimination of a fire hazard by removing the hazard from the work area (at least ((~~thirty-five~~)) 35 feet for combustibles), by covering or shielding the hazard with a fire-re-

sistant material, or physically preventing the hazard from entering the work area.

(67) **Physically isolated.** Positive isolation of the supply from the distribution piping of a fixed extinguishing system. Examples of ways to physically isolate include: Removing a spool piece and installing a blank flange; providing a double block and bleed valve system; or completely disconnecting valves and piping from all cylinders or other pressure vessels containing extinguishing agents.

(68) **Portable toilet.** A nonsewered portable facility for collecting and containing urine and feces. A portable toilet may be either flushable or nonflushable. For purposes of this section, portable toilets do not include privies.

(69) **Portable unfired pressure vessel.** A pressure container or vessel used aboard ship, other than the ship's equipment, containing liquids or gases under pressure. This does not include pressure vessels built to Department of Transportation regulations under 49 C.F.R. Part 178, Subparts C and H.

(70) **Positioning device system.** A full body harness or positioning harness that is worn by an employee, and is rigged to allow an employee to be supported on an elevated vertical or inclined surface, such as a wall, pole or column, and work with both hands free from the body support.

(71) **Potable water.** Water that meets the standards for drinking purposes of the state or local authority having jurisdiction, or water that meets the quality standards prescribed by the U.S. Environmental Protection Agency's National Primary Water Regulations (40 C.F.R. Part 141).

(72) **Powder actuated fastening tool.** A tool or machine that drives a stud, pin, or fastener by means of an explosive charge.

(73) **Protected space.** Any space into which a fixed extinguishing system can discharge.

(74) **Proximity firefighting.** Specialized firefighting operations that require specialized thermal protection and may include the activities of rescue, fire suppression, and property conservation at incidents involving fires producing very high levels of conductive, convective, and radiant heat such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. Proximity firefighting operations usually are exterior operations but may be combined with structural firefighting operations. Proximity firefighting is not entry firefighting.

(75) **Qualified instructor.** A person with specific knowledge, training, and experience in fire response or fire watch activities to cover the material found in WAC 296-304-01019 (2) or (3).

(76) **Qualified person.** One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.

(77) **Readily accessible/available.** Capable of being reached quickly enough to ensure, for example, that emergency medical services and first-aid intervention are appropriate or that employees can reach sanitation facilities in time to meet their health and personal needs.

(78) **Related employment.** Any employment related to or performed in conjunction with ship repairing, ship building or ship breaking work, including, but not limited to, inspecting, testing, and serving as a watchman.

(79) Rescue. Locating endangered persons at an emergency incident, removing those persons from danger, treating the injured, and transporting the injured to an appropriate health care facility.

(80) Restraint line. A line from a fixed anchorage or between two anchorages to which an employee is secured in such a way as to prevent the employee from falling to a lower level.

Note: A restraint line is not necessarily designed to withstand forces resulting from a fall.

(81) Rope grab. A fall arrester that is designed to move up or down a lifeline suspended from a fixed overhead or horizontal anchorage point, or lifeline, to which the full body harness is attached. In the event of a fall, the rope grab locks onto the lifeline rope through compression to arrest the fall. The use of a rope grab device is restricted for all restraint applications. See WAC 296-880-40025.

(82) Sanitation facilities. Facilities, including supplies, maintained for employee personal and health needs such as potable drinking water, toilet facilities, hand-washing and hand-drying facilities, showers (including quick-drenching or flushing) and changing rooms, eating and drinking areas, first-aid stations, and on-site medical-service areas. Sanitation supplies include soap, waterless cleaning agents, single-use drinking cups, drinking water containers, toilet paper, and towels.

(83) Serviceable condition. The state or ability of supplies or goods, or of a tool, machine, vehicle, or other device, to be used or to operate in the manner prescribed by the manufacturer.

(84) Servicing. Workplace activities that involve the construction, installation, adjustment, inspection, modification, testing, or repair of machinery, equipment, or systems. Servicing also includes maintaining machines, equipment, or systems when performing these activities would expose the employee to harm from the start-up or energization of the system being serviced, or the release of hazardous energy.

(85) Sewered toilet. A fixture maintained for the purpose of urination and defecation that is connected to a sanitary sewer, septic tank, holding tank (bilge), or on-site sewage-disposal treatment facility, and that is flushed with water.

(86) Shall or must. Mandatory.

(87) Shield. To install a covering, protective layer, or other effective measure on or around steam hoses or temporary steam-piping systems, including metal fittings and couplings, to protect employees from contacting hot surfaces or elements.

(88) Ship breaking. Breaking down a vessel's structure to scrap the vessel, including the removal of gear, equipment or any component part of a vessel.

(89) Ship building. Construction of a vessel, including the installation of machinery and equipment.

(90) Ship repairing. Repair of a vessel including, but not limited to, alterations, conversions, installations, cleaning, painting, and maintenance.

(91) Shipyard firefighting. The activity of rescue, fire suppression, and property conservation involving buildings, enclosed structures, vehicles, vessels, aircraft, or similar properties involved in a fire or emergency situation.

(92) Short bight. A loop created in a line or rope that is used to tie back or fasten objects such as hoses, wiring, and fittings.

(93) Small hose system. A system of hoses ranging in diameter from 5/8" (1.6 cm) up to 1 1/2" (3.8 cm) which is for the use of em-

ployees and which provides a means for the control and extinguishment of incipient stage fires.

(94) **Standpipe.** A fixed fire protection system consisting of piping and hose connections used to supply water to approved hose lines or sprinkler systems. The hose may or may not be connected to the system.

(95) **Tag.** A prominent warning device that includes a means of attachment that can be securely fastened to an energy-isolating device in accordance with an established procedure to indicate that the energy-isolating device and the equipment being controlled must not be operated until the tag is removed by an authorized employee.

(96) **Tags-plus system.** A system to control hazardous energy that consists of an energy-isolating device with a tag affixed to it, and at least one additional safety measure.

(97) **Verification of isolation.** The means necessary to detect the presence of hazardous energy, which may involve the use of a test instrument (for example, a voltmeter), and, for other than electric shock protection, a visual inspection, or a deliberate attempt to start-up the machinery, equipment, or system.

(98) **Vermin.** Insects, birds, and other animals, such as rodents, that may create safety and health hazards for employees.

(99) **Vessel.** Every watercraft for use as a means of transportation on water, including special purpose floating structures not primarily designed for or used as a means of transportation on water.

(100) **Vessel section.** A subassembly, module, or other component of a vessel being built or repaired.

(101) **Walkway.** Any surface, whether vertical, slanted, or horizontal, on which employees walk, including areas that employees pass through, to perform their job tasks. Walkways include, but are not limited to, access ways, designated walkways, aisles, exits, gangways, ladders, ramps, stairs, steps, passageways, and scaffolding. If an area is, or could be, used to gain access to other locations, it is to be considered a walkway.

(102) **Work area.** A specific area, such as a machine shop, engineering space, or fabrication area, where one or more employees are performing job tasks.

(103) **Working surface.** Any surface where work is occurring, or areas where tools, materials, and equipment are being staged for performing work.

(104) **Worksite.** A general work location where one or more employees are performing work, such as a shipyard, pier, barge, vessel, or vessel section.

AMENDATORY SECTION (Amending WSR 17-18-075, filed 9/5/17, effective 10/6/17)

WAC 296-304-03005 Mechanical paint removers. (1) Power tools.

(a) You must ensure that employees engaged in the removal of paints, preservatives, rusts or other coatings by means of power tools are protected against eye injury by goggles or face shields that meets the requirements of WAC 296-304-09005 (1) and (2).

(b) All portable rotating tools used for the removal of paints, preservatives, rusts or other coatings must be adequately guarded to protect both the operator and nearby workers from flying missiles.

(c) Portable electric tools must be grounded in accordance with the requirements of WAC 296-304-08003 (1) and (2).

(d) In a confined space, you must provide mechanical exhaust ventilation sufficient to keep the dust concentration to a minimum, or must protect employees by respiratory protective equipment that meets the requirements of chapter 296-842 WAC.

(2) Flame removal.

(a) You must ensure that when hardened preservative coatings are removed by flame in enclosed spaces, the employees exposed to fumes are protected by air line respirators that meet the requirements of chapter 296-842 WAC. Employees performing this operation in the open air, and those exposed to the resulting fumes, must be protected by a fume filter respirator that meets the requirements of chapter 296-842 WAC.

(b) Flame or heat must not be used to remove soft and greasy preservative coatings.

(3) Abrasive blasting.

(a) Equipment. Hoses and fittings used for abrasive blasting must meet the following requirements:

(i) Hoses of a type to prevent shocks from static electricity must be used.

(ii) Hose couplings. Hose lengths must be joined by metal couplings secured to the outside of the hose to avoid erosion and weakening of the couplings.

(iii) Nozzles must be attached to the hose by fittings that will prevent the nozzle from unintentionally becoming disengaged. Nozzle attachments shall be of metal and must fit onto the hose externally.

(iv) Dead man control. A dead man control device must be provided at the nozzle end of the blasting hose either to provide direct cutoff or to signal the pot tender by means of a visual and audible signal to cut off the flow, in the event the blaster loses control of the hose. The pot tender must be available at all times to respond immediately to the signal.

(b) Replacement. Hoses and all fittings used for abrasive blasting must be inspected frequently to ensure timely replacement before an unsafe amount of wear has occurred.

(c) Personal protective equipment.

(i) You must ensure that abrasive blasters (~~working in enclosed spaces~~) are protected by abrasive blasting respirators that meet the requirements of chapter 296-818 WAC, Abrasive blasting and chapter 296-842 WAC.

EXCEPTION: Filter type respirators that meet the requirements of chapters 296-842 and 296-840 WAC may be used when:

(1) The work is done in the open;

(2) Proper eye, face, hearing, and head protection is used; and

(3) Synthetic abrasives containing less than one percent free silica are used. "Free silica" includes amorphous silica and the crystalline forms that are not chemically combined with any other elements.

~~(ii) ((You must ensure that abrasive blasters working in the open are protected as required in subsection (1) of this section.~~

~~Exception: When synthetic abrasives containing less than one percent free silica are used, the employer may substitute particulate or dust filter respirators that are approved by the National Institute of Safety and Health (NIOSH) and used according to chapter 296-842 WAC.~~

~~(iii))~~ You must ensure that employees, including machine tenders and abrasive recovery workers, working in areas where unsafe concentrations of abrasive materials and dusts are present are protected by eye and respiratory protective equipment that meets the requirements of WAC 296-304-09005 (1) and (2) and chapter 296-842 WAC.

Exception: This requirement does not apply to blasters.

~~((iv))~~ (iii) You must ensure that a blaster is protected against injury from exposure to the blast by appropriate protective clothing, including gloves that meet the requirements of WAC 296-304-09015(1).

~~((v))~~ (iv) A surge from a drop in pressure in the hose line can throw a blaster off the staging. To protect against this hazard, you must ensure that a blaster is protected by a personal fall arrest system, that meets the requirements of ~~((WAC 296-304-09021))~~ chapter 296-880 WAC, Unified safety standards for fall protection. The personal fall arrest system must be tied off to the ship or other structure during blasting from elevations where adequate fall protection cannot be provided by railings.

AMENDATORY SECTION (Amending WSR 17-18-075, filed 9/5/17, effective 10/6/17)

WAC 296-304-04001 Ventilation and protection in welding, cutting and heating. (1) Mechanical ventilation requirements. ~~((a))~~ For the purposes of this section, mechanical ventilation must meet the following requirements:

~~((i))~~ (a) Mechanical ventilation must consist of either general mechanical ventilation systems or local exhaust systems.

~~((ii))~~ (b) General mechanical ventilation must be of sufficient capacity and so arranged as to produce the number of air changes necessary to maintain welding fumes and smoke within safe limits.

~~((iii))~~ (c) Local exhaust ventilation must consist of freely movable hoods intended to be placed by the welder or burner as close as practicable to the work. This system must be of sufficient capacity and so arranged as to remove fumes and smoke at the source and keep the concentration of them in the breathing zone within safe limits.

~~((iv))~~ (d) Contaminated air exhausted from a working space must be discharged into the open air or otherwise clear of the source of intake air.

~~((v))~~ (e) All air replacing that withdrawn must be clean and respirable.

~~((vi))~~ (f) Oxygen must not be used for ventilation purposes, comfort cooling, blowing dust or dirt from clothing, or for cleaning the work area.

(2) Welding, cutting and heating in confined spaces.

(a) Except as provided in ~~((WAC 296-304-04001(2))~~ (c) of this subsection and subsection (3)(b) of this section, either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section must be provided whenever welding, cutting or heating is performed in a confined space.

(b) The means of access must be provided to a confined space and ventilation ducts to this space must be arranged in accordance with WAC 296-304-05011 (2)(a) and (b).

(c) When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space must be protected by air line respirators in accordance with the requirements of chapter 296-842 WAC, and an employee on the outside of such a confined space must be assigned to maintain communication with those working within it and to aid them in an emergency.

(3) Welding, cutting or heating of metals of toxic significance.

(a) Welding, cutting or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection must be performed with either general mechanical or local exhaust ventilation meeting the requirements of subsection (1) of this section.

(i) Zinc-bearing base or filler metals or metals coated with zinc-bearing materials.

(ii) Lead base metals.

(iii) Cadmium-bearing filler materials.

(iv) Chromium-bearing metals or metals coated with chromium-bearing materials.

(b) Welding, cutting, or heating in any enclosed spaces aboard the vessel involving the metals specified in this subsection must be performed with local exhaust ventilation in accordance with the requirements of subsection (1) of this section or employees must be protected by air line respirators in accordance with the requirements of chapter 296-842 WAC.

(i) Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials.

(ii) Cadmium-bearing or cadmium coated base metals.

(iii) Metals coated with mercury-bearing metals.

(iv) Beryllium-containing base or filler metals. Because of its high toxicity, work involving beryllium must be done with both local exhaust ventilation and air line respirators.

(c) Employees performing such operations in the open air must be protected by filter type respirators in accordance with the requirements of WAC 296-304-09003, except that employees performing such operations on beryllium-containing base or filler metals must be protected by air line respirators in accordance with the requirements of chapter 296-842 WAC.

(d) Other employees exposed to the same atmosphere as the welders or burners must be protected in the same manner as the welder or burner.

(4) Inert-gas metal-arc welding. (~~((a))~~) Since the inert-gas metal-arc welding process involves the production of ultraviolet radiation of intensities of (~~(5)~~) five to 30 times that produced during shielded metal-arc welding, the decomposition of chlorinated solvents by ultraviolet rays, and the liberation of toxic fumes and gases, employees must not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

(~~((i))~~) (a) The use of chlorinated solvents must be kept at least (~~(two hundred)~~) 200 feet from the exposed arc, and surfaces prepared with chlorinated solvents must be thoroughly dry before welding is permitted on such surfaces.

(~~((ii))~~) (b) Helpers and other employees in the area not protected from the arc by screening as provided in WAC 296-304-04011(5) must be protected by filter lenses meeting the requirements of Tables I-1A and B (see below). When two or more welders are exposed to each other's arc, filter lens goggles of a suitable type meeting the requirements of WAC 296-304-09001 (1) and (3) must be worn under welding helmets or hand shields to protect the welder against flashes and radiant energy when either the helmet is lifted or the shield is removed.

(~~((iii))~~) (c) Welders and other employees who are exposed to radiation must be suitably protected so that the skin is covered completely to prevent burns and other damage by ultraviolet rays. Welding helmets and hand shields must be free of leaks and openings, and free of highly reflective surfaces.

~~((iv))~~ (d) When inert-gas metal-arc welding is being performed on stainless steel, the requirements of subsection (3)(b) of this section must be met to protect against dangerous concentrations of nitrogen dioxide.

(5) General welding, cutting and heating.

(a) Welding, cutting and heating not involving conditions or materials described in subsection (2), (3), or (4) of this section may normally be done without mechanical ventilation or respiratory protective equipment, but where, because of unusual physical or atmospheric conditions, an unsafe accumulation of contaminants exists, suitable mechanical ventilation or respiratory protective equipment must be provided.

(b) Employees performing any type of welding, cutting or heating must be protected by suitable eye protective equipment in accordance with the requirements of Tables I-1A and B (see below).

(6) Residues and cargos of metallic ores of toxic significance must be removed from the area or protected from the heat before welding, cutting or heating ~~((is))~~ has begun.

TABLE I-1A

FILTER LENSES FOR PROTECTION AGAINST
RADIANT ENERGY

OPERATIONS	ELECTRODE SIZE 1/32 IN	ARC CURRENT	MINIMUM PROTECTIVE SHADE
Shielded metal arc welding	Less than 3	Less than 60	7
	3-5	60-160	8
	5-8	160-250	10
	More than 8	250-550	11
Gas metal arc welding and flux cored arc welding		Less than 60	7
		60-160	10
		160-250	10
		((250-550)) <u>250-500</u>	10
Gas Tungsten arc welding		Less than 50	8
		50-150	8
		150-500	10
Air carbon ((are cutting))	(Light)	Less than 500	10
	((Heavy))	((500-1000))	((11))
<u>Arc cutting</u>	<u>(Heavy)</u>	<u>500-1000</u>	<u>11</u>
Plasma arc welding		Less than 20	6
		20-100	8
		100-400	10
		400-800	11
Plasma arc cutting	(Light)**	Less than 300	8
	(Medium)**	300-400	9
	(Heavy)**	400-800	10
Torch brazing	—	—	3
Torch soldering	—	—	2
Carbon Arc welding	—	—	14

** These values apply where the actual arc is clearly seen. Lighter filters may be used when the arc is hidden by the workplace.

TABLE I-1B

FILTER LENSES FOR PROTECTION AGAINST
RADIANT ENERGY

OPERATIONS	PLATE THICKNESS... INCHES	PLATE THICKNESS... MM	MINIMUM* PROTECTIVE SHADE
Gas welding:			

OPERATIONS	PLATE THICKNESS... INCHES	PLATE THICKNESS... MM	MINIMUM* PROTECTIVE SHADE
Light	Under 1/8	Under 3.2	4
Medium	1/8 ((-)) to 1/2	3.2 ((-)) to 12.7	5
Heavy	Over 1/2	Over 12.7	6
Oxygen cutting:			
Light	Under 1	Under 25	3
Medium	1 ((-)) to 6	((25-100)) 25 to 150	4
Heavy	Over 6	Over 150	5

* As rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. In oxyfuel gas welding or cutting where the torch produces a high yellow light, it is desirable to use a filter lens that absorbs the yellow or sodium line in the viable light of the (spectrum) operation.

Note: A worker may use an auto-darkening helmet that allows for the selection of final filtration settings inside the appropriate range as described in the tables above. The auto-darkening helmet must be in good working order and maintained in accordance with the manufacturers recommendations and guidance.

AMENDATORY SECTION (Amending WSR 18-04-096, filed 2/6/18, effective 3/9/18)

WAC 296-304-05001 Scaffolds or staging. (1) General requirements.

(a) All scaffolds and their supports whether of lumber, steel or other material, must be capable of supporting the load they are designed to carry with a safety factor of not less than four.

(b) All lumber used in the construction of scaffolds must be spruce, fir, long leaf yellow pine, Oregon pine or wood of equal strength. The use of hemlock, short leaf yellow pine, or short fiber lumber is prohibited.

(c) Lumber dimensions as given are nominal except where given in fractions of an inch.

(d) All lumber used in the construction of scaffolds must be sound, straight-grained, free from cross grain, shakes and large, loose or dead knots. It must also be free from dry rot, large checks, worm holes or other defects which impair its strength or durability.

(e) Scaffolds must be maintained in a safe and secure condition. Any component of the scaffold which is broken, burned or otherwise defective must be replaced.

(f) Barrels, boxes, cans, loose bricks, or other unstable objects must not be used as working platforms or for the support of planking intended as scaffolds or working platforms.

(g) No scaffold must be erected, moved, dismantled or altered except under the supervision of competent persons.

(h) No welding, burning, riveting or open flame work must be performed on any staging suspended by means of fiber rope.

(i) Lifting bridles on working platforms suspended from cranes must consist of four legs so attached that the stability of the platform is assured.

(j) Unless the crane hook has a safety latch or is moused, the lifting bridles on working platforms suspended from cranes must be attached by shackles to the lower lifting block or other positive means must be taken to prevent them from becoming accidentally disengaged from the crane hook.

(2) Independent pole wood scaffolds.

(a) All pole uprights must be set plumb. Poles must rest on a foundation of sufficient size and strength to distribute the load and to prevent displacement.

(b) In light-duty scaffolds not more than 24 feet in height, poles may be spliced by overlapping the ends not less than ((4)) four feet and securely nailing them together. A substantial cleat must be nailed to the lower section to form a support for the upper section except when bolted connections are used.

(c) All other poles to be spliced must be squared at the ends of each splice, abutted, and rigidly fastened together by not less than two cleats securely nailed or bolted thereto. Each cleat must overlap each pole end by at least 24 inches and must have a width equal to the face of the pole to which it is attached. The combined cross sectional area of the cleats must be not less than the cross sectional area of the pole.

(d) Ledgers must extend over two consecutive pole spaces and must overlap the poles at each end by not less than ((4)) four inches. They must be left in position to brace the poles as the platform is raised with the progress of the work. Ledgers must be level and must be securely nailed or bolted to each pole and must be placed against the inside face of each pole.

(e) All bearers must be set with their greater dimension vertical and must extend beyond the ledgers upon which they rest.

(f) Diagonal bracing must be provided between the parallel poles, and cross bracing must be provided between the inner and outer poles or from the outer poles to the ground.

(g) Minimum dimensions and spacing of members must be in accordance with Table E-1 in WAC 296-304-07011.

(h) Platform planking must be in accordance with the requirements of subsection (8) of this section.

(i) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(3) Independent pole metal scaffolds.

(a) Metal scaffold members must be maintained in good repair and free of corrosion.

(b) All vertical and horizontal members must be fastened together with a coupler or locking device which will form a positive connection. The locking device must be of a type which has no loose parts.

(c) Posts must be kept plumb during erection and the scaffold must be subsequently kept plumb and rigid by means of adequate bracing.

(d) Posts must be fitted with bases supported on a firm foundation to distribute the load. When wooden sills are used, the bases must be fastened thereto.

(e) Bearers must be located at each set of posts, at each level, and at each intermediate level where working platforms are installed.

(f) Tubular bracing must be applied both lengthwise and crosswise as required.

(g) Platform planking must be in accordance with the requirements of subsection (8) of this section.

(h) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(4) Wood trestle and extension trestle ladders.

(a) The use of trestle ladders, or extension sections or base sections of extension trestle ladders longer than 20 feet is prohibited. The total height of base and extension may, however, be more than 20 feet.

(b) The minimum dimensions of the side rails of the trestle ladder, or the base sections of the extension trestle ladder, must be as follows:

(i) Ladders up to and including those 16 feet long must have side rails of not less than 1 5/16 x 2 3/4 inch lumber.

(ii) Ladders over 16 feet long and up to and including those 20 feet long must have side rails of not less than 1 5/16 x 3 inch lumber.

(c) The side rails of the extension section of the extension trestle ladder must be parallel and must have minimum dimensions as follows:

(i) Ladders up to and including 12 feet long must have side rails of not less than 1 5/16 x 2 1/4 inch lumber.

(ii) Ladders over 12 feet long and up to and including those 16 feet long must have side rails of not less than 1 5/16 x 2 1/2 inch lumber.

(iii) Ladders over 16 feet long and up to and including those 20 feet long must have side rails of not less than 1 5/16 x 3 inch lumber. (Rev. 2-17-76)

(d) Trestle ladders and base sections of extension trestle ladders must be so spread that when in an open position the spread of the trestle at the bottom, inside to inside, must not be less than 5 1/2 inches per foot of the length of the ladder.

(e) The width between the side rails at the bottom of the trestle ladder or of the base section of the extension trestle ladder must not be less than 21 inches for all ladders and sections ((6)) six feet or less in length. For longer lengths of ladder the width must be increased at least ((4)) one inch for each additional foot of length. The width between the side rails of the extension section of the trestle ladder must be not less than 12 inches.

(f) In order to limit spreading, the top ends of the side rails of both the trestle ladder and of the base section of the extension trestle ladder must be beveled, or of equivalent construction, and must be provided with a metal hinge.

(g) A metal spreader or locking device to hold the front and back sections in an open position, and to hold the extension section securely in the elevated position, must be a component of each trestle ladder or extension trestle ladder.

(h) Rungs must be parallel and level. On the trestle ladder, or on the base section of the extension trestle ladder, rungs must be spaced not less than ((8)) eight inches nor more than 18 inches apart; on the extension section of the extension trestle ladder, rungs must be spaced not less than ((6)) six inches nor more than 12 inches apart.

(i) Platform planking must be in accordance with the requirements of subsection (8) of this section, except that the width of the platform planking must not exceed the distance between the side rails.

(j) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(5) Painters' suspended scaffolds.

(a) The supporting hooks of swinging scaffolds must be constructed to be equivalent in strength to mild steel or wrought iron, must be forged with care, must not be less than 7/8 inch in diameter, and must be secured to a safe anchorage at all times.

(b) The ropes supporting a swinging scaffold must be equivalent in strength to first-grade 3/4 inch diameter manila rope properly rig-

ged into a set of standard ((6)) six inch blocks consisting of at least one double and one single block.

(c) Manila and wire ropes must be carefully examined before each operation and thereafter as frequently as may be necessary to ensure their safe condition.

(d) Each end of the scaffold platform must be supported by a wrought iron or mild steel stirrup or hanger, which in turn is supported by the suspension ropes.

(e) Stirrups must be constructed so as to be equivalent in strength to wrought iron 3/4 inch in diameter.

(f) The stirrups must be formed with a horizontal bottom member to support the platform, must be provided with means to support the guardrail and midrail and must have a loop or eye at the top for securing the supporting hook on the block.

(g) Two or more swinging scaffolds must not at any time be combined into one by bridging the distance between them with planks or any other form of platform.

(h) No more than two persons must be permitted to work at one time on a swinging scaffold built to the minimum specifications contained in this section. Where heavier construction is used, the number of persons permitted to work on the scaffold must be determined by the size and the safe working load of the scaffold.

(i) Backrails and toeboards must be in accordance with the requirements of subsection (9) of this section.

(j) The swinging scaffold platform must be one of the three types described in (k), (l), and (m) of this ((~~section~~)) subsection.

(k) The ladder-type platform consists of boards upon a horizontal ladder-like structure, referred to herein as the ladder, the side rails of which are parallel. If this type of platform is used the following requirements must be met:

(i) The width between the side rails must be no more than 20 inches.

(ii) The side rails of ladders in ladder-type platforms must be equivalent in strength to a beam of clear straight-grained spruce of the dimensions contained in Table E-2 in WAC 296-304-07011.

(iii) The side rails must be tied together with tie rods. The tie rods must not be less than 5/16 inch in diameter, located no more than ((5)) five feet apart, pass through the rails, and be riveted up tight against washers at both ends.

(iv) The rungs must be of straight-grained oak, ash, or hickory, not less than 1 1/8 inches diameter, with 7/8 inch tenons mortised into the side rails not less than 7/8 inch and must be spaced no more than 18 inches on centers.

(v) Flooring strips must be spaced no more than 5/8 inch apart except at the side rails, where ((±)) one inch spacing is permissible.

(vi) Flooring strips must be cleated on their undersides.

(l) The plank-type platform consists of planks supported on the stirrups or hangers. If this type of platform is used, the following requirements must be met:

(i) The planks of plank-type platforms must not be less than 2 x 10 inch lumber.

(ii) The platform must not be more than 24 inches in width.

(iii) The planks must be tied together by cleats of not less than 1 x 6 inch lumber, nailed on their undersides at intervals of not more than ((4)) four feet.

(iv) The planks must extend not less than ((6)) six inches nor more than 18 inches beyond the supporting stirrups.

(v) A cleat must be nailed across the platform on the underside at each end outside the stirrup to prevent the platform from slipping off the stirrup.

(vi) Stirrup supports must not be more than 10 feet apart.

(m) The beam-type platform consists of longitudinal side stringers with cross beams set on edge and spaced not more than ((4)) four feet apart on which longitudinal platform planks are laid. If this type platform is used the following requirements must be met:

(i) The side stringers must be of sound, straight-grained lumber, free from knots, and of not less than 2 x 6 inch lumber, set on edge.

(ii) The stringers must be supported on the stirrups with a clear span between stirrups of not more than 16 feet.

(iii) The stringers must be bolted to the stirrups by U-bolts passing around the stirrups and bolted through the stringers with nuts drawn up tight on the inside face.

(iv) The ends of the stringers must extend beyond the stirrups not less than ((6)) six inches nor more than 12 inches at each end of the platform.

(v) The platform must be supported on cross beams of 2 x 6 inch lumber between the side stringers securely nailed thereto and spaced not more than ((4)) four feet on centers.

(vi) The platform must not be more than 24 inches wide.

(vii) The platform must be formed of boards 7/8 inch in thickness by not less than ((6)) six inches in width, nailed tightly together, and extending to the outside face of the stringers.

(viii) The ends of all platform boards must rest on the top of the cross beams, must be securely nailed, and at no intermediate points in the length of the platform must there be any cantilever ends.

(6) Horse scaffolds.

(a) The minimum dimensions of lumber used in the construction of horses must be in accordance with Table E-3 in WAC 296-304-07011.

(b) Horses constructed of materials other than lumber must provide the strength, rigidity and security required of horses constructed of lumber.

(c) The lateral spread of the legs must be equal to not less than one-third of the height of the horse.

(d) All horses must be kept in good repair, and must be properly secured when used in staging or in locations where they may be insecure.

(e) Platform planking must be in accordance with the requirements of subsection (8) of this section.

(f) Backrails and toeboards must be in accordance with subsection (9) of this section.

(7) Other types of scaffolds. Scaffolds of a type for which specifications are not contained in this section must meet the general requirements of subsections (1), (8) and (9) of this section, must be in accordance with recognized principles of design and must be constructed in accordance with accepted standards covering such equipment.

(8) Scaffold or platform planking.

(a) Except as otherwise provided in subsection (5)(k) and (m) of this section, platform planking must not be less than 2 x 10 inch lumber. Platform planking must be straight-grained and free from large or loose knots and may be either rough or dressed.

(b) Platforms of staging must not be less than two 10 inch planks in width except in such cases as the structure of the vessel or the

width of the trestle ladders make it impossible to provide such a width.

(c) Platform planking must project beyond the supporting members at either end by at least ((6)) six inches but in no case must it project more than 12 inches unless the planks are fastened to the supporting members.

(d) Table E-4 in WAC 296-304-07011 must be used as a guide in determining safe loads for scaffold planks.

(9) Backrails and toeboards.

(a) Scaffolding, staging, runways, or working platforms which are supported or suspended more than ((5)) five feet above a solid surface, or at any distance above the water, must be provided with a railing which has a top rail whose upper surface is from 42 to 45 inches above the upper surface of the staging, platform, or runway and a midrail located halfway between the upper rail and the staging, platform, or runway.

(b) Rails must be of 2 x 4 inch lumber, flat bar or pipe. When used with rigid supports, taut wire or fiber rope of adequate strength may be used. If the distance between supports is more than ((8)) eight feet, rails must be equivalent in strength to 2 x 4 inch lumber. Rails must be firmly secured. Where exposed to hot work or chemicals, fiber rope rails must not be used.

(c) Rails may be omitted where the structure of the vessel prevents their use. When rails are omitted employees working more than ((5)) five feet above solid surfaces must be protected by safety belts and life lines meeting the requirements of WAC ((296-304-09021(2))) chapter 296-880 WAC, Unified safety standards for fall protection, and employees working over water must be protected by personal flotation devices meeting the requirements of WAC 296-304-09017(1).

(d) Employees working from swinging scaffolds which are triced out of a vertical line below their supports or from scaffolds on paint floats subject to surging, must be protected against falling toward the vessel by a railing or a safety belt and line attached to the backrail.

(e) When necessary, to prevent tools and materials from falling on men below, toeboards of not less than 1 x 4 inch lumber must be provided.

(10) Access to staging.

(a) Access from below to staging more than ((5)) five feet above a floor, deck or the ground must consist of well secured stairways, cleated ramps, fixed or portable ladders meeting the applicable requirements of WAC 296-304-05003 or rigid type noncollapsible trestles with parallel and level rungs.

(b) Ramps and stairways must be provided with 36-inch handrails with midrails.

(c) Ladders must be so located or other means must be taken so that it is not necessary for employees to step more than one foot from the ladder to any intermediate landing or platform.

(d) Ladders forming integral parts of prefabricated staging are deemed to meet the requirements of these regulations.

(e) Access from above to staging more than ((3)) three feet below the point of access must consist of a straight, portable ladder meeting the applicable requirements of WAC 296-304-05003 or a Jacob's ladder properly secured, meeting the requirements of WAC 296-304-05007(4).