

# GENERAL INDUSTRY HANDBOOK



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Montana Department of  
**LABOR & INDUSTRY**

This booklet is only a reference of basic applicable standards and should not be considered a complete substitute for any provisions of the Occupational Safety and Health Act of 1970 or for any standards issued under the Act. The requirements discussed in this publication are summarized and abbreviated. The actual source standards are referenced at the end of each topic discussed; consult 29 CFR 1910 for a more complete explanation of the specific standards listed. Visit OSHA's website at [www.OSHA.gov](http://www.OSHA.gov).



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# THE MONTANA SAFETY CULTURE ACT

The Safety Culture Act enacted by the 1993 Montana State Legislature encourages workers and employers to come together to create and implement a workplace safety philosophy. It is the intent of the act to raise workplace safety to a preeminent position in the minds of all Montana's workers and employers.

Therefore, it is the responsibility and duty of employers to participate in the development and implementation of safety programs that will meet the specific needs of their workplace; thereby establishing a safety culture that will help create a safe work environment for all future generations of Montanans.

Recognizing the diversity of Montana's economy, the Montana Safety Culture Act (MSCA) intends to allow some flexibility of interpretation and application so you and your workers' compensation insurer can establish a safety program appropriate to your business and employees' needs and circumstances. You are encouraged to contact your insurer for assistance in establishing your safety program.

## Requirements

**Every Employer SHALL** establish, implement and maintain an educational based training program which **SHALL**, at a minimum:

1. Provide each new employee with a general safety orientation containing information common to all employees and appropriate to the business operations, before they begin their regular job duties.

RECOMMENDATIONS: The orientation should contain both oral and written instruction and include, but not be limited to, information on:

- Accident and hazard reporting procedures
- Emergency procedures
- Fire safety
- First aid
- Personal protective equipment
- Work site hazards

2. Provide job or task-specific safety training appropriate for employees before they perform that job or task without direct supervision.

RECOMMENDATIONS: The training should:

- Include specific safety rules, procedures and hazards
- Identify the employer's and employee's responsibilities regarding safety in the workplace
- Be conducted by personnel knowledgeable of the task being trained
- Be conducted when program is established, when employees' job assignments change, when new substances are introduced to the workplace, and when a new hazard is identified

3. Offer continuing regular refresher safety training.

RECOMMENDATIONS: The training should:

- Be held as is appropriate, but at least annually
  - Contain material to maintain and expand knowledge and awareness of safety issues in the workplace
4. Provide a system for the employer and their employees to develop an awareness and appreciation of safety through tools such as newsletters, periodic safety meetings, posters, and safety incentive programs.
  5. Provide periodic self-inspection for hazard assessment when the safety program is implemented, new worksites are established, and thereafter as is appropriate to the business operations, but at least annually, which:
    - Identifies hazards and unsafe work practices or conditions
    - Identifies corrective actions needed
    - Documents corrective action taken
  6. Include documentation of performance of activities listed in (1) through (5) above. This documentation must be kept by the employer for three years.

RECOMMENDATIONS: Documentation should include:

- Date, time, location and description of training, inspections, and corrective actions
- List of participants, i.e. inspectors, trainers, participants

## **Additional Requirements for Employers with more than five employees**

Employers with more than five employees must meet the previous requirements listed as well as the additional requirements listed below. In making the determination of employment levels, the employers **shall** count all **regular, temporary, leased and seasonal workers** under the employer's direction and control. The following requirements apply when there are more than five employees and remain in effect until the number of employees is less than six for three consecutive months.

### **1. Implement and maintain policies and procedures that assign specific safety responsibilities and safety performance accountability.**

Recommendations: The Policies & Procedures Should:

- Include a statement of top management commitment to the safety program
- Encourage and motivate employee involvement in the program.
- Define safety responsibilities for managers, personnel, supervisors and employees.
- Be reflected in job descriptions and performance evaluations
- Be communicated and accessible to all employees.

### **2. Implement and maintain procedures for reporting, investigating and taking corrective action on all work-related incidents, injuries, illnesses, fatalities and unknown unsafe work conditions or practices.**

Recommendations Procedures should be nonpunitive and include but not be limited to:

- Provisions for timely and effective reporting
- Recommendations and follow-up corrective action.
- Documentation
- Signature requirements for reports, investigations and corrective actions.
- Periodic evaluation of the procedures' effectiveness.

## Safety Committee Requirements

It is the intent of the Montana Department of Labor & Industry (MTDLI) that employer and employees meet for the purpose of creating a safety culture in Montana workplaces and reducing on-the-job injuries and illnesses, in the hope that by improving occupational safety, workers' compensation insurance rates for all industries in Montana will be reduced. Therefore, all employers with more than five employees are required to have a safety committee. The numbered requirements are followed by department recommendations.

### EVERY SAFETY COMMITTEE SHALL:

1. Be composed of employee and employer representatives and hold regularly scheduled meetings, at least once every four months.

### THE SAFETY COMMITTEE SHOULD:

- Be of sufficient size and number to provide for effective representation of the workforce
- Have more than one safety committee for employers with multiple sites
2. Include in its employee membership volunteers or members elected by their peers.
3. Include safety committee activities that assist the employer in fact finding.

RECOMMENDATIONS: The DLI recommends that the committee document its activities and act as a fact-finding body and report to the employer regarding:

- Assessing and controlling hazards
- Assessing safety training and awareness topics
- Communication with employees regarding safety committee activities
- Developing safety rules, policies and procedures
- Educating employees on safety related topics
- Evaluating the safety program on a regular basis
- Inspecting the workplace
- Keeping job specific training current
- Motivating employees to create a safety culture in the workplace
- Reviewing incidents of workplace accidents, injuries and illnesses

## Compliance

Workers' compensation insurers and the State Fund will assist the employers they insure in establishing safety programs that meet the requirements of the law. Your workers' compensation insurance contract or agreement will require the implementation of a safety program. If you fail to comply and refuse to participate in or follow through on recommendations resulting from safety consultation services offered by your workers' compensation insurer, you could see your workers' compensation premium increase. Contact your insurer for specific information about the consequences for noncompliance.

An effective safety program is your key to:

- Lowering Costs
- Improving Productivity
- Improving Employees' Morale

## Safety Program Checklist

- General safety orientation for new employees that contains information common to all employees and appropriate to the business operations, and is provided prior to the start of regular job duties.
- Job or task-specific training appropriate for employees before they perform that job or task without direct supervision.
- Continuing regular refresher training.
- System for employer and employees to develop an awareness and appreciation of safety through tools such as newsletters, periodic safety meetings, posters, and safety incentive programs.
- Periodic self-inspection for hazard assessment when safety program is implemented, new work sites are established and thereafter as is appropriate to the business operations, but at least annually.
- Documentation of performance of activities listed in the above requirements which include: (1) date, time, location and description of training, inspections and corrective actions; (2) list of participants; and (3) retained for three years.
- Additional requirements for employers with more than five employees.

- Policies and procedures that assign specific safety responsibility and safety performance accountability.
- Procedures for reporting, investigating, and taking corrective action on all work-related incidents, accidents, injuries, illnesses, and known unsafe work conditions or practices.
- Safety committee established which fills the following requirements: (1) composed of employees and employers; (2) meet at least once every 4 months; (3) employee members are either elected or volunteers; and (4) committee activities assist in fact finding.

## Questions and Answers

- Q:** Do I need to have a safety program if I only hire one person for 1 or 2 months out of the year?
- A:** Yes, all employers are required to have an educational based training program that includes the required elements.
- Q:** When I hire a new employee, do I need to conduct the general safety orientation the first day of employment?
- A:** You should complete the general safety orientation the first day an employee reports to work. This orientation should cover basic information such as the location of first aid kits, fire extinguishers, exits, and possible hazards. Task-specific safety training should be given within a reasonable time, not more than 30 days from the date of employment.
- Q:** Would documentation requirements be met by keeping a federal form on file?
- A:** Yes, it is intended that you and your insurer have flexibility in developing a safety program that meets the needs of your business. Avoiding duplication is encouraged.
- Q:** What record keeping is required?
- A:** Records of training new employees, safety meetings, and suggestions for improving safety in your workplace should be kept, but these records do not have to be sent to any state agencies.
- Q:** Who is required to comply with the MSCA?
- A:** The purpose of the legislation is to actively promote safety in every workplace to reduce the number of occupational injuries and illnesses. It is intended that voluntary safety compliance for those in the private sector, with the suggestions

of your insurer, can best achieve this goal. If you are insured by the State Fund, they have the authority to raise your premiums if you fail to implement a safety program. It is mandatory for public sector entities to comply with the MSCA.

**Q:** We have an early return-to-work program in place. Does the Safety Committee decide if someone should return to work or not?

**A:** The Safety Committee is a fact-finding body that reports to the employer on safety issues. The Committee would not make personnel decisions or make recommendations to the employer.

**Q:** I have 50 employees; how big should my safety committee be?

**A:** The safety committee should provide effective representation of the employer's and employee's interest. Your workers' compensation insurer can help you decide what size your committee should be.

If you don't have a written safety program but would like to get one, you can visit Safety Writer and use their online safety plan-writing program made available by OSHA. The program is free and you can get your written plan started by visiting [www.safetyconsultationservices.com/safetywriter/](http://www.safetyconsultationservices.com/safetywriter/).

## Request a Consultation

DLI's Safety & Health Bureau is dedicated to help improve safety and health in the workplace. If you would like to learn more about incorporating safety & health into your place of business you can contact the Consultation Unit at 406-494-5481. Consultation services are provided at no cost to the employer and will not result in any fines or penalties. Services are confidential.



# GENERAL INDUSTRY STANDARDS

## Abrasive Blasting

Blast-cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when not in use. 1910.244(b)

Blast-cleaning enclosures shall be exhaust ventilated in such a way that a continuous inward flow of air will be maintained at all openings in the enclosure during the abrasive blasting operation. 1910.94(a)(3)

## Abrasive Grinding

Abrasive wheel machinery and portable power tools shall be used only on machines provided with safety guards with the following exceptions:

- Wheels used for internal work while within the work being ground
- Mounted wheels, used in portable operations, 2 inches (5 centimeters) and smaller in diameter
- Type 16, 17, 18, 1SR, and 19 cones, plugs, and threaded hole pot balls where the work offers protection. 1910.215(a)(1) and 1910.243(c)(1)(i)

Abrasive wheel machinery and portable power tool safety guards shall cover the spindle end, nut, and flange projections, except:

- Safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut, and outer flange are exposed
- Where the nature of the work is such as to entirely cover the side of the wheel, the side covers of the guard may be omitted
- The spindle end, nut, and outer flange may be exposed on machines designed as portable saws. 1910.215(a)(2) and 1910.243(c)(1)(ii)(a)

Work rests shall be adjusted so that they are no more than 1/8 inch (3.1 millimeters) from the abrasive wheel. 1910.215(a)(4)

Abrasive wheel safety guards for bench and floor stands and for cylindrical grinders

shall not expose the grinding wheel periphery for more than 65 degrees above the horizontal plane of the wheel spindle. The protecting member shall be adjustable for variations in wheel size so that the distance between the wheel periphery and adjustable tongue (tongue guard) or end of the peripheral member at the top shall never exceed 1/4 inch (6 millimeters). 1910.215(b)(3), (4) and (9)

Machines designed for a fixed location shall be securely anchored to prevent “walking,” or designed in such a manner that in normal operation they will not move. 1910.212(b)

Abrasive wheels must be ring tested 1910.215(d)(1)

## **Accident Recordkeeping Requirements**

If your company had more than 10 employees during the last calendar year, you must keep the OSHA injury and illness records using the OSHA Forms 300, 300-A, and 301 or the equivalent form. 1904.1(a)(2) and 1904.29(a) and (b)(4)

If your company had 10 or fewer employees during the last calendar year, you do not need to keep OSHA injury and illness records unless OSHA or the Bureau of Labor Statistics informs you in writing that you must keep these records. 1904.1(a)(1)

Each recordable injury or illness must be entered on the OSHA Forms 300 and 301 within 7 calendar days of receiving the information. 1904.29(b)(3)

The OSHA 300-A must be verified, certified by a company executive and posted no later than February 1st of the following year and remain posted until April 30th. 1904.32 (a) and (b)

The OSHA 300, 300-A, and 301 logs must be kept and maintained for 5 years following the year to which they relate. 1904.33(a) and 1904.33(b)(1)

Note: Certain establishments classified as retail trades, finance, insurance, real estate, and services may be exempt from the requirement for maintaining records relating to occupational illness and injuries. (See 29 CFR 1904 Subpart B App A Partially Exempt Industries.)

## **Accident Reporting Requirements**

All employers are required to notify OSHA (private sector) or the Montana Department of Labor & Industry Safety & Health Bureau (public sector) when an employee is killed on the job or suffers a work-related hospitalization, amputation or loss of an eye. 1904.39(a) and (b)(7)

- A fatality must be reported within 8 hours.
- An in-patient hospitalization, amputation, or eye loss must be reported within 24 hours.

OSHA Contact info:

(800) 321-6742 National

(406) 247-7494 Montana OSHA Office

(406) 444-6401 MT Dept. of Labor & Industry Safety & Health Bureau

## **Air Contaminants**

Section 1910.1000 contains more than 600 permissible exposure limits (PELs). To achieve compliance with this section, administrative or engineering controls must first be determined and implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. 1910.1000(e)

## **Air Receivers**

All new air receivers installed, shall be designed and constructed to meet the standards of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section VIII, 1968. 1910.169(a)(2).

Copies of the Boiler and Pressure Vessel Code are available for purchase from: American Society of Mechanical Engineers (ASME), United Engineering Center, 345 East 47th Street, New York, NY 10017

A drain pipe and valve shall be installed for the removal of accumulated oil and water. 1910.169(b)(2)

Indicating gauges and safety valves shall be installed and tested frequently. 1910.169(b)(3)(iii)and(iv)

## **Asbestos**

The employer shall ensure that no employee is exposed to an airborne concentration of asbestos more than 0.1 fiber per cubic centimeter of air (0.1 f/cc) as an 8-hour time-weighted average (TWA). 1910.1001(c)(1)

The employer shall ensure that no employee is exposed to an airborne concentration

of asbestos more than 1.0 fiber per cubic centimeter of air (1.0 f/cc) as averaged over a sampling period of 30 minutes. 1910.1001(c)(2)

To help reduce worker exposure to airborne fibers, asbestos must be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state. This “wet” method also must be used when products containing asbestos are removed from bags, cartons, or containers. 1910.1001(f)(1)(vi) and (viii)

Respirators must be used (1) while feasible engineering and work practice controls are being installed or implemented; (2) during maintenance and repair activities or other activities where engineering and work practice controls are not feasible; (3) if feasible engineering and work practice controls are insufficient to reduce employee exposure to below the time weighted average (TWA) and/or excursion limit; and (4) in emergencies. 1910.1001(g)(1)

Owners of buildings constructed prior to 1980 which contain thermal system insulation or sprayed-on or troweled-on surfacing material must presume that these materials contain asbestos and train custodial and maintenance workers to deal with it safely. They may rebut the presumption by sampling and analysis which determines that it does not contain more than 1.0 percent asbestos. 1910.1001(j) (1) through (2) and (8)(iii)

## **Belt Sanding Machines**

Belt sanding machines used for woodworking shall be provided with guards at each nip point where the sanding belt runs onto a pulley, and the unused run of the sanding belt shall be shielded to prevent accidental contact. 1910.213(p)(4)

## **Bloodborne Pathogens**

Each employer having employee(s) who may incur skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials as a result of performing their professional duties shall establish a written exposure control plan designed to eliminate or minimize exposure. 1910.1030(c)(1)

Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. This includes first aid workers and other emergency care providers who might be exposed to bleeding victims. When differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious. 1910.1030(d)(1)

Engineering and work practice controls shall be used to eliminate or minimize

employee exposure. Where occupational exposure remains after instituting engineering and work practice controls, personal protective equipment shall also be used. 1910.1030(d)(2)(i)

Any employer required to maintain a log of occupational injuries and illnesses must implement and maintain a sharps injury log. The log must include: (1) type and brand of device; (2) department or work area where incident occurred; and (3) description of how incident occurred.

## **Boilers**

(See Pressure Vessels)

### **1,3 Butadiene**

Permissible exposure limits (PELs) for 1,3 Butadiene are:

(1) Time Weighted Average (TWA) limit. The employer shall ensure that no employee is exposed to an airborne concentration more than one part per million parts of air (ppm) measured as an 8-hour TWA.

(2) Short Term Exposure Limit (STEL). The employer shall ensure that no employee is exposed to an airborne concentration more than five ppm of air as determined over a sampling period of 15 minutes. 1910.1051(c)(1) and (2)

## **Cadmium**

The standard establishes an 8-hour, Time Weighted Average (TWA) permissible exposure limit (PEL) of 5 micrograms per cubic meter of air (5 ug/m<sup>3</sup>) and an action level of 2.5 micrograms per cubic meter of air (2.5 ug/m<sup>3</sup>) for all industries. The PEL applies to all cadmium compounds and does not differentiate between exposure to cadmium fumes or dust. 1910.1027(b) and (c)

In six major cadmium industries covered by the general industry standard (nickel-cadmium batteries, cadmium/zinc refining, lead smelting, pigments, plating, plastics), OSHA determined that it was not technologically or economically feasible to engineer to a TWA PEL of 5 micrograms per cubic meter of air (5 ug/m<sup>3</sup>). A separate engineering control air limit (SECAL) of either 15 micrograms per cubic meter of air (15 ug/m<sup>3</sup>) or 50 micrograms per cubic meter of air (50 ug/m<sup>3</sup>) was established for these industries. 1910.1027(f)(1)(i)

Employers must institute medical surveillance programs for all employees who,

for 30 or more days per year, are exposed at or above the action level. Medical surveillance also is required for all employees who, although not currently exposed at or above the action level, have been exposed to cadmium prior to this standard by the employer for an aggregate period of more than 60 months. 1910.1027(l)(1)(i)(A) and (B)

## **Change Rooms**

Employers are to provide employees with a room to change from their work clothes into their street clothes at the end of their shift when they work in regulated areas, or work in areas above the PEL, or at hazardous waste cleanup sites that will be in operation for 6 months or longer. Change rooms must be equipped with separate storage facilities for street clothes and protective clothing. 1910.1025(i)(2); 1910.141(e); and 1910.120(n)(7)

## **Chains, Cables, Ropes, and Hooks**

Hooks and chains used with overhead or gantry cranes shall be visually inspected daily. Monthly inspections shall be done with a certification record, dated, and signed by the inspector and kept on file readily available to appointed personnel. Running ropes shall be inspected monthly and a certification record kept on file and readily available to appointed personnel. 1910.179(j)(2)(iii) and (m)(1)

Rope clips attached with U-bolts shall have the U-bolts on the dead or short end (non-load carrying end) of the rope. Spacing and numbering of all clip types shall be installed in accordance with the clip manufacturer's recommendation. A newly installed rope requires all clip bolt nuts be retightened after 1 hour of use. 1910.179(h)(2)(v)

Hoist ropes on crawler, locomotive, and truck cranes shall be free from kinks or twists and shall not be wrapped around the load. 1910.180(h)(2) and (3)

Slings and their fastenings and attachments shall be inspected daily before use by a competent person. Damaged or defective slings shall be immediately removed from service. 1910.184(d)

Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or hooks that are twisted more than 10 degrees out of alignment are to be evaluated before use to determine if they are safe for the intended load. 1910.180(d)(3)(v) and 1910.184(f)(5)(vi)

## **Chemical Information**

(See Hazard Communication or Specific Chemical Term)

### **Compressed Air**

Compressed air used for cleaning purposes shall not exceed 30 pounds per square inch (psi) and then only with effective chip guarding and personal protective equipment. 1910.242(b)

### **Compressed Gas Cylinders**

Inside of buildings, gas cylinders generally shall be stored in a well-protected, well-ventilated, dry location, at least 20 feet (6.1 meters) from highly combustible materials such as oil or excelsior. Cylinders should be stored in assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards. 1910.253(b)(2)(ii)

Where a cylinder is designed to accept a valve protection cap, caps shall be in place, except when the cylinder is in use or connected for use. 1910.253(b)(2)(iv)

### **Compressed Gases**

ACETYLENE – Under no conditions shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure more than 15 pounds per square inch (psi) (103 kilopascal (kPa) gauge pressure) or 30 psi (206 kPa absolute). The use of liquid acetylene is prohibited. 1910.253(a)(2)

Acetylene cylinders shall be stored and used in a vertical, valve-end-up position only. 1910.253(b)(3)(ii)

The in-plant transfer, handling, storage, and utilization of acetylene in cylinders shall be in accordance with Compressed Gas Association Pamphlet G-1-2009, which is incorporated by reference as specified in Sec. 1910.6.

Copies of CGA Pamphlet G-1-2009 are available for purchase from the: Compressed Gas Association, Inc., 4221 Walney Road, 5th Floor, Chantilly, VA 20151; telephone: (703) 788-2700; fax: (703) 961-1831; email: [cga@cganet.com](mailto:cga@cganet.com).

HYDROGEN – Hydrogen containers shall comply with one of the following: (1) designed, constructed, and tested in accordance with appropriate requirements of ASME Boiler and Pressure Vessel Code, Section VIII—Unfired Pressure Vessels—1968; or (2) designed, constructed, tested and maintained in accordance with U.S. Department of Transportation specifications and regulations. 1910.103(b)(1)(i)(a)(1) and (2)

Hydrogen systems shall be located so that they are readily accessible to delivery equipment and to authorized personnel, shall be located above ground and shall not be located beneath electric power lines. Systems shall not be located close to flammable liquid piping or piping of other flammable gases. 1910.103(b)(2)(i)(a) through (d)

Permanently installed containers shall be provided with substantial noncombustible supports on firm noncombustible foundations. 1910.103(b)(1)(i)(b)

NITROUS OXIDE – Piped systems for the in-plant transfer and distribution of nitrous oxide shall be designed, installed, maintained, and operated in accordance with Compressed Gas Association Pamphlet G-8.1-1964. 1910.105

OXYGEN – Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet (6.1 meters) or by a noncombustible barrier at least 5 feet (1.5 meters) having a fire resistance rating of 1/2 hour (30 minutes). 1910.253(b)(4)(iii)

## **Confined Spaces**

(See Permit-Required Confined Spaces)

## **Cranes (Overhead and Mobile), Hoists and Derricks**

All functional operating mechanisms, air and hydraulic systems, chains, ropes, slings, hooks, and other lifting equipment shall be visually inspected daily (frequent inspections). 1910.179(j)(2); 1910.180(d); and 1910.184(d)(2)

Complete inspection of the crane shall be performed at 1 month to 12-month intervals (periodic inspections) depending on its activity, severity of service, and environmental conditions. The inspection shall include the following areas: deformed, cracked, corroded, worn, or loose members or parts; the brake system; limit indicators (wind, load); power plant, and electrical apparatus. 1910.179(j)(3); 1910.180(d)(4); and 1910.181(d)(3)

Unsafe conditions disclosed by the inspection requirements shall be corrected

before the operation is resumed and the crane shall not be operated until all guards have been reinstalled, safety devices reactivated and maintenance equipment removed. 1910.179(l)(2)(ii); 1910.180(f); and 1910.181(f)(2)(i)(f)

Overhead cranes shall have stops at the limit of travel trolley. Bridge and trolley bumpers or equivalent automatic devices shall be provided. Bridge trucks shall have tail sweeps. 1910.179(e)(1) through (4)

The rated load of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block, and this marking shall be clearly legible from the ground or floor. 1910.179(b)(5)

Pendant control boxes shall be clearly marked for identification of functions. 1910.179(g)(1)(v)

There shall be no hoisting, lowering, or traveling while any employee is on the load or hook. 1910.179(n)(3)(v); 1910.180(h)(3)(v); and 1910.181(i)(3)(v)

## **Dockboards**

Dockboards shall be strong enough to carry the load imposed on them. 1910.26(a)

Portable dockboards shall be anchored or equipped with devices that will prevent their movement when in use. 1910.30(a)(2)

## **Drinking Water**

Potable drinking water shall be provided in all places of employment. 1910.141(b)(1)(i)

Potable drinking water dispensers shall be designed, constructed, and serviced to ensure sanitary conditions, shall be capable of being closed, and shall have a tap. 1910.141(b)(1)(iii)

Open containers such as barrels, pails or tanks for drinking water from which the water must be dipped or poured, if they are fitted with a cover, are prohibited. 1910.141(b)(1)(v)

A common drinking cup is not allowed. 1910.141(b)(1)(vi)

## **Electrical**

Clearance to panel 1910.303 (G)(1)(vi)(b)

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. 1910.303(b)(1)

Listed or labeled equipment shall be installed and used in accordance with any instructions included in the listing or labeling. 1910.303(b)(2)

### **FLEXIBLE CORDS AND CABLES (EXTENSION CORDS)**

Flexible cords and cables shall be protected from accidental damage. 1910.305(a)(2)(x)

Unless specifically permitted, flexible cords and cables may not be used as a substitute for the fixed wiring of a structure, where attached to building surfaces, where concealed or where run through holes in walls, ceilings, or floors, or where run through doorways, windows, or similar openings. 1910.305(l)(iii)

Flexible cords shall be connected to devices and fillings so that strain relief is provided that will prevent pull from being directly transmitted to joints or terminal screws. 1910.305(g)(2)(iii)

### **GROUNDING/GROUNDED**

For a grounded system, a grounding electrode conductor shall be used to connect both the equipment grounding conductor and the grounded circuit conductor to the grounding electrode. Both the equipment grounding conductor and the grounding electrode conductor shall be connected to the grounded circuit conductor on the supply side of the service disconnecting means or on the supply side of the system disconnecting means or overcurrent devices if the system is separately derived. 1910.304(g)(1) through (g)(9)

For an underground service-supplied system, the equipment grounding conductor shall be connected to the grounding electrode conductor at the service equipment. 1910.304(g)(4)(ii)

The path to ground from circuits, equipment, and enclosures shall be permanent and continuous. 1910.304(g)(5)

### **GUARDING**

Electrical equipment shall be free from recognized hazards that are likely to cause death or serious physical harm to employees. 1910.303(b)(1)

## **IDENTIFICATION**

Each disconnecting means shall be legibly marked to indicate its purpose, unless it is located and arranged so the purpose is evident. 1910.303(f)

## **LISTING AND LABELING**

Listed or labeled equipment shall be used and installed in accordance with any instructions included in the listing or labeling. 1910.303(b)(2)

## **OPENINGS**

Unused openings in cabinets, boxes, and fittings shall be effectively closed. 1910.305(b)(1)(i)

## **SAFETY-RELATED WORK PRACTICES**

Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts when work is performed near or on equipment or circuits that are or may be energized. 1910.333(a)

Electrical safety-related work practices cover both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training). 1910.331(a)

There must be written lockout/tagout procedures (Typical minimal lockout procedures are located in 1910.147 Appendix A). 1910.333(b)(2)(i)

Overhead power lines must be de-energized and grounded by the owner or operator of the lines, or other protective measures must be provided before work is started. Protective measures, such as guarding or insulating the lines, must be designed to prevent employees from contacting the lines directly with any part of the body or indirectly through materials, tools, or equipment. 1910.333(c)(3)

Unqualified employees and mechanical equipment must be at least 10 feet (3 meters) away from overhead power lines. If the voltage exceeds 50,000 volts (50kV), the clearance distance increases 10 feet (3 meters) plus 4 inches (10.2 centimeters) for each additional 10,000 volts (10k V). 1910.333(c)(3)(i)(A) and (B)

Portable ladders must have nonconductive side rails if used by employees who would be working where they might contact exposed energized circuit parts. 1910.333(c)(7)

## **SPLICES**

Conductors shall be spliced or joined with devices identified for such use or by brazing, welding, or soldering with a fusible alloy or metal. All splices, joints, and free ends of conductors shall be covered with an insulation equivalent to that of the conductor or with an insulating device suitable for the purpose. 1910.303(c)(3)

## **Emergency Action Plans**

An emergency action plan to ensure employee safety in the event of fire and any other emergencies must be prepared in writing and reviewed with employees. However, employers with 10 or fewer employees may communicate the plan orally to employees. 1910.38(b)

The plan shall include the following elements: escape procedures and routes, critical plant operations, employee accounting following an emergency evacuation, rescue and medical duties, means of reporting emergencies, and persons to be contacted for information or clarification. 1910.38(c)

## **Ergonomics**

An ergonomic hazard may be caused or aggravated by repetitive motions, forceful exertions, vibration, sustained or awkward positioning or mechanical compression of the hand, wrist, arm, back neck, shoulder, and leg over extended periods or from other ergonomic stressors.

## **Exits**

Every building designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of emergency. 1910.36(b)(1)

In hazardous areas, or where employees may be endangered by the blocking of any single means of egress due to fire or smoke, there shall be at least 2 means of egress remote from each other. 1910.36(b)(2) and (2)

Exits and the way of approach and travel from exits shall be maintained so that they are unobstructed, unlocked and accessible always. 1910.36(d)(1) and 1910.37(a)(3)

Exit routes must be arranged so that employees will not have to travel toward a high hazard area, unless the path of travel is effectively shielded from the high hazard area by suitable partitions or other physical barriers. 1910.37(a)(2)

Exits shall be marked by readily visible, suitably illuminated exit signs. Exit signs shall be distinctive in color and provide contrast with surroundings. The word "EXIT" shall be of plainly legible letters, not less than 6 inches (15.2 centimeters) high. 1910.37(b)

Any door, passage, or stairway that is neither an exit nor a way of exit access and that is so located or arranged as to be likely to be mistaken for an exit, shall be identified by a sign reading "Not an Exit" or similar designation. 1910.37(b)(5)

## **Explosives and Blasting Agents**

All explosives shall be kept in approved magazines. 1910.109(c)(10)(i)

Stored packages of explosives shall be laid flat with top side up. Black powder, when stored in magazines with other explosives, shall be stored separately. 1910.109(c)(5)(i)

Vehicles used to store packages of explosives or blasting agents shall keep Department of Transportation placards visible until the vehicle is empty of explosives or blasting agents. 1910.1201

Smoking, matches, open flames, spark-producing devices, and firearms (except firearms carried by guards) shall not be permitted inside of or within 50 feet (15.2 meters) of magazines. The land surrounding a magazine shall be kept clear of all combustible materials for a distance of at least 25 feet (7.6 meters). Combustible materials shall not be stored within 50 feet (15 meters) of magazines. 1910.109(c)(5)(vii)

The manufacture of explosives and pyrotechnics shall meet the requirements of OSHA's Process Safety Management (1910.119) standard. 1910.109(k)(2) and (3)

## **Extension Cords**

(See Electrical, Flexible Cords and Cables)

## **Eye and Face Protection**

Each affected employee shall use appropriate eye or face protection when exposed to eye or face hazards from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiation. 1910.133(a)(1)

Protective eye and face devices must comply with either ANSI Z87. 1-1989 or ANSI Z87. 1-2003, American National Standard Practice for Occupational and Educational Eye and Face Protection. 1910.133(b)(1)

## **Eyewash/Drench Shower**

Where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. 1910.151(c)

## **Fan Blades**

When the periphery of the blades of a fan is less than 7 feet (2.1 meters) above the floor or working level, the blades shall be guarded. The guard shall have openings no larger than 1/2 inch (12.7 millimeters). 1910.212(a)(5)

## **Fall Protection**

The employer must ensure each fall protection system and falling object protection, other than personal fall protection systems, that this part requires meets the requirements in this section. The employer must ensure each personal fall protection system meets the requirements in subpart of this part. 1910.29(a)(1)/1910.140(c)(1)

## **Fire Protection**

Only approved portable fire extinguishers shall be used. 1910.157(c)(2)

If portable fire extinguishers are provided for employee use, the employer shall mount, locate, and identify them so they are readily accessible to employees without subjecting the employees to possible injury. These fire extinguishers shall be maintained in a fully charged and operable condition and kept in their designated places at all times except during use. 1910.157(c)(1) and (4)

Portable fire extinguishers containing carbon tetrachloride or chlorobromomethane shall not be used. 1910.157(c)(3)

Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer also shall provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting. Extinguishers should be inspected on a monthly and annual basis. 1910.157(g)(1)

## Flammable Liquids

Flammable liquids shall be kept in covered containers or tanks when not actually in use. 1910.106(e)(2)(iv)(A)

In industrial plants, for fire protection purposes, the quantity of flammable or combustible liquid that may be located outside of an inside storage room or storage cabinet in any one fire area of a building shall not exceed:

- 25 gallons (94.6 liters) of Category 1 flammable liquids in containers
- 120 gallons (454 liters) of Category 2, 3, or 4 flammable liquids in containers
- 660 gallons (2,498 liters) of Category 2, 3, or 4 flammable liquids in a single portable tank. 1910.106(e)(2)(ii)(B)

Flammable or combustible liquids shall be drawn from or transferred into containers within a building only through a closed piping system, from safety cans, by means of a device drawing through the top, or by gravity through an approved self-closing valve. Transferring by means of air pressure is prohibited. 1910.106(e)(2)(iv)(d)

Adequate precautions shall be taken to prevent the ignition of flammable vapors. Sources of ignition include, but are not limited to, open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, static, electrical and mechanical sparks, spontaneous ignition, including heat-producing chemical reactions, and radiant heat. 1910.106(e)(6)(i)

Category 1 or 2 flammable liquids, or Category 3 liquids with a flashpoint below 100 degrees F (37.8 C) shall not be dispensed into containers unless the nozzle and container are electrically interconnected. 1910.106(e)(6)(ii)

## Containers and Portable Tank Storage

Not more than 60 gallons (227.1 liters) of Category 1, 2, or 3 flammable liquids, nor more than 120 gallons (454.2 liters) of Category 4 flammable liquids may be stored in a storage cabinet. 1910.106(d)(3)(i)

Inside storage rooms for flammable and combustible liquids shall be constructed to meet the required fire-resistive rating and wiring for their uses and shall have a 4-inch (10.2 centimeters) sill around the perimeter of the room to contain spilled liquids. 1910.106(d)(4)(i) and (iii)

The quantity of LP-Gas stored shall not exceed 300 pounds (approximately 2,550 cubic feet in vapor form) except as provided in subparagraph (5). 1910.110(f)(4)(i)

Flammable or combustible liquids, including stock for sale, shall not be stored so as to limit use of exits, stairways, or areas normally used for the safe egress of people. 1910.106(d)(5)(i)

Outside storage areas shall be graded to divert spills away from buildings or other exposures, or be surrounded with curbs at least 6 inches (15.2 centimeters) high with appropriate drainage to a safe location for accumulated liquids. The areas shall be protected against tampering or trespassing, where necessary, and shall be kept free of weeds, debris, and other combustible material not necessary to the storage. 1910.106(d)(6)(iii) and (iv)

## **Floors, General Conditions – Also See Walking-working surfaces**

All place of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly and sanitary condition. 1910.22(a)(1) through (3)

Where wet processes are used, drainage must be maintained and to the extent feasible, dry standing places such as false floors, platforms and mats must be provided. 1910.22(a)(2)

## **Floor Loading Limit**

In every building or other structure, or part thereof, used for mercantile, business, industrial, or storage purposes, the loads approved by the building official shall be marked on plates of approved design that shall be supplied and securely affixed by the owner of the building, or his duly authorized agent, in a conspicuous place in each space to which they relate. Such plates shall not be removed or defaced, but if lost, removed, or defaced, shall be replaced by the owner or his agent. 1910.22(d)(1)

## **Floor Openings and Open Sides**

Each employee is protected from falling into a stairway floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. However, for any stairway used less than once per day where traffic across the stairway floor hole prevents the use of a fixed guardrail system (e.g., holes located in aisle spaces), the employer may protect employees from falling into the hole by using a hinged floor hole cover that meets the criteria in 1910.29 and a removable system on all exposed sides, except at the entrance to the stairway. 1910.28(b)(3)(iii)

Every hatchway and chute floor opening shall be guarded by a hinged floor cover that meets the criteria in 1910.29 and a fixed guardrail system that leaves only

one exposed side. When the hole is not in use the employer must ensure the cover is closed or a removable guardrail system is provided on the exposed sides. 1910.28(b)(3)(v) and (A)

The employer must ensure each employee on a runway or similar walkway is protected from falling 4 feet (1.2 m) or more to a lower level by a guardrail system. 1910.28(b)(5)(i)

When the employer can demonstrate that it is not feasible to have guardrails on both sides of a runway used exclusively for a special purpose, the employer may omit the guardrail on one side of the runway, provided the employer ensures the runway is at least 18 inches (46 cm) wide and each employee is provided with and uses a personal fall arrest system or travel restraint system. 1910.28(b)(5)(ii)(A)&(B)

## **Foot Protection**

Foot protective equipment shall be worn when working in areas where there is a danger of foot injuries due to falling or rolling objects or objects piercing the sole and where employees' feet are exposed to electrical hazards. 1910.136(a)

Employees in the logging industry are to wear heavy-duty logging boots that are waterproof or water repellant and cover and provide support for the ankles. Those persons who operate chain saws must wear foot protection constructed with cut resistant material that will protect the employee against contact with a running chain saw. Sharp, calk-soled boots or other slip resistant type boots may be used where the terrain and weather conditions require them. 1910.266(d)(1)(v)

Protective footwear must comply with any of the following: (1) ANSI Z41-1991, American National Standard for Personal Protection—Protective Footwear; (2) ANSI Z41-1999, American National Standard for Personal Protection—Protective Footwear; (3) ASTM F-2412-2005, Standard Test Methods for Foot Protection; and (4) ASTM F-2413-2005, Standard Specification for Performance Requirements for Protective Footwear. 1910.136(b)(1)

## **Forklifts (Powered Industrial Trucks)**

If at any time a powered industrial truck is found to need repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition. 1910.178(p)(1)

High-lift rider trucks shall be equipped with substantial overhead guards unless operating conditions do not permit. 1910.178(e)(1)

Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except as provided for in paragraph 1910.178 (q)(12). Additional counterweighting of fork trucks shall not be done unless approved by the truck manufacturer. 1910.178(q)(6)

Forklift trucks shall be equipped with vertical-load, backrest extensions when the types of loads present a hazard. 1910.178(e)(2)

The brakes of trucks shall be set and wheel chocks placed under the rear wheels to prevent the movement of trucks, trailers, or railroad cars while loading or unloading. 1910.178(m)(7)

Only a trained and authorized operator shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks. 1910.178(l)

Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required by paragraph (l)(4)(ii) to ensure that the operator has knowledge and skills needed to operate the powered industrial truck safely.

An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years. 1910.178(l)(4)(iii)

The employer shall certify that each operator has been trained and evaluated as required by this standard. The certification shall include the name of the operator, the date of training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation. 1910.178(l)(6)

## **Formaldehyde**

Employee exposure to formaldehyde shall be limited to 0.75 parts per million (ppm) as an 8-hour time weighted average (TWA); a 2 ppm 15-minute short term exposure limit (STEL); and an action level of 0.5 ppm. 1910.1048(b); (c)(1) through (2)

A medical surveillance program shall be instituted for any employee whose exposure exceeds the STEL or action level. Medical removal provisions with economic, seniority, and benefits protection may supplement medical surveillance programs, where necessary. 1910.1048(l)(i) and (l)(8)(vi) through (viii)

Hazard warning labels are required for all forms of formaldehyde, including solutions

and mixtures composed of 0.1 percent or greater of formaldehyde and materials capable of releasing the substance in concentrations of 0.1 ppm or higher. Comprehensive labels must include warnings of potential carcinogenic effects where concentrations may exceed 0.5 ppm. 1910.1048(m)(1)(i) and (m)(3)(iii)

The employer shall conduct training at the time of employees' initial assignment and annually thereafter for all employees exposed to a formaldehyde concentration of 0.1 ppm or higher. Such training is required to increase employees' awareness of formaldehyde hazards in their workplace and the control methods employed as well as an awareness of the signs and symptoms of health effects related to formaldehyde exposure. 1910.1048(n)(1) through (3)

## General Duty Clause

**Private Sector:** Hazardous conditions or practices not covered in an OSHA standard may be covered under Section 5(a)(1) of the Occupational Safety and Health Act of 1970, which states: "Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."

**Public Sector:** An employer must provide of employment free from recognized hazards that are causing or are likely to cause death or serious harm. MCA 50-71-116: ARM 24.30.102

## Hand Tools

Portable electric equipment shall be handled in a manner that will not cause damage. When the cord and plug connected tools are relocated they should be visually inspected before use. 1910.334(a)(1) and (2)

Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees. 1910.242(a)

The frames of portable electrical tools and equipment, except when UL approved double insulated construction, shall be properly grounded. 1910.304

All hand tools shall be kept in safe condition. Handles of tools shall be kept tight in the tool and wooden handles shall be free of splinters or cracks. Wedges and chisels shall be free of mushroomed heads. Wrenches shall not be used when sprung to the point that slippage occurs. 1910.266(e)(1)(i) through (v) Logging Operations

All non-current-carrying metal parts of portable equipment and fixed equipment including their associated fences, housings, enclosures, and supporting structures shall be grounded. 1910.304(g)(6)

## **Hazard Communication**

The purpose of this section is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, safety data sheets and employee training. 1910.1200(a)(1)

Employers shall develop, implement and maintain at each workplace a written hazard communication program which at least describes how the criteria for labels and other forms of warnings, safety data sheets, and employee information and training will be met, and which also includes a list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas) and, the methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas. 1910.1200(e)(1)

Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked. Hazards not otherwise classified do not have to be addressed on the container. Where the chemical manufacturer or importer is required to label, tag or mark the following information shall be provided:

- Product identifier
- Signal word
- Hazard statement(s)
- Pictogram
- Precautionary statement(s), and
- Name, address and telephone number of the manufacturer

1910.1200(f)(1)(i)-(vi)

The employer shall maintain in the workplace copies of the required safety

data sheets for each hazardous chemical and shall ensure that they are readily accessible during each work shift to employees when they are in their work areas. (Electronic access other alternatives to maintaining paper copies of the safety data sheets are permitted if no barriers to immediate employee access in each workplace are created by such options.) 1910.1200(g)(8)

Safety data sheet format includes at least the following:

- Section 1, Identification
- Section 2, Hazard(s) identification
- Section 3, Composition/information on ingredients
- Section 4, First Aid measures
- Section 5, Fire-fighting measures
- Section 6, Accidental release measures
- Section 7, Handling and storage
- Section 8, Exposure controls/personal protection
- Section 9, Physical and chemical properties
- Section 10, Stability and reactivity
- Section 11, Toxicological information
- Section 12, Ecological information
- Section 13, Disposal considerations
- Section 14, Transport information
- Section 15, Regulatory information, and
- Section 16, Other information including date of preparation or last revision

1910.1200(g)(2) through (xvi)

Employee training shall include at least: Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released); the physical, health, simple asphyxiation, combustible dust and pyrophoric gas hazards, as well as hazards not otherwise classified, of the chemicals in the work area; the

measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and the details of the hazard communication program developed by the employer, including an explanation of the labels received on shipped containers and the workplace labeling system, and the safety data sheet (SDS), and how employees can obtain and use the appropriate hazard information. 1910.1200(h)(3)(i) through (iv)

## **Hazardous Energy (Lockout/Tagout)**

Whenever service or maintenance is performed on machines and equipment, it must be done with the machine or equipment stopped and isolated from all sources of energy.

The energy isolating device(s) for that machine or equipment must be locked out or tagged out in accordance with a documented procedure. Employees involved in the energy control program must be given training. Periodic inspections of the use of the procedures must be conducted at least annually to ensure the continued effectiveness of the program. The periodic inspection must include a review of the procedures with all employees who are authorized to use the procedures when lockout is used, and with all authorized and affected employees when tagout is used. When outside contractors are performing servicing or maintenance within a plant or facility, each employer must coordinate with the other employers to ensure that no employees are endangered. When a group of employees are performing a servicing or maintenance activity, each employee must be afforded protection equivalent to the utilization of individual lockout or tagout. When servicing or maintenance extends over more than one shift, specific procedures shall be utilized to ensure continuity of personnel protection, including provision for the orderly transfer of lockout or tagout control. This must be done to minimize exposure to hazards from unexpected energizing, startup of the machine or equipment, or the release of stored or residual energy. 1910.147

## **Hazardous Waste Operations and Emergency Response**

Any information concerning the chemical, physical, and toxicological properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. The employer may utilize information developed for the hazard communication standard for this purpose. 1910.120(c)(8)

Employers are required to develop an emergency response plan for employees who will be responding to potential emergencies involving hazardous substances. This includes in-plant emergencies involving those substances to which employees are expected to respond. 1910.120(q)

Training is required for all employees who work at hazardous waste cleanup sites, treatment storage and disposal (TSD) sites (Environmental Protection Agency permitted sites), and who respond to any emergencies involving hazardous substances. Training must cover the necessary information to perform these jobs safely including information on the proper personal protective equipment and procedures to safeguard employees against hazards and effects of exposure to toxic substances. 1910.120(e), (p)(7) and (q)(6)

A safety and health program that delineates responsibilities and methods for assuring employee safety is necessary for employees engaged in hazardous waste cleanup and for TSD activities. 1910.120(b)(1) and (p)(1)

Medical surveillance (physical examination) is required for employees dealing with hazardous waste, TSD, and hazardous materials. It is used to monitor employees for adverse exposure to harmful substances. 1910.120(f)(2)

Personal protective equipment must be selected and used to protect employees from hazardous substances and physical hazards. 1910.120(g)(3)

When necessary, a decontamination procedure must be used to assure that hazardous substances are removed from workers before they leave the worksite as well as from equipment that is to be taken off site. 1910.120(k)(1) and (2), (p)(1) and (q)(2)(vii)

An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan shall be in writing and be available for inspection and copying by employees, their representatives, and OSHA personnel. 1910.120(q)(1)

## **Head Protection**

Head protection equipment (helmets) shall be worn when there is a possible danger of head injuries from impact, flying or falling objects, or electrical shock and burns. 1910.135(a)(1) and (2)

Head protection must comply with any of the following standards: (1) ANSI Z89.1-2014, American National Standard for Industrial Head Protection; (2) ANSI Z89.1-1997, American National Standard for Industrial Head Protection; or (3) ANSI Z89.1-1986, American National Standard for Personnel protection—Protective

Headwear for Industrial Workers-Requirements. 1910.135(b)(1)

## Housekeeping

All places of employment, passageways, store- rooms, and service rooms shall be kept clean and orderly and in a sanitary condition. 1910.22(a)(1) and 1910.141(a)(3)

## Ionizing Radiation

Employers shall be responsible for proper controls to prevent any employee from being exposed to ionizing radiation more than acceptable limits. 1910.1096(b)(1) and (c)(1)

Except as provided below, no employer shall possess, use, or transfer sources of ionizing radiation in such a manner as to cause any individual in a restricted area to receive in any period of one calendar quarter from sources in the employer's possession or control a dose more than those in the following table:

Table G-18

Rems per calendar quarter <sup>1</sup>	
Whole body: Head and trunk; active blood-forming organs; lens of eyes; or gonads.....	1.25
Hands and forearms; feet and ankles.....	18.75
Skin of whole body.....	7.5

1910.1096(b)(1)

<sup>1</sup>Rem is a measure of the dose of any ionizing radiation to body tissue in terms of its estimated biological effect relative to a dose of 1 roentgen (r) of x-rays (1 millirem [mrem] = 0.001 rem). The relation of the rem to other dose units depends on the biological effect under consideration and upon the conditions for irradiation. 1910.1096(a)(7)

Exceptions: An employer may permit an individual in a restricted area to receive doses to the whole body greater than those permitted so long as: (1) During the calendar quarter the dose to the whole body shall not exceed 3 rems; (2) the dose to the whole body, when added to the accumulated occupational dose to the whole

body, shall not exceed 5 (N- 18) rems, where “N” equals the individual’s age in years at his/her last birthday; and (3) the employer maintains adequate past and current exposure records. 1910.1096(b)(2)(ii) and (iii)

Each radiation area shall be conspicuously posted with appropriate signs and/or barriers. 1910.1096(e)(2)

Employers shall maintain records of the radiation exposure to all employees for whom personnel monitoring is required. 1910.1096(b)(2)(iii) and (n)(1)

## **Ladders, Fixed**

The employer must ensure fixed ladders can support their maximum intended load; the minimum perpendicular distance from the centerline of the steps or rungs, or grab bars, or both, to the nearest permanent object in the back of the ladder is 7 inches (18 cm), except for elevator pit ladders, which have a minimum perpendicular distance of 4.5 inches (11 cm). 1910.23 (d)(1) and (2)

Cages and wells installed on fixed ladders are designed, constructed, and maintained to permit easy access to, and egress from, the ladder that they enclose. 1910.29(g)(1)

Cages and wells are continuous throughout the length of the fixed ladder, except for access, egress, and other transfer points. 1910.29(g)(2)

Cages and wells are designed, constructed, and maintained to contain employees in the event of a fall, and to direct them to a lower landing. 1910.29(g)(3)

The side rails of through or sidestep ladders extend 42 inches (1.1 m) above the top of the access level or landing platform served by the ladder. 1910.23(d)(4)

## **Ladders, Portable**

Stepladders shall be equipped with a metal spreader or locking device of sufficient size and strength to securely hold the front and back sections in an open position. 1910.23(c)(2)

Ladders shall be inspected frequently and those that have developed defects shall be withdrawn from service for repair or destruction and tagged or marked as “Dangerous, Do Not Use.” 1910.145 and 1910.22(d)

Non- self-supporting ladders shall be erected on stable and level surfaces unless they are secured or stabilized to prevent accidental displacement. 1910.23 (c)(4)

Portable ladders used to gain access to an upper landing surface have side rails that extend at least 3 feet (0.9 m) above the upper landing surface. 1910.23(c) (11)

## **Lead**

The employer shall ensure that no employee is exposed to lead at concentrations greater than 50 micrograms per cubic meter (50 ug/m<sup>3</sup>) of air averaged over an 8-hour period. 1910.1025(c)(1)

## **Lockout/Tagout**

(See Hazardous Energy)

## **Lunchrooms**

Employees shall not consume food or beverages in toilet rooms or in any area exposed to a toxic material. 1910.141(g)(2)

A covered receptacle of corrosion resistant or disposable material shall be provided in lunch areas for disposal of waste food. The cover may be omitted when sanitary conditions can be maintained without the use of a cover. 1910.141(g)(3)

## **Machine Guarding**

Machine guarding shall be provided to protect employees in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips, and sparks. The guard shall be such that it does not offer an accident hazard. 1910.212(a)(1) and (2)

The point-of-operation guarding device shall be so designed as to prevent the operator from having any part of his body in the danger zone during the operating cycle. 1910.212(a)(3)(ii)

Special supplemental hand tools for placing and removing material shall permit handling of material without the operator placing a hand in the danger zone. 1910.212(a)(3)(iii)

Some of the machines that usually require point-of- operation guarding are

guillotine cutters, shears, alligator shears, power presses, milling machines, power saws, jointers, portable power tools, and forming rolls and calendars. 1910.212(a)(3)(iv)

## **Machinery, Fixed**

Machines designed for a fixed location shall be securely anchored to prevent walking or moving, or designed in such a manner that they will not move during normal operation. 1910.212(b)

## **Markings, Placards, and Labels**

Employers who receive shipments of hazardous materials that are required to be marked, placarded or labeled in accordance with the U.S. Department of Transportation hazardous materials regulations must retain such warnings on the packaging and transport until the hazardous materials are removed. 1910.1201(a) and (b)

## **Material Hoisting Equipment, Inspection**

(See Chains, Cables, Ropes, and Hooks)

(Also See Cranes (Overhead and Mobile), Hoists and Derricks)

Hooks and chains used with overhead or gantry cranes shall be visually inspected daily. Monthly inspections shall be done with a certification record, dated, and signed by the inspector and kept on file readily available to appointed personnel. Running ropes shall be inspected monthly and a certification record kept on file and readily available to appointed personnel. 1910.179(j)(2) and (m)(1)

All U-bolt rope clips on hoist ropes on overhead and gantry cranes shall be installed so that the U-bolt is in contact with the dead end (short or non-load carrying end) of the rope. Clips shall be installed in accordance with the clip manufacturer's recommendation. All nuts on newly installed clips shall be tightened after 1 hour of use. 1910.179(h)(2)(v)

Hoist ropes on crawler, locomotive, and truck cranes shall be free from kinks or twists and shall not be wrapped around the load. 1910.180(h)(3)

Slings and their fastening and attachments shall be inspected each day before use. Damaged or defective slings shall be immediately removed from service. 1910.184(d)

Each metal mesh sling shall have permanently affixed to it a durable marking that states the rated capacity for vertical basket hitch and choker hitch loadings 1910.184(g)(1)

Alloy steel chain slings shall have permanently affixed durable identification stating size, grade, rated capacity and reach. 1910.184(e)(1) Hooks that have been opened more than 15 percent of the normal throat opening measured at the narrowest point or twisted more than 10 degrees from the plane of the unbent hook shall be immediately removed from service. 1910.184(f)(5)(vi)

## **Mechanical Power Presses**

The employer shall provide and ensure the usage of point-of-operation guards or properly applied and adjusted point-of-operation devices to prevent entry of hands or fingers into the point of operation by reaching through, over, under, and around the guard on every operation performed on a mechanical power press. This requirement shall not apply when the point-of-operation opening is 1/4 inch (6 mm) or less. 1910.217(c)(1) and (c)(2)(i)(a)

Hand and foot operations shall be provided with guards to prevent inadvertent initiation of the press. 1910.217(b)(4) and (5)(i) and (ii)

The employer shall provide and enforce the use of safety blocks whenever dies are being adjusted or repaired in the press. Brushes, swabs, or other tools shall be provided for lubrication so that employees shall not reach into the point of operation. 1910.217(d)(9)(iv) and (v)

Presence-sensing devices may not be used to initiate the slide motion except when used in total conformance with paragraph (h), 29 CFR 1910.217, which requires certification of the control system. 1910.217(h)

Machines using full revolution clutches shall incorporate a single-stroke mechanism. 1910.217(b)(3)(i)

A main disconnect switch capable of being locked in the off position shall be provided with every power press control system. 1910.217(b)(8)(i)

To ensure safe operating conditions and to maintain a record of inspections and maintenance work, the employer shall establish a program of regular inspections of the power presses that shall include the date, serial number of the equipment, as well as the signature of the inspector. 1910.217(e)(1)(i)

All point-of-operation injuries must be reported to OSHA or the state agency within 30 days. 1910.217(g)(1)

Amputations must be reported within 24-hours. 1904.39(a)(2)

### Medical Records and Employee Exposure Records

Employers, upon request, are to make sure that each employee or their designated representative has access to their exposure records. 1910.1020(e)(2)(i)

Employers must provide newly hired workers with information on and the availability of the employee's medical records, and employees' rights of access. 1910.1020(g) (i) through (iii)

## **Medical Services and First Aid**

The employer shall ensure the ready availability of medical personnel for advice and consultation on matters of occupational health. 1910.151(a)

When a medical facility for treatment of injured employees is not available in proximity to the workplace, a person or persons shall be trained to render first aid. First aid supplies shall be maintained for use by trained personnel. 1910.151(b)

### 4,4' Methyleneedianiline (MDA)

An employer must ensure that no employee is exposed to an airborne concentration of MDA in excess of 10 parts per billion (ppb) as an 8-hour time weighted average (TWA); a 100 ppb, 15-minute short term exposure limit (STEL); an action level of 5 ppb; and that there is no dermal contact with MDA. 1910.1050(b) and (c)

Employers must determine whether employees are subject to MDA exposure above the action level, 8-hour TWA, or STEL, or dermally. 1910.1050(e)(1)(i); (e)(2) and (e)(8)

Employers must limit airborne exposures to MDA with feasible engineering and work practice controls, supplemented using respirators if necessary, and must limit dermal exposure by providing appropriate personal protective clothing and equipment; regulated areas must be established where exposure may exceed the 8-hour TWA, or dermal exposures to MDA can occur. 1910.1050(j)

Hygiene facilities to include decontamination, change, equipment, shower, and lunch areas may be required to be provided by employers where dermal or elevated levels of exposure to MDA may occur. 1910.1050(j)

Hazards of exposure to MDA must be communicated to employees via posting signs in regulated areas, labeling containers of MDA, maintaining a safety data sheet for MDA, and by providing employees with an information and training program. 1910.1050(k)(1) through (3)

Medical surveillance must be made available to employees exposed dermally to MDA for 15 or more days, exposed above the action level for 30 or more days per year, and in other situations where exposure to MDA may present health risks to employees. Benefits (pay, seniority) must be afforded employees whose exposure to MDA leads to a medical determination, based on health considerations, the employee must be removed from such exposure. 1910.1050(m)(1) and (m)(9)(v)

## **Methylene Chloride**

Permissible exposure limits (PELs) for methylene chloride are: (1) 8-hour time weighted average (TWA). The employer shall ensure that no employee is exposed to an airborne concentration more than 25 parts per million of air (25 ppm) as an 8-hour TWA.

(2) STEL. The employer shall ensure that no employee is exposed to an airborne concentration more than 125 ppm parts of air (125 ppm) as determined over a sampling period of 15 minutes. 1910.1052(c)(1) and (c)(2)

## **Noise Exposure**

Protection against the effects of occupational noise exposure shall be provided when the sound levels exceed those shown in Table G-16. Feasible engineering and/or administrative controls shall be utilized to keep exposure below the allowable limit. 1910.95(a)

When engineering or administrative controls fail to reduce the noise level to within the levels of Table G-16, personal protective equipment shall be provided and used to reduce the noise to an acceptable level. 1910.95(b)(1)

In all cases, where the sound levels equal or exceed an 8-hour TWA of 85 decibels measured on the A scale, a continuing, effective hearing conservation program shall be administered. In addition, the employer shall develop and implement a monitoring program. 1910.95(c) and (d)(1)

Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level (See Table G-16 footnotes).

The employer shall make available to affected employees or their representative's copies of this standard and shall post a copy in the workplace. 1910.95 (1)(1)

TABLE G-16 - PERMISSIBLE NOISE EXPOSURES<sup>1</sup>

Duration per day, hours	Sound level dBA slow response
8	90
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

<sup>1</sup>When the daily noise exposure is composed of two or more periods of noise exposure of different levels, their combined effect should be considered, rather than the individual effect of each. If the sum of the following fractions:  $C(1)/T(1) + C(2)/T(2)$  plus  $C(n)/T(n)$  exceeds unity, then, the mixed exposure should be considered to exceed the limit value.  $C_n$  indicates the total time of exposure at a specified noise level, and  $T_n$  indicates the total time of exposure permitted at that level. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level. 1910.95(b)(2)

## Nonionizing Radiation (Electromagnetic Radiation)

Employers shall be responsible for proper controls to prevent any employee from being exposed to electromagnetic radiation more than acceptable limits. 1910.97(a)(2)

Each electromagnetic radiation area shall be conspicuously posted with appropriate signs and/or barriers. 1910.97(a)(3)

## Permit-Required Confined Spaces

1. “Confined Space” means a space that: Is large enough and so configured that an employee can bodily enter and perform assigned work; and
2. Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry.); and
3. Is not designated for continuous employee occupancy.

“Non-permit confined space” means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

“Permit-required confined space (permit space)” means a confined space that has one or more of the following characteristics:

1. Contains or has a potential to contain a hazardous atmosphere;
2. Contains a material that has the potential for engulfing an entrant;
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or
4. Contains any other recognized serious safety or health hazard.

#### 1910.146(b)

The employer shall evaluate the workplace to determine if confined space conditions exist that necessitate permits for entry. 1910.146(c)(1)

If permit-required confined spaces exist, exposed employees must be informed of the existence, location, and dangers of the permit space by positive means, such as signs, or there must be an equally effective means of communicating the hazards of these spaces. 1910.146(c)(2)

If the employer decides that employees will not enter permit spaces, the employer shall take effective measures to prevent them from entering the permit spaces and shall comply with paragraphs (c)(1), (c)(2), (c)(6), and (c)(8) of 1910.146.

If confined space entry is required, a written permit program must be developed and initiated by the employer. The written program shall be available for inspection by employees and their authorized representatives. 1910.146(c)(4)

Before entry is authorized, the employer shall document the completion of measures required by paragraph (d)(3) of this section by preparing an entry permit. 1910.146(e)(1)

The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section. 1910.146(g)(1)

The employer shall ensure that each member of the rescue service is provided with, and is trained to use properly, the personal protective equipment and rescue equipment necessary for making rescues from permit spaces. 1910.146(k)(1)(i)

## **Personal Protective Equipment**

The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (head, eye, face, foot, or hand protection). If such hazards are present, or are likely to be present, the employer shall select and have employees use the type(s) of personal protective equipment (PPE) that will protect them from the hazards identified in the hazard assessment. 1910.132(d)

Proper personal protective equipment which covers the eyes, face, head, and extremities, respiratory devices, and protective shields and barriers shall be provided, used, and maintained in a sanitary and reliable condition where there is a hazard from processes or environments that may cause injury or illness to the employee. 1910.132(a)

Where employees furnish their own personal protective equipment, the employer shall be responsible to assure its adequacy and that the equipment is properly maintained and in a sanitary condition. 1910.132(6b)

The employer shall provide training to each employee who is required to use PPE. Each such employee shall be trained to know at least the following: When PPE is necessary; what PPE is necessary; how to properly don, doff, adjust, and wear PPE; the limitations of the PPE; and the proper care, maintenance, useful life, and disposal of PPE. 1910.132(f)

Except as provided by paragraphs (h)(2) through (h)(6), the protective equipment, including personal protective equipment (PPE), shall be provided by the employer at no cost to employees. 1910.132(h)(1)

## **Portable Power Tools (Pneumatic)**

For portable tools, a tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool. 1910.243(b)(1)

Hose and hose connections used for conducting compressed air shall be designed for the pressure and service to which they are subjected. 1910.243(b)(2)

## **Power Transmission Equipment Guarding**

All belts, pulleys, sprockets and chains, flywheels, shafting and shaft projections, gears, and couplings, or other rotating or reciprocating parts, or any portion thereof,

within 7 feet (2.1 meters) of the floor or working platform shall be effectively guarded. 1910.219(b)(1), (c)(2)(i) and (f)(3)

All guards for inclined belts shall conform to the standards for construction of horizontal belts, and shall be arranged in such a manner that a minimum clearance of 7 feet (2.1 meters) is maintained between the belt and floor at any point outside the guard. 1910.219(e)(3)

Flywheels located so that any part is 7 feet (2.1 meters) or less above the floor or platform shall be guarded with an enclosure of sheet, perforated, or expanded metal or woven wire. 1910.219(b)(1)(i)

Flywheels protruding through a working floor shall be entirely enclosed by a guardrail and toe board. 1910.219(b)(1)(iii)

Where both runs of horizontal belts are 7 feet (2.1 meters) or less from the floor or working surface, the guard shall extend at least 15 inches (37.5 centimeters) above the belt or to a standard height except that where both runs of a horizontal belt are 42 inches (1.05 meters) or less from the floor, the belt shall be fully enclosed by guards made of expanded metal, perforated or solid sheet metal, wire mesh on a frame of angle iron, or iron pipe securely fastened to the floor or to the frame of the machine. 1910.219(e)(1)(i) and 1910.219(m)(1)(i)

Gears, sprocket wheels, and chains shall be enclosed; unless they are more than 7 feet (2.1 meters) above the floor, or the mesh points are guarded. 1910.219(f)(1) and 1910.219(f)(3)

Couplings with bolts, nuts or set screws extending beyond the flange of the coupling shall be guarded by a safety sleeve. 1910.219(i)(2)

## **Powered Industrial Trucks**

(See Forklifts)

## **Powered Platforms for Building Maintenance**

All completed building maintenance equipment installations shall be inspected and tested in the field before being placed in service. A similar inspection and test shall be made following any major alteration to an existing installation. No hoist shall be subjected to a load more than 125 percent of its rated load. 1910.66(g)(1)

Structural supports, tie-downs, tie-in guides, anchoring devices and any affected

parts of a building included in the installation shall be designed by or under the direction of a registered, experienced professional engineer. Exterior installations shall be capable of withstanding prevailing climatic conditions. The building installation shall provide safe access to, and egress from, the equipment and sufficient space to conduct necessary maintenance. Affected parts of the building shall have the capability of sustaining all the loads imposed by the equipment. The affected parts of the building shall be designed to allow the equipment to be used without exposing employees to a hazardous condition. 1910.66(e)(1)(i) through (v)

Repairs or major maintenance of those building portions that provide primary support for the suspended equipment must not affect the capability of the building to meet the requirements of this standard. 1910.66(e)(10)

The equipment power circuit shall be an independent electrical circuit that shall remain separate from all other equipment within or on the building, other than power circuits used for hand tools that will be used in conjunction with the equipment. If the building is provided with an emergency power system, the equipment power circuit may also be connected to this system. 1910.66(e)(11)(iii)

Equipment installations shall be designed by or under the direction of a registered, experienced professional engineer. The design shall provide for a minimum live load of 250 pounds (113.6 kg) for each occupant of a suspended or supported platform. Equipment that is exposed to wind when not in service shall be designed to withstand forces generated by winds of at least 100 mph (44.7 m/s) at 30 feet (9.2 meters) above grade and when in service able to withstand forces generated by winds of at least 50 mph (22.4 m/s) at all elevations. 1910.66(f)(5)(i) through (iv)

Each suspended unit component, except suspension ropes and guardrail systems, can support at least four times the maximum intended live load applied or transmitted to that component. 1910.66(f)(5)(i)(A)

## **Pressure Vessels (Boilers)**

Boiler design, construction, and inspection is referenced in the ASME Boiler and Pressure Vessel Code, 2004 and current. 1910.106(b) and 1910.217(b)(12) and OSHA Instruction TED 1.15, Section III: Chapter 3 (Pressure Vessel Guidelines).

## **Process Safety Management of Highly Hazardous Chemicals**

Employers shall develop a written plan of action regarding employee participation and shall consult with employees and their representatives on the conduct and development of process hazard analyses and on the development of the other

elements of process safety management. 1910.119(c)(1) and (2)

The employer shall complete a compilation of written process safety information prior to conducting a process hazard analysis. 1910.119(d)

The employer shall perform a process hazard analysis appropriate to the complexity of the company's processes and shall identify, evaluate, and control the hazards involved in the process. 1910.119(e)(1)

The employer shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with process safety information. 1910.119(f)(1)

Each employee presently involved in operating a process and each employee before being involved in operating a newly assigned process shall be trained in an overview of the process and in the operating procedures specified in paragraph (f). 1910.119(g)(1)

The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety performance and programs. 1910.119(h)(2)(i)

The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job. 1910.119(h)(3)(i)

The employer shall perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information. 1910.119(i)(1)

The employer shall establish and implement written procedures to maintain the ongoing integrity of process equipment. 1910.119(j)(2)

The employer shall establish and implement written procedures to manage changes to process chemicals, technology, equipment, and procedures, and changes to facilities that affect a covered process. 1910.119(l)(1)

The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemicals in the workplace. 1910.119(m)(1)

The employer shall establish and implement an emergency action plan for the entire plant in accordance with the provisions of 29 CFR 1910.38(a). 1910.119(n)(1)

## Railings

The employer must ensure guardrail systems meet the following requirements:

1. The top edge height of top rails, or equivalent guardrail system members, are 42 inches (107 cm), plus or minus 3-inches (8 cm), above the walking-working surface. 1910.29(b)(1)
2. Midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members are installed between walking-working surface and the top edge of the guardrail system as follows when there is not a wall or parapet that is at least 21 inches (53 cm) high. 1910.29(b)(2)

Where tools, equipment, or materials are piled higher than the top of the toeboard, paneling or screening is installed from the toeboard to the midrail of the guardrail system and for a length that is sufficient to protect employees below. If the items are piled higher than the Midrails, the employer must also install paneling or screening to the top rail and for a length that is sufficient to protect employees below. 1910.29(k)(2)(i)

Railings shall be of such construction that the complete structure shall can withstand a load of at least 200 pounds (90 kilograms) in any direction on any point on the top rail. 1910.29(b)(3)

## Respiratory Protection

Where respirators are required, the program shall be regularly evaluated to determine its continued effectiveness. The employer is required to develop and implement a written respiratory protection program with required worksite-specific procedures and elements for required respirator use. The program must be administered by a suitably trained program administrator. 1910.134(c)

Must select a respirator certified by the National Institute for Occupational Safety and Health (NIOSH) which must be used in compliance with the conditions of its certification. 1910.134(d)(1)(i) and 1910.134(d)(1)(ii)

Must provide a medical evaluation to determine employee's ability to use a respirator, before fit testing and use. 1910.134(e)(2)

Before an employee may be required to use any respirator with a negative or positive pressure tight-fitting facepiece, the employee must be fit tested with the same make, model, style and size of respirator that will be used. 1910.134(f)

The employer shall not permit respirators with tight-fitting face pieces to be worn

by employees who have facial hair that comes between the sealing surface of the face piece and the face or that interferes with valve function; or any condition that interferes with the face-to-face piece seal or valve function. 1910.134(g)(1)(i)

Must clean and disinfect respirators as often as necessary to maintain a sanitary condition for exclusive use respirators, before being worn by different individuals when issued to more than one employee, and after each use for emergency use respirators and those used in fit testing and training. 1910.134(h)(1)

All respirators shall be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals, and they shall be packed or stored to prevent deformation of the face piece and exhalation valve. 1910.134(h)(2)

All respirators used in routine situations shall be inspected before each use and during cleaning. 1910.134(h)(3)(i)(A)

The employer shall ensure that all filters, cartridges and canisters used in the workplace are labeled and color coded with the NIOSH approval label and that the label is not removed and remains legible. 1910.134(j)

Employer must conduct evaluations of the workplace as necessary to ensure proper implementation of the program and consult with employees to ensure proper use. 1910.134(l)

## **Respirable Crystalline Silica**

The employer shall assess the exposure of each employee who is or may be reasonably expected to be exposed to respirable crystalline silica at or above the action level in accordance with either the performance option 1910.1053(d)(2) or the scheduled monitoring options 1910.1053(d)(3).

The employer shall reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonable be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred. 1910.1053(d)(4)

Within 15 working days after completing an exposure assessment in accordance with paragraph (d) of this section, the employer shall individually notify each affected employee in writing of the results of that assessment or post the results in an appropriate location accessible to all affected employees. 1910.1053(d)(6)(i)

When observation of monitoring requires entry into an area where the use of

protective clothing or equipment is required for any workplace hazard, the employer shall provide the observer with protective clothing and equipment at no cost and shall ensure that the observer uses such clothing and equipment. 1910.1053(d)(7)(ii)

The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of respirable crystalline silica is, or can reasonably be expected to be, in excess of the PEL. 1910.1053(e)(1)

The employer shall use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below PEL, unless the employer can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection. 1910.1053(f)(1)

The employer shall establish and implement a written exposure control plan that contains at least the following elements: 1910.1053(f)(2)(i)

- A description of the tasks in the workplace that involve exposure. 1910.1053(f)(2)(i)(A)
- A description of engineering controls, work practices, and respiratory protection used to limit employee exposure for each task. 1910.1053(f)(2)(i)(B)
- A description of housekeeping measures used to limit employee exposure. 1910.1053(f)(d)(i)(C)

The employer shall review and evaluate the effectiveness of the written exposure control plan at least annually and update it as necessary. 1910.1053(f)(2)(ii).

## **Restarts**

In operations where injury to the operator might result if motors were to restart after power failures, provision shall be made to prevent machines from automatically restarting upon restoration of power. 1910.213(b)(3)

Band saw blades shall be enclosed or guarded except for the working portion of the blade between the bottom of the guide rolls and the table. Band saw wheels shall be fully encased. The outside periphery of the enclosure shall be solid. The front and back shall be either solid or wire mesh or perforated metal. 1910.213(i)(1)

Circular table saws shall have a hood over the portion of the saw above the table

mounted so that the hood will automatically adjust itself to the thickness of and remain in contact with the material being cut. 1910.213(c), (d)(1) and (e)(1)

Circular table saws shall have a spreader aligned with the blade, spaced no more than 1/2 inch (8 millimeters) behind the largest blade mounted in the saw. The provision of a spreader relating to grooving, dadoing, or rabbeting is not required. 1910.213(c)(2) and (e)(2)

Rip saws shall have a spreader aligned with the blade and shall be no thinner than the blade. The provision of a spreader relating to grooving, dadoing, or rabbeting is not required. 1910.213(c)(2) and (e)(2)

Circular table saws used for ripping shall have non-kickback fingers or dogs. Rip saws shall have non-kickback fingers or dogs. 1910.213(c)(3) and (f)(2)

Inverted swing or sliding cut-off saws shall be provided with a hood that will cover the part of the saw that protrudes above the top of the table or material being cut. 1910.213(g)(4)

Radial saws shall have an upper guard that completely encloses the upper half of the saw blade. The sides of the lower exposed portion of the blade shall be guarded by a device that will automatically adjust to the thickness of and remain in contact with the material being cut. 1910.213(h)(1)

Radial saws used for ripping shall have non-kickback fingers or dogs. 1910.213(h)(2)

Radial saws shall have an adjustable stop to prevent the forward travel of the blade beyond the position necessary to complete the cut in repetitive operations. 1910.213(h)(3)

Radial saws shall be installed so that the cutting head will return to the starting position when released by the operator. 1910.213(h)(4)

Self-feed circular saws feed rolls and blades shall be protected by a hood or guard to prevent the hand of the operator from encountering the in-running rolls at any point. 1910.213(f)(1)

Swing or sliding cut-off saws shall be provided with a hood that will completely enclose the upper half of the saw. 1910.213(g)(1)

Swing or sliding cut-off saws shall be provided with limit stops to prevent the saws from extending beyond the front or back edges of the table. 1910.213(g)(3)

Swing or sliding cut-off saws shall be provided with an effective device to return the saw automatically to the back of the table when released at any point of its travel.

## Ropes

(See Chains, Cables, Ropes, Hooks)

## Saws, Portable Circular

(Also See Woodworking Machinery)

All portable, power driven circular saws (except those used for cutting meat) having a blade diameter greater than 2 inches (5 centimeters) shall be equipped with guards above and below the base plate or shoe. The upper guards shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base plate to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically return to the covering position. 1910.243(a)(1)

All cracked saw blades shall be removed from service. 1910.243(a)(4)

## Scaffolds

Scaffolds used in General Industry must meet the requirements in 29 CFR part 1926, subpart L (Scaffolds).

Each platform unit (e.g., scaffold plank, fabricated deck, or fabricated platform) shall be installed so that the space between adjacent units and the space between the platform and the uprights is no more than 1 inch (2.5 cm) wide, except where the employer can demonstrate that a wider space is necessary (for example, to fit around uprights when side brackets are used to extend the width of the platform).

On scaffolds where platforms are overlapped to create a long platform, the overlap shall occur only over supports, and shall not be less than 12 inches (30 cm) unless the platforms nailed together or otherwise restrained to prevent movement. 1926.451(b)(7)

At all points of a scaffold where the platform changes direction, such as turning a corner, any platform that rests on a bearer at an angle other than a right angle shall be laid first, and platforms which rest at right angles over the same bearer shall be laid second, on top of the first platform. 1926.451(b)(8)

Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured

by different manufacturers shall not be modified in order to intermix them unless a competent person determines the resulting scaffold is structurally sound. 1926.451(b)(10)

Scaffold components made of dissimilar metals shall not be used together unless a competent person has determined that galvanic action will not reduce the strength of any component. 1926.451(b)(11)

## **Showers**

Employers are to provide showers for those employees who work in areas where they are exposed above the permissible exposure limits or work in regulated areas so they may shower at the end of their shift. For employees working at a hazardous waste cleanup site that will be in operation for six months or more, showers are to be provided for their use at the end of their work shift. 1910.120(n)(7) and 1910.1018(m)(2)

## **Skylights**

Each employee is protected from falling through any hole (including skylights) that is 4 feet (1.2 m) or more above a lower level by one of the following: covers, guardrail systems, travel restraint systems, or personal fall arrest systems. 1910.28(b)(3)(i) (A) - (D)

## **Spray-Finishing Operations**

In conventional dry type spray booths, overspray dry filters or filter rolls, if installed, shall conform to the following: The spraying operations, except electrostatic spraying, must ensure an average air velocity over the open face of the booth of not less than 100 feet (30 meters) per minute. Electrostatic spraying operations may be conducted with an air velocity of not less than 60 feet (18 meters) per minute, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges, or audible alarm or pressure activated devices, shall be installed to indicate or ensure that the required air velocity is maintained. Filter pads shall be inspected after each period of use and clogged filter pads discarded and replaced. Filter pads shall be inspected to ensure proper replacement of filter media. 1910.107(b)(5)(i)

Spray booths shall be so installed that all portions are readily accessible for cleaning. 1910.107(b)(9)

A clear space of not less than 3 feet (0.9 meters) on all sides shall be kept from storage or combustible construction. 1910.107(b)(9)

Space within the spray booth on the downstream and upstream sides of filters shall be protected with approved automatic sprinklers. 1910.107(b)(5)(iv)

There shall be no open flame or spark producing equipment in any spraying area nor within 20 feet (6 meters) thereof, unless separated by a partition. 1910.107(c)(2)

The quantity of flammable or liquids with a flashpoint greater than 199.4 degrees Fahrenheit (93 degrees Celsius) kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift. Bulk storage of portable containers of flammable or combustible liquids shall be in a separate, constructed building detached from other important buildings or cut off in a standard manner. 1910.107(e)(2)

The withdrawal of flammable liquids and liquids with a flashpoint greater than 199.4 degrees Fahrenheit (93 degrees Celsius) from containers having a capacity of greater than 60 gallons shall be by approved pumps. 1910.107(e)(4)

All spraying areas shall be kept as free from the accumulation of deposits of combustible residues as practical, with cleaning conducted daily if necessary. Scrapers, spuds, or other such tools used for cleaning purposes shall be of non-spark material. 1910.107(g)(2)

Residue scrapings and debris contaminated with residue shall be immediately removed from the premises. 1910.107(g)(3)

“No smoking” signs in large letters on a contrasting color background shall be conspicuously posted in all spraying areas and paint storage rooms. 1910.107(g)(7)

## **Stairs, Fixed Industrial**

Employers must ensure each employee exposed to an unprotected side or edge of a stairway landing that is 4 feet (1.2 m) or more above a lower level is protected by a guardrail or stair rail system. 1910.28(b)(11)(i)

Stairs shall be constructed so the riser height and tread width are uniform throughout. 1910.25(b)(3)

Fixed stairways shall have a minimum width of 22 inches (55 centimeters). 1910.25(c)(4)

Standard stairs are used to provide access from one walking-working surface to another when operations necessitate regular and routine travel between levels, including access to operating platforms for equipment. Winding stairways may be used on tanks and similar round structures when the diameter of the tank or structure is at least 5 feet (1.5 m). 1910.25(b)(7)

## Storage

All stored materials stacked in tiers shall be stacked, blocked, interlocked, and limited in height so that they are secure against sliding or collapse. 1910.176(b)

Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion or pest harborage. Vegetation control will be exercised when necessary. 1910.176(c)

Where mechanical handling equipment is used, sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways, and whenever turns or passage must be made. 1910.176(a)

## Toeboards

Railings protecting floor openings, platforms, and scaffolds shall be equipped with toeboards whenever persons can pass beneath the open side, wherever there is moving machinery, or wherever there is equipment with which falling material could cause a hazard. 1910.29(k)(1)(i)

A standard toeboard shall have a minimum height of 3.5 inches (9 cm) as measured from the top edge of the toeboard to the level of the walking-working surface. 1910.23(k)(1)(ii)

## Toilets

Water closets shall be provided according to the following: 1-15 persons, one facility; 16-35 persons, two facilities; 36-55 persons, three facilities; 56-80 persons, four facilities; 81-110 persons, five facilities; 111-150 persons, six facilities; over 150 persons, one for each additional 40 persons. Where toilet rooms will be occupied by no more than one person at a time and can be locked from the inside, separate rooms for each sex need not be provided. 1910.141(c)(1)(i)

Each water closet shall occupy a separate compartment with a door and walls or partitions between fixtures sufficiently high to ensure privacy. 1910.141(c)(2)

Wash basins (lavatories) shall be provided in every place of employment. 1910.141(d)

Lavatories shall have hot, cold or tepid running water, hand soap or equivalent, and hand towels, blowers or equivalent. 1910.141(d)(2)(i) and (iv)

The above requirements do not apply to mobile crews or normally unattended locations, if employees working at these locations have transportation immediately available to nearby toilet facilities. 1910.141(c)(1)(ii)

## **Walking-Working Surfaces**

All places of employment, passageways, storerooms, service rooms, and walking-working surfaces are kept in a clean, orderly and sanitary condition 1910.22(a)(1)

Where mechanical handling equipment is used, sufficient safe clearance shall be allowed for aisles, at loading docks, through doorways, and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair with no obstruction across or in aisles that could create hazards. Permanent aisles and passageways shall be appropriately marked. 1910.176(a)

The employer must provide, and ensure each employee uses a safe means of access and egress to and from walking-working surfaces. 1910.22(c)

Covers and/or guardrails shall be provided to protect personnel from the hazards of open pits, tanks, vats, ditches, etc. 1910.176(g)

## **Welding-General**

(Also See Welding in Confined Spaces)

Arc welding cables with damaged insulation or exposed, bare conductors shall be replaced. 1910.254(d)(9)(iii)

Refer to 29 CFR 1910.252(c)(5) through (10) for special considerations when welding operations require fluxes, coverings, coatings, or alloys involving fluorine compounds, zinc, lead, beryllium, cadmium, or mercury.

Mechanical ventilation shall be provided when welding or cutting in a space:

- Where there is less than 10,000 cubic feet (300 cubic meters) per welder, and
- Where the overhead height is less than 16 feet (4.9 meters)

1910.252(c)(2)(i)(A) and (B)

Proper shielding and eye protection to prevent exposure of personnel from welding hazards shall be provided. 1910.252(b)(2)(i)(B); (F) through (H)

Workers or other persons adjacent to the welding areas shall be protected from the welding rays by noncombustible or flameproof screens or shields or shall be required to wear appropriate goggles. The screens shall be so arranged that no serious restriction of ventilation exists. 1910.252(b)(2)(iii) and 1910.252(c)(1)(iii)

Proper precautions (isolating welding and cutting, removing fire hazards and combustibles, and providing a fire watch) for fire prevention shall be taken in areas where welding or other “hot work” is being done. 1910.252(a)

## **Welding in Confined Spaces**

All welding and cutting operations that are performed in confined spaces (such as a tank, boiler, or a pressure vessel) shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency. 1910.252(c)(4)

In such circumstances where it is impossible to provide such ventilation, airline respirators approved by the National Institute for Occupational Safety and Health (NIOSH) for this purpose shall be used. 1910.252(c)(4)(ii)

In areas immediately hazardous to life, airline respirators with escape air bottles or self-contained breathing equipment shall be used. The breathing equipment shall be approved by NIOSH. 1910.252(c)(4)(iii)

Where welding operations are performed in confined spaces and where welders and helpers are provided with airline respirators self-contained breathing equipment, a worker shall be stationed on the outside of such confined spaces to ensure the safety of those working within. 1910.252(c)(4)(iv) and 1910.146(d)(6)

Oxygen shall never be used for ventilation. 1910.252(c)(4)(v)

## **Woodworking Machinery**

All woodworking machinery such as table saws, swing saws, radial saws, band saws, jointers, tenoning machines, boring and mortising machines, shapers, planers, lathes, sanders, veneer cutters, and other miscellaneous woodworking machinery shall be enclosed or guarded, except that part of the blade doing the actual cutting, to protect the operator and other employees from hazards inherent to the operation. 1910.213(c) through (r)

Power control devices shall be provided on each machine to make it possible for the operator to cut off the power to the machine without leaving his/her position at the point of operation. Power controls and operating controls should be located within easy reach of the operator while at his/her regular work location, making it unnecessary for the operator to reach over the cutter to adjust. This does not apply to constant pressure controls used only for setup purposes. 1910.213(b)(1) and (4)





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