ROAD MAP
TO HEALTHCARE
OSHA COMPLIANCE

SUMMARY

The Road Map to Healthcare OSHA Compliance was developed for individuals in healthcare facilities who are designated a “safety manager” along with their normal duties. A part of the safety program in compliance with OSHA standards in order to provide a safe workplace for the staff. Sometimes those OSHA standards can be verbose and hard to understand. The Road Map helps to simplify the standards. It is not intended to take the place of the standards, only to make them easier to understand. Organizations must understand that they are required to comply with the OSHA standards as depicted in the Code of Federal Standards.
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INTRODUCTION

Road Map to Health Care OSHA Compliance was prepared by the members of the South Carolina Health Alliance Occupational Safety and Health Administration (OSHA) Advisory Committee. It was not written to replace the Code of Federal Regulations (CFR), but only to furnish key elements of the CFR, which will help those responsible for healthcare safety understand the intent of the standards. For complete compliance, you must familiarize yourself with the CFR standards that are applicable.

This Road Map will assist you down the “OSHA Compliance Highway” so that your organization will not only provide a safe workplace for your employees, but will also be in compliance with the various standards that affect your organization.

HISTORICAL BACKGROUND

In January 1997, James Knight, executive assistant to the director of the South Carolina Department of Labor, Licensing and Regulations (DLLR), contacted Ken Shull, president of the South Carolina Health Alliance (SCHA), and told him that the South Carolina DLLR would like to work closely with SCHA in the development of a better understanding of each other’s organizations and facilitate improved working conditions for healthcare workers (HCW). A committee of representatives from healthcare organizations and insurers was formed. It was made up of representatives from large-, middle- and small-sized hospitals, PHT Services, Ltd., the South Carolina Health Care Association (SCHCA), and SCHA staff. This committee has met several times with DLLR staff. Meetings have also been held for the development of the Road Map.

The SCHA OSHA Advisory Committee members are Joe Avant, safety manager, Medical University of South Carolina; Wayne Brannan, safety manager, Medical University of South Carolina; Colleen Helms, risk management manager, PHT Services, Ltd.; Rickey Herring, safety manager, Oconee Memorial Hospital; Greg Reed, safety manager, Greenville Hospital System; Paul Richter, SASHE, risk management coordinator for support services, South Carolina Health Alliance, Chairman; and Pat Schneider, safety consultant, South Carolina Health Care Association.

Too often, healthcare safety managers are plant engineers, risk managers, nursing personnel, or administrative staff who have been given safety as an additional responsibility. This is not to say that they do not perform admirably, but only that they do not have the time or understanding of the multiple regulations and codes to fully comply with them. This document was developed to assist those individuals with the OSHA standards applicable to the healthcare environment.

How to Utilize the Road Map

The standards are arranged alphabetically. Each standard includes an Intent statement, key elements for standard compliance under Guidelines for Compliance and additional resources under Applicable References. Following the section of standards is a list of Resources where additional information can be obtained.

A special thanks goes to Jim Knight, Dale Ziglar and Grady Pittman of the South Carolina DLLR for their assistance in this project.
ABBREVIATIONS

ACGI  American Conference of Government Industrial Hygienists—A membership organization that benefits occupational health, provides technical information, and promotes excellence in environmental and occupational health. Developed the *Threshold Limit Values for Chemical Substances*. Also, publishes other documents related to industrial hygiene topics.

ACM  Asbestos-Containing Material—Materials that contain at least 1% asbestos.

ANSI  American National Standards Institute—A private organization that administers and coordinates the U.S. private sector voluntary standardization system. ANSI does not develop standards, instead it facilitates development by establishing consensus among qualified groups.

ASHRAE  American Society of Heating, Refrigeration and Air Conditioning Engineers—A membership organization organized for the purpose of advancing the arts and sciences of heating, ventilation, air conditioning and refrigeration, for the public’s benefit, through writing standards, research, education and publication.

CDC  Center for Disease Control and Prevention—Promotes health and quality of life by preventing and controlling disease, injury, and disability. The CDC detects and investigates health problems, conducts research to enhance disease prevention, develops health policies, implements prevention strategies and fosters safe and healthy environments.


EPA  Environmental Protection Agency—An agency established to protect human health and the natural environment, i.e., air, water, land. It develops and enforces federal laws regarding the release of harmful substances into the environment.

IAQ  Indoor air quality—The quality of breathable air within one’s work environment, including odors, carbon dioxide buildup, and pollutants.

NFPA  National Fire Protection Association—A membership organization that works to reduce fires through the advocacy of scientifically based codes and standards, research and education for fire and related safety issues.

NIOSH  National Institute of Occupational Safety and Health—As a part of CDC, NIOSH is the only federal agency responsible for conducting research and making recommendations for the prevention of work-related illnesses and injury.

OSHA  Occupational Safety and Health Administration—As part of the U.S. Department of Labor, OSHA was established to save the lives, prevent injuries and protect the health of American workers.

PEL  Permissible exposure limits—The amount of specific air contaminant and the duration of employee exposure to that substance.

PPE  Personal protective equipment—Personal equipment worn by individuals for the protection against various hazards to which they are exposed in the workplace.

RCRA  Resource Conservation and Recovery Act—This federal law focuses on “cradle-to-grave” control of hazardous waste. Under RCRA, the EPA has authority to regulate underground storage tanks.

SCBA  Self-contained breathing apparatus—Respiratory protective device that utilizes its own oxygen.

STEL  Short-term exposure limits—Exposure based on a 15-minute period.

TWA  Time-weighted average—Eight-hour monitoring period based on a 40-hour work week.
HEALTHCARE OSHA STANDARDS

ASBESTOS
29 CFR 1926.1101

Intent
The intent of this section of the Code is intended for the protection of employees from exposure to asbestos fibers during construction, alteration, renovation, repair, or maintenance of structures. Asbestos may cause asbestosis, mesothelioma, lung cancer, stomach cancer, or colon cancer. Smoking increases the hazard.

Guidelines for Compliance
- Asbestos may be found in surfacing material, thermal system insulation, mastic, ceiling and floor tiles, sprayed or troweled on fireproofing materials, plasters, roofing materials, joint compounds, cementitious asbestos siding or pipes, fire walls or doors, and gaskets. Buildings constructed before 1980 are assumed to have asbestos-containing materials, unless proved otherwise through surveys.
- Asbestos-containing materials (ACM) are materials that contain at least 1% asbestos.
- All construction projects performed where asbestos may be disturbed should be monitored. (PEL is 0.1 f/cc, eight-hour TWA, but there is no safe level of exposure.)
- Building owner must determine the presence, amount, location, and type of asbestos in the facility, and can be held accountable for subcontractor activities.
- Asbestos work is regulated by class and should be supervised by a competent person in a regulated area. Each class of work requires specific compliance methods:
  - Class I Work—Removal of thermal system insulation or surfacing material.
  - Class II Work—Removal of all other ACM (floor and ceiling tiles, mastic, etc.)
  - Class III Work—Repair and maintenance activities where ACM may be disturbed.
  - Class IV Work—Maintenance and custodial activities where ACM is contacted but not disturbed (construction projects only).
- Training is based on the class of asbestos work that will be performed. Training records must be maintained.
- An effective and ongoing operations and maintenance (O&M) plan should be in place.
- Proper PPE and hygiene facilities must be provided based on the class of work to be performed.
- Respirators should be worn and fit testing is required. Also, a written respiratory program must be in place.
- Sanding is prohibited.
- Stripping must be performed with low abrasion pads at speeds less than 300 rpm with wet methods.
- Floors must have sufficient finish to dry-buff or burnish.
- Asbestos awareness training is required for employees who perform housekeeping activities where ACM is present.
- Medical surveillance is required and records must be maintained for at least 30 years.

Applicable References
BENZENE
29 CFR 1910.1028

Intent
The intent of this section of the Code is to protect workers from exposure to benzene in the workplace. Benzene is most typically found as a product component in medical laboratories and maintenance departments where petroleum and similar chemicals are found.

Guidelines for Compliance
■ Assess all areas where benzene may be used and could exceed the permissible exposure limits (e.g., laboratories and maintenance departments). [paragraph (d)]
■ Conduct initial monitoring. Where the employer documents that one shift will consistently have higher employee exposure for an operation, the employer shall be only required to determine representative exposure. Initial monitoring shall be done within 30 days from introduction into the workplace. [paragraph (e)(iv) and (e)(iv)(2)(ii)]
■ If appropriate exposure limits cannot be met, the employer shall provide respiratory protection. The employer shall institute a respiratory protection program in accordance with 29 CFR 1910.134(b), (d), (e) and (f).
■ Personal protective equipment shall be worn to protect the eyes and skin from exposure to liquid benzene. [paragraph (h)]
■ Where employees are exposed at or above the action level for 30 or more days per year or for those exposed at or above the PEL 10 or more days per year, medical surveillance must be initiated. The PEL for benzene is 1 ppm as a eight-hour TWA. [paragraph (I)]
■ Exposure monitoring and medical surveillance records should be retained by the employer for 30 years. [paragraph (k)(D)(iii)]
■ Information and training shall be provided to the employees upon initial assignment to a work area and at least annually thereafter. [paragraph (j)(3)]
■ Maintain exposure monitoring records for a 30-year period.
■ You must restrict access in these areas to authorized persons and post warning signage at entrances to regulated areas saying:

DANGER
BENZENE
CANCER HAZARD
FLAMMABLE – NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

Applicable References
29 CFR 1910.1200
BLOODBORNE PATHOGENS

29 CFR 1910.1030

Intent
The intent of this section of the Code is to protect employees from occupational exposure to blood, blood products, human body fluids and human tissue that may be potentially infectious.

Guidelines for Compliance
- Establish a written exposure control plan which has, at a minimum, (1) exposure determination, (2) procedures for evaluating the circumstances of an exposure, and (3) determine how and when the methods of compliance are to be implemented. [paragraph (c)] Review annually.
- Determine which employees are vulnerable to exposure, or potential exposure, by reviewing job descriptions. The employees should be assigned into three groups: those jobs that have exposure through their daily tasks (i.e., floor nurses, operating room nurses, phlebotomists, etc.), those with incidental contact (i.e., laundry worker, housekeeper, etc.), and office workers. [paragraph (c)(v)]
- Establish method of communicating the different hazards to employees.
- Ensure those with possible exposure are given the opportunity to be adequately counseled, offered a vaccination and monitored through the employee health program. All at-risk employees should be offered hepatitis B vaccine at no cost. If they choose not to receive the vaccine, it should be documented on a declination form. [paragraph (f)(2)].
- Implement and require compliance with standard precautions.
- Where possible, establish engineering controls to reduce exposure. Constantly seek improved methods in work practice controls, needleless devices, etc.
- When engineering controls are not possible, implement work practice controls (i.e., not allowing food, drink, or use of cosmetics in a location where blood is kept, proper hand washing, proper handling of needles–no recapping, etc.).
- Provide proper personal protective equipment (PPE) for the job. Ensure that it is utilized properly and employee understands its limitations. [paragraph (d)(3)]
- Handle needles carefully and dispose of used needles in an approved container.
- Handle soiled linens and contaminated waste with care and appropriate PPE.
- Establish a postexposure program, which includes counseling, taking blood samples, and offering postexposure prophylaxes per current protocol.
- Training on initial assignment and retraining within 12 months of initial assignment. Maintain records for three years. [paragraph (g)(2)(A), and (C)(iv)]

Applicable References
OSHA Pamphlet 3127, Occupational Exposure to Bloodborne Pathogens
OSHA Pamphlet 3128, Bloodborne Pathogens and Acute Care Facilities
OSHA Pamphlet 3131, Bloodborne Pathogens and Long-Term Care Workers
CONFINED SPACES
29 CFR 1910.146

Intent
The intent of this section of the Code is to ensure that employees are protected from confined space entry hazards which can result in serious and even fatal injuries. Examples of confined spaces are boilers, pits, man holes, tanks, building crawl spaces and other areas that meet the following criteria.

Definitions
Confined Space
- Large enough and so configured so that an employee can enter and perform work.
- Has limited or restricted means of entry or exit.
- Is not designed for continuous occupancy.

Permit Required Confined Space
- A space that requires a written permit to enter, special safety precautions, and additional personnel because there may be additional hazards such as:
  - Hazardous atmosphere (or potential to contain a hazardous atmosphere)
  - Contains a material that may engulf an entrant
  - Has an internal configuration such that an entrant may become trapped by inwardly converging walls or a floor that slopes downward and tapers to a smaller cross-section.
  - Any other recognized serious safety or health hazard (e.g., electrical).

Guidelines for Compliance
- Perform an evaluation of workplace for confined spaces. If permit required confined spaces exist, label them. If employees will enter them, a written program is required. If employees will not enter, steps should be taken to prevent unauthorized entry. [paragraph (c)(2), (c)(3)]
- If a written program is required:
  - Implement measures to prevent unauthorized entry and identify hazards of the confined space prior to employee entry. [paragraph (d)]
  - Develop means, procedures and practices for safe entry operations (ventilation, isolation, pedestrian barriers, etc.).
  - Provide necessary equipment (for monitoring, ventilation, communication, PPE, lighting, barriers, ladders, and rescue).
  - When entry operations are conducted, evaluate conditions prior to entering the confined space and during operations to ensure that conditions do not change. Monitor for oxygen, combustible gases and vapors, and toxic gases and vapors (in that order).
  - Provide at least one attendant. (If the attendant will monitor more than one confined space, include a means for the attendant to respond to an emergency without leaving the other space unattended.)
  - Designate persons who have active roles (entrant, attendant, entry supervisor) and outline their duties. [paragraph (d)(h), (d)(I), and (d)(j)]
  - Develop a permit system and provisions for concluding the entry. [paragraph (d)(12), (e), and (f)]
—Develop a system for coordinating entry operations with contractors, and providing contractors with all information on confined space hazards. Require contractors performing confined space entry to follow 29 CFR 1910.146.
—Review the program annually using canceled permits or whenever deficiencies are noted in the written program or permit.

■ Employees should be trained initially and when changes occur. Employees who perform entry rescue should have simulated rescue training annually and be trained in first aid and CPR. [paragraph (g), (k)(1)]
■ If an outside rescue team is used, they should be provided with access to confined spaces in order to practice rescue and make rescue plans. They should be notified prior to confined space entry to ensure that they are available. [paragraph (j)(4)]
■ Lifelines and chest or full body harnesses should be used for all entries. In vertical spaces that are greater than five feet deep, a mechanical means of rescue should be used (e.g., hoist). [paragraph (k)]

**Applicable References**


ANSI Standard ANSI Z117.1-1989, *Safety Requirements for Confined Spaces*
CONSTRUCTION

29 CFR 1926

Intent
The intent of this section of the Code is to protect employees from injuries on construction sites. Construction on healthcare facilities, where the facility acts as a general contractor or in-house projects utilizing employees, are covered under this standard.

Guidelines for Compliance
- Construction projects vary in size and complexity. Large major projects are normally awarded to general contracting firms which should assume liability for the safety program on the construction site. They will have a dedicated safety manager and either provide, or ensure that the appropriate safety equipment is available for the workers and is utilized. Your role will be to have periodic meetings with their safety manager and receive reports concerning safety issues past, present and future. Also included in these meetings will be discussions about the performance of their role in interim life safety. Smaller projects can be managed either by the facility representative, serving as general contractor, or utilizing in-house personnel to perform the work. In both cases, the facility safety manager assumes the responsibility for ensuring that safety measures are performed.
- In both large and small construction projects, the facility safety manager must be familiar with the provisions of 29 CFR §1926, either to confirm the general contractor’s compliance or self-compliance. There are five subparts of the Code that will apply to any type of construction done on your property:
  - Subpart C (1926.20 - 1926.32) - General Safety and Health
  - Subpart D (1926.50 - 1926.59) - Occupational Health and Environmental Control
  - Subpart E (1926.100 - 1926.107) - Personal Protective Equipment and Life Saving Equipment
  - Subpart F (1926.150 - 1926.155) - Fire Protection and Prevention
  - Subpart G (1926.200 - 1926.203) - Signs, Signals, and Barricades
- The other portions of the Code are dependent on the type of construction activities being performed (e.g., 1926.1101, Asbestos).

Applicable References
29 CFR 1926
CORROSIVES

Intent
The intent of this section of the Code is to protect workers from eye, skin and other injuries where healthcare organizations use products with corrosive properties. Corrosives are typically found in labs, pharmacies, and clinical areas where acids, bases, hazardous drugs, and high level quaternary disinfectants are present. In addition, exposure to corrosives may occur in engineering areas, in central sterile areas with ETO, in print shops, near battery charging areas, in some compressed gases (chlorine, fluorine) and in various support areas. Also, vendors and contractors may bring corrosives into the organization’s environment.

Guidelines for Compliance
- Corrosive materials are identified as liquids or solids that cause full thickness destruction of human skin at the site of contact, or a liquid that has a severe corrosion rate on steel or aluminum.
- Corrosives can be identified by reading labels and researching MSDS. They can alert the organization for the need to take appropriate measures such as use of PPE, engineering controls, and to conduct appropriate training.
- Particular attention should be focused where product information or labeling indicates a PH equal to or less than 2.0 or equal to or greater that 12.5.
- Where products in use are identified as being corrosive, the following should be considered:
  — Provide initial orientation and ongoing training for affected staff.
  — Provide personal protective equipment (PPE) and related training for affected staff.
  — Ensure that appropriate engineering controls are in place. Pay particular attention to the installation of eyewash/shower units. Other controls may be necessary such as hoods or HVAC systems.
  — Ensure that appropriate warning labels and/or signage is in place. Some areas may need to be restricted to authorized staff only.
- Waste products containing corrosives may have to be handled in accordance with federal RCRA or DOT guideline and in accordance with your local POTW (water/sewer) disposal requirements.

Applicable References
29 CFR 1910.151 OSHA Instruction TED 1.15 9/95
OSHA CPL 2-2.52 11/90 OSHA letter of interpretation 2/95 OSHA instruction STD 1-8.2 3/82
ELECTRICAL SAFETY WORK PRACTICES

29 CFR 1910.333

Intent
The intent of this section of the Code is to protect employees from electrical shock or other injuries resulting from direct or indirect contact with electricity.

Guidelines for Compliance
- All energized electrical parts must be deenergized before the employee works on or near them, unless they can prove that deenergizing introduces additional hazards or is infeasible due to equipment design or operational limitations. Live parts that operate at less than 50 volts to ground need not be deenergized if there will be no increased exposure to electrical burns or explosion due to electrical arcs. [paragraph (a)(1)]
- Locks and tags shall be placed on each means used to deenergize circuits equipment on which work is to be performed. A written lockout/tagout program shall be available. (See lockout/tagout guidelines.) [paragraph (b)(2)(3)(I)(A)]
- Only qualified persons should be allowed to work on energized electrical parts. This person shall be familiar with the precautionary techniques, personal protective equipment, insulating and shielding material, and insulated tools. [paragraph (c)(2)]
- Any vehicle or mechanical equipment capable of having parts of its structure elevated near energized overhead lines shall be operated so that a clearance of 10 feet (305 cm) is maintained. If the voltage is greater than 50kV, the clearance will be increased 4 inches (10 cm) for every 10 kV over that voltage. [paragraph (c)(3)(iii)]
- Conductive materials and equipment that are in contact with any part of an employee’s body shall be handled in a manner that will prevent them from contacting exposed energized conductors or circuit parts. Portable ladders shall have nonconductive side rails if they are used where the employee or the ladder could come in contact with energized parts. Conductive apparel such as watches, bracelets, etc. may not be worn if they might contact energized parts. Where live parts present an electrical contact hazard, employees may not perform housekeeping duties at such close distances to the parts that there is a possibility of contact, unless adequate safeguards are provided. [paragraph (c)(6), (7), (8) and (9)]

Applicable References
29 CFR 1910.147
EMERGENCY PLANS
29 CFR 1910.38

Intent
The intent of this section of the Code is to protect employees from fires and other emergencies. Hospitals within South Carolina must meet the intent of this regulation for DHEC licensure and JCAHO accreditation.

Guidelines for Compliance
- A written emergency plan must contain the following elements:
  - Emergency evacuation routes and escape procedures.
  - Procedures to be followed by employees who remain to operate critical operations before they evacuate.
  - Procedures to account for all employees after an emergency evacuation.
  - Any rescue or medical duties assigned to personnel.
  - Names or job titles of personnel who can be contacted for further explanation of duties under the plan. [paragraph (a)(2)(I-vi)]
- An alarm system must be established. [paragraph (3)]
- All personnel shall receive training and be familiar with the evacuation plan. Training shall be conducted upon initial assignment, when employee’s responsibility under the plan changes, and when the plan changes itself. [paragraph (a)(5)(ii)(A-C)]
- A fire prevention plan shall be written for any organization with 11 or more employees. This plan can be a part of the emergency plan. The fire prevention plan must contain:
  - A list of major workplace fire hazards, their proper handling and storage procedures, potential ignition sources and their control procedures, and the type of fire protection equipment to handle the situation.
  - Name or job title of personnel responsible for maintenance of suppression equipment.
  - Name or job title of personnel responsible for controlling fuel source hazards.
  - Housekeeping procedures for controlling accumulation of flammable or combustibles.
  - Employees shall be trained upon initial assignment of the fire hazards in their workplace. [paragraph (a)(2, 3 & 4)]
- Healthcare occupancies normally adopt a “defend-in-place” philosophy, utilizing horizontal exits, when possible, for evacuation.

Applicable References
29 CFR 1910.38
EMERGENCY RESPONSE

29 CFR 1910.120 (q)

Intent
The intent of this section of the Code is to protect employees from exposure resulting from uncontrolled release of chemicals in the workplace. This includes exposures resulting from chemical spills or releases as well as treatment of contaminated patients. Important note: this standard only applies to uncontrolled releases, therefore, if employees in the immediate vicinity can clean up a spill, this does not constitute an emergency response.

Guidelines for Compliance
- Perform a facilitywide assessment of areas where chemicals may be located, and where there is a potential for release. Consider leaks, puncture to containers, spills, etc.
- Determine areas that could be set up differently to prevent an uncontrolled release. (Example - use of secondary containers in laboratories for specimens to prevent formaldehyde spills or leaks)
- Determine which areas should be evacuated as opposed to clean up by employees. When possible, isolate areas of a spills by closing doors and then notify the fire department or HAZMAT team. Incidents that can be handled by evacuation and clean up by an outside party are not considered an emergency response.
- Consider patients that may enter through the emergency department. Collaborate with the local LEPC and obtain a written agreement that contaminated patients will be decontaminated off-site. If your facility is part of the local LEPC, and will be involved in community emergency response, or if employees will be involved in clean up operations at the facility, a written program or action plan is required which should contain the following:
  — Pre-emergency planning and coordination with outside parties
  — Personal roles, lines of authority, training and communication
  — Emergency recognition and prevention
  — Safe distances and places of refuge
  — Site security and control
  — Evacuation routes and procedures
  — Decontamination
  — Emergency medical treatment procedures
  — Emergency alerting and response procedures
  — Critiques of response and follow-up
  — PPE and emergency equipment

Portions of the LEPC plan, or items addressed by programs to meet compliance with SARA Title III may be used to meet these requirements.
- Training requirements:
  — First Responder Awareness Level—For individuals who are likely to witness a release and not be involved with the clean up, and will begin the process by contacting emergency personnel. This level is required for EMS personnel, unless they will handle or transport contaminated patients, and for emergency room personnel. It is also required for any employee who may be exposed to hazardous materials during emergency response incidents.
—First Responder Operations Level (8-hour)—For individuals who responds in a defensive fashion to prevent the spread of contamination without actually trying to stop the release. This is required for all medical personnel who will decontaminate patients and for EMS personnel who will transport patients who have not been decontaminated.

—Skilled Support Personnel Level—For emergency support work performed in the decontamination area. This is required for any medical personnel who, under life threatening circumstances, would have to enter a decontamination area to treat a patient.

—Technician Level (24-hour)—For those who will aggressively try to stop a release by patching, plugging, etc. This is required only if there is a HAZMAT team within the facility, and their intent is to stop leaks and clean up spills. The HAZMAT team should be a part of a medical surveillance program. Proper PPE must be provided.

**Applicable References**

29 CFR 1910.120(q)
OSHA Publication 3152, *Hospitals and Community Emergency Response: What You Need to Know*
ERGONOMICS

Intent
The intent of this guideline is to alert healthcare organizations to the concept of ergonomics in the work environment. Violations for ergonomic injuries are cited under the General Duty Clause.

Guidelines for Compliance
- Perform a hazard assessment to identify ergonomic hazards. Conduct an evaluation of injuries and trends to identify tasks/jobs where employees are at increased risk to perform repetitive motions.
- Consider implementing a written ergonomic program which addresses the following elements: identification of high-risk tasks, hazard control, medical management, and employee training and evaluation.
- When implementing the program, considerations must be given to training, engineering controls and work practices.
- The employer should provide frequent rest breaks and job rotation from work that involves repetitive motion and application of excessive force (load).
- Maximum flexibility should be designed into equipment.
- Proper lighting and anti-glare devices should be provided.
- Work areas should have temperature controls and adequate ventilation.
- Employers should provide mechanical lifting and material handling equipment to eliminate manual lifting and materials handling when feasible.
- Reduce or eliminate vibration and sharp edges or handles that dig into the skin.
- A training and education program should be available to HCW about proper body mechanics and other techniques they can use to reduce potential for injury. Training programs should consist of a combination of classroom instruction and hands on training.

Applicable References
OSHA. Proposed Ergonomic Protection Standard
Job Safety & Health Quarterly
ETHYLENE OXIDE
29 CFR 1910.1047

Intent
The intent of this section of the Code is to protect employees from exposure to ethylene oxide (EtO) in the workplace.

Guidelines for Compliance
- Assess all areas where EtO may be used and determine potential exposure. Some areas where EtO may be found are areas where sterilization of equipment takes place.
- Institute engineering controls and work practices to eliminate or reduce employee exposure at or below the permissible exposure limits (PEL). The PEL for EtO is an airborne concentration not to exceed one part of EtO per million parts of air (1ppm) as an 8-hour time-weighted average (TWA). The employee should also not be exposed in excess of 5 ppm as averaged over a sampling period of 15 minutes. [paragraph (c)]
- Where PEL is exceeded, develop and implement a written program to reduce exposure at or below the PEL.
- If engineering controls and work practices fail to reduce exposure at or below the 8-hour TWA, the employee shall be furnished approved respiratory protection. [paragraph (f)]
- Where there is a possibility of an emergency involving EtO, a continuous monitoring system should be present alarm when excessive amounts of EtO are present so evacuation can be done. A written plan for emergency situations shall be developed for these areas. [paragraph (h)]
- A medical surveillance program shall be instituted for employees who are exposed to EtO. [paragraph (I)]
- Warning signs shall be posted at entrances to areas where EtO is used. Also, containers will be properly labeled with signage. [paragraph (j)]
- Provide employees who are potentially exposed to EtO at or above the PEL with information and training on EtO at the time of initial assignment and at least annually thereafter. [paragraph (j)(3)]
- Keep an accurate record of all measurements taken to monitor employee exposure to EtO and maintain for a 30-year period. [paragraph (k)]

Applicable References
29 CFR 1910.38 29 CFR 1910.120 29 CFR 1910.134 (b), (d), (e), and (f)
EYEWASH/EMERGENCY SHOWER

29 CFR 1910.151(c)

Intent
The intent of this section of the code is to offer protection for employees from contact exposure to injurious materials and chemicals in the workplace. Emergency eyewash equipment and drench showers are provided for the emergency treatment of the eyes and body of individuals who have been exposed to injurious materials and chemicals. Eyewash and shower facilities must be located in specific locations and meet certain requirements as noted below.

Guidelines for Compliance

- Eyewash units and drench showers shall be located where individuals are exposed to injurious corrosive materials. Refer to the chemical’s Material Safety Data Sheet (MSDS). Do not totally rely on the pH of the chemical. If the MSDS uses languages such as corrosive materials, skin irritant or eye irritant, you may need an eyewash/shower.

- Eyewashes and showers shall be located in accessible locations that can be reached in not more than ten seconds, located not more than 25 feet from the hazard, and not impeded by a door or different level of floor. [SC DLLR OSH Information Memorandum: 82-x-57 Rev.] However, for those strong acids or caustics, the eyewash shall be within 10 feet of the hazard. The term “strong” is usually based on the pH of the substance.

- Each eyewash and shower shall have a highly visible sign identifying its location.

- Personal eyewash equipment (plastic bottles) can be used for immediate response to an eye injury, but shall not replace plumbed fixtures. The eyewash facility must have the capability to flush the eyes for a 15-minute period while holding the eyelids open so water can flow over the entire eye surface. This is known as “hands free” operation.

- Have a proactive maintenance management program. Both eyewash and drench shower shall be activated weekly to flush the line and verify operation. The eyewash should deliver 4 gallons of water per minute for a 15-minute period. The shower should deliver 20 gallons of water per minute for a 15-minute period.

- The height of the shower head must be between 82 and 96 inches from floor level. The eyewash must be between 33 and 45 inches from the floor.

- Possible locations for eyewash units and/or drench showers:
  - Central supply
  - Boiler room
  - Housekeeping
  - Pharmacy
  - Emergency room
  - Pathology labs
  - Chemistry labs
  - Kitchen
  - Incinerator
  - Morgue
  - Other developers or fixers
  - Paint shop
  - Nuclear medicine
  - Where formaldehyde/glutaraldehyde are used

- pH scale: 12 (high pH), 7 (neutral), 2 (acidic)

Applicable References

29 CFR 1910.151(c)


Applicable CFRs governing various chemicals

Applicable Material Safety Data Sheets
FIRE PREVENTION PLANS
29 CFR 1910.38(B)

Intent
The intent of this section of the code is to protect the employees from fire hazards in the workplace by ensuring that the staff are aware of and familiar with all materials that might ignite or accelerate a fire and the proper storage of those items.

Guidelines for Compliance
- Develop a written fire prevention plan. [paragraph (a)(2)(I)-(vi)]
- Survey the workplace and compile a list of the major fire hazards, how they should be handled, and how they should be stored.
- Communicate to employees the hazard’s potential ignition sources, control procedures, and proper type of fire protection equipment or systems which can control the fire. [paragraph (b)(4)]
- List the names or job titles of those responsible for maintaining fire suppression equipment and those responsible for control of fuel source hazards. [paragraph (b)(2)]
- Maintain and test fire alarm and suppression systems. [paragraph (b)(5)]
- Train employees upon initial assignment in evacuation, fire containment, and extinguishment. [paragraph (b)(4)]
- Ensure employees are familiar with procedure to communicate a fire event to other employees and to fire responders.
- Limit smoking to assigned locations.
- Flammables and combustibles shall be stored in approved containers. Provide proper warning signage.

Applicable References
JCAHO. Comprehensive Accreditation Manual for Hospitals
FORKLIFT

29 CFR 1910.178

Intent
The intent of this section of the Code contains safety requirements for forklifts, lift trucks, and hand trucks, all referred to as “trucks” in this guideline. The actual title of the Code is “Power Industrial Trucks.” Forklifts are found in warehouses and other material storage areas.

Guidelines for Compliance

- Trucks shall have a label or other identifying mark indicating approval by a testing laboratory. Modifications shall not be made by the customer without permission from the manufacturer. [paragraph (a)(3) and (4)]
- Power-operated trucks shall not be used in atmospheres containing hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen, propylene oxide, acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical hydrazine. [paragraph (c)(2)(I)]
- High-lift rider trucks shall be fitted with an overhead guard manufactured in accordance with ANSI standard, ANSI B56.1-1969. [paragraph (e)(1)]
- The storage of handling of liquid fuels shall be in accordance with NFPA Flammable and Combustible Code (NFPA 30-1969). The storage of liquefied petroleum fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA 58). [paragraph (f)(1) and (2)]
- Battery charging shall be located in designated areas that have proper ventilation, eyewash/shower facility, and fire protection. [paragraph (g)(10 and 2)]
- Concentrations of carbon monoxide shall not exceed levels specified in 29 CFR 1910.1000. [paragraph (I)(1)]
- A training program shall be provided for industrial truck operators and only operators who have successfully completed the training program shall be permitted to operate powered industrial trucks. Training shall consist of a combination of classroom instruction and practical training. Training and evaluation shall be conducted by a designated person who has the requisite knowledge, training, and experience to train powered industrial truck operators and judge their competency.
- Trucks shall be operated a safe distance from ramps or platforms and shall have sufficient headroom under lights, pipes, etc. [paragraph (m)(6) and (8)]

Applicable References

ANSI Standard B56.1-1969 American National Standard for Powered Industrial Trucks
NFPA 30, Flammable and Combustible Liquids Code
NFPA 58, Liquefied Petroleum Gas Code
FORMALDEHYDE
29 CFR 1910.1048

Intent
The intent of this section of the Code is to protect workers from exposure to formaldehyde by identifying employees at risk to exposure, monitoring the workplace for exposure levels, and applying work practice and engineering controls to ensure that employee exposure to formaldehyde does not exceed the PEL.

Guidelines for Compliance
- Assess all areas where formaldehyde may be used. Determine potential exposure and locate areas where chemicals containing 0.1% or greater formaldehyde are located. Some areas where it may be found are laboratories, surgical suites, morgues, and clinics.
- Conduct exposure monitoring by a competent surveyor to determine the amount of exposure to your employees. Consult with surveyor for appropriate action to take in areas of concern. [The PEL is 0.5 parts per million (ppm). Airborne levels of exposure cannot exceed 0.75 ppm average over an 8-hour TWA, or exceed 2.0 ppm over a 15-minute STEL].
- Establish initial assignment training program and repeat whenever a new exposure to formaldehyde is introduced and/or at least annually. [paragraph (n)]
- Institute a medical surveillance program for all exposed employees whose exposure is at or above the action level or STEL (for employees who develop signs or symptoms of overexposure, or for employees exposed to formaldehyde in emergencies.) [paragraph (l)] Unless you chose to perform an initial monitoring of each employee exposed to formaldehyde, you shall develop a representative sampling strategy that measures exposures in each job classification for each work shift. When the last monitoring results reveal employee’s exposure is at or above the PEL, repeat monitoring must be done at least every six months. When the level is at or above the STEL, monitoring must be done under worst conditions at least once per year. [paragraph (d)] Though it is not required, it is recommended that monitoring be done at least annually even though the levels are below PEL and STEL. The employee must be notified of the results in writing.
- Engineering and workplace controls should be maintained to keep employee exposure below the PEL (fume hoods, filters, open versus closed systems). If these systems cannot control the PEL, you must restrict access in these areas to authorized persons and post warning signage to include cancer hazard notification, provide appropriate respirators, conduct periodic monitoring, hygiene facilities (including change room) must be provided. [paragraph (f)]
- Employees shall be provided with the proper PPE as determined by the initial assessment. At a minimum, employees should use goggles, face shields, aprons and gloves.
- An eyewash unit and drench shower shall be provide where formaldehyde is used. [paragraph (l)(2)]
- Maintain exposure records for a 30-year period.

Applicable References
GENERAL DUTY CLAUSE

OSH Act, Section 5(a)(1)

Intent
The intent of this section of the Act is to inform employers that they must provide a safe workplace for employees so they will not be injured or become ill.

Guidelines for Compliance

- Each employer
  —shall furnish to each employee a place of employment free from recognized hazards that are causing or are likely to cause death or serious physical harm to the employee
  —shall comply with occupational safety and health standards promulgated under this Act.

- Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act, which are applicable to his or her own actions and conduct.

- The General Duty Clause is utilized when there is not a specific code covering a particular situation or incident. If an unsafe environment or practice is present, then the employer is cited under this section of the Act.

- Examples of items enforced under the General Duty Clause are:
  - TB
  - Ergonomics
  - Glutaraldehyde
  - Latex
  - Hazardous drugs
  - Workplace violence
  - Lasers

- OSHA Guidelines are enforced by this clause.

Applicable References

Occupational Safety and Health Act, Section 5
GLUTARALDEHYDE

Intent
The intent of this guideline is to protect employees from exposure to glutaraldehyde in the workplace. Although there is no specific section of the Code that addresses a permissible exposure limit, OSHA may enforce exposure concerns citing the General Duty Clause based on NIOSH and ACGIH recommended ceiling limits.

Guidelines for Compliance
- Assess all areas where glutaraldehyde might be used. Areas of use may include ambulatory surgery, operating rooms, endoscopy, ultrasound, central sterile, and respiratory therapy. Employees at risk for exposure may include nurses, housekeeping, dental workers, radiologists, lab employees, and others.
- Conduct exposure monitoring by a competent surveyor in identified areas of use to determine the amount of exposure to your employees. Applicable NIOSH ceiling limits (0.2ppm) should not be exceeded.
- To keep identified work sites below the NIOSH ceiling limit, ventilation systems should maintain at least six room air changes per hour. Where glutaraldehyde is kept in large vats or trays for cold sterilization, local exhaust ventilation and fume hoods are suggested.
- Employees should be trained in the wear of and enforced to wear appropriate PPE, including splash-proof goggles or face shields, impervious gloves and gowns. (Use Butyl Rubber, Nitrile or Viton gloves when working with glutaraldehyde. It has been shown that glutaraldehyde permeates through latex gloves.)
- Eyewash/showers should be located in immediate proximity to glutaraldehyde use. Employees should be treated in emergency exposure procedures, including washing and skin showering procedures.
- A written emergency spill procedure should be available and understood by affected employees.
- Conduct training upon initial assignment and annually thereafter.
- Spills should be cleaned up in accordance with your organization’s policy.

Applicable References
NIOSH PB 89-148621, September 1988
ACGIH TLVs, Chemical Substances, Physical Agents, Biological Exposure
HAZARD COMMUNICATION

29 CFR 1910.1200

Intent
The intent of this section of the Code requires healthcare, like other employers, to inform employees about potential health hazards resulting from exposure to chemicals used or stored throughout the workplace.

Guidelines for Compliance
- Develop a written hazard communication plan for your worksite. [paragraph (e)]
- Assign responsibility/accountability for compliance to ensure training, labeling, and MSDS maintenance activities are accomplished.
- Prepare an inventory of hazardous chemicals for your worksite. [paragraph (e)(I)]
- Obtain MSDS for hazardous chemicals used in your worksite. Have MSDS, written plan and inventory readily accessible. [paragraph (g)(8)]
- Ensure that hazardous chemicals are properly labeled and safely stored. [paragraph (f)]
- Establish a hazardous communication training program to address training at the time of initial assignment, when a new hazard is introduced into the worksite, and when transferred to a new department. Also train employees of the potential of chemicals in unlabeled pipes. [paragraph (h)]
- MSDS files must be available to all employees 24-hours/day, 7 days/week.
- Exchange hazard communication information when contractors are on the site.

Applicable References
29 CFR 1910.1200
OSHA Instruction CPL 2-2.38C, Inspection Procedures for the Hazard Communication Standard
OSHA Pamphlet 3084, Chemical Hazard Communication
OSHA Pamphlet 3104, Hazard Communication—A Compliance Kit
OSHA Pamphlet 3119, Exposure to Hazardous Chemicals in Laboratories
OSHA Fact Sheet No. OSHA 93-96
HAZARDOUS DRUGS

Intent
The intent of this guideline is to protect employees from exposure to a variety of hazardous drugs that may be found in the workplace. Occupational exposure settings may include hospitals, physician’s offices, and home health care environments. Hazardous drugs include cytotoxic, investigational, and aerosolized drugs, such as pentamidine or ribavirin. Individuals at risk for exposure include pharmacists, nurses, physicians, and other healthcare workers who mix, administer, transport or dispose of hazardous drugs. The September 22, 1995, OSHA Technical Manual (OSHA instruction TED 1.15) best describes guidelines for cytotoxic and other hazardous drugs and is used as a reference for OSHA compliance officers.

Guidelines for Compliance
- Perform a hazard assessment where hazardous drugs (HD) might be used.
- Develop a written safety and health plan governing the preparation, handling, administration, safe disposal of, engineering controls, PPE, hygiene practices, training, designation of accountable persons and decontamination procedures for hazardous drugs. This will assist in protecting employees from associated health hazards. This plan should be available to employees, including temporary workers and contracted entities.
- Post appropriate warning signage in work, preparation, storage, and on disposal containers and sites.
- Employ good work practices when manipulating drugs to prevent spraying or aerosolizing of the drug. Wash hands as appropriate. Watch infusion pumps and IV setups for leaks, dispose of PPEs, and associated trash in the HD waste stream. Clean reusable PPEs appropriately. Provide emergency spill and decontamination kits to areas that handle or administer hazardous drugs. Handle contaminated linen appropriately.
- Prohibit eating, drinking, smoking, chewing gum, applying makeup or storing food in work or preparation areas.
- Use approved class II type B or class III biological safety cabinets (BSC) that are routinely certified and properly vented. BSC needed to be decontaminated with water and an appropriate detergent (add 70% isopropyl alcohol if contaminant is only soluble in alcohol). Frequency of decontamination is based on the BSC manufacturers’ recommendation.
- Use appropriate PPE (gloves, disposable gowns, respiratory protection–BSC or NIOSH approved respirator, eye or face shields).
- Disposal of such drugs and associated wastes should be in accordance with applicable regulations. EPA regulations may govern specific instances.
- All syringes, IV bags, and containers containing hazardous drugs should be labeled with distinctive warning labels with instructions for special handling and disposal precautions.
- Investigational drugs should not only be administered by personnel involved in that specific drug research. The known potential hazards or toxic effects should be reviewed prior to use in the workplace.
- Aerosolized hazardous drugs (pentamidine, ribavirin) require special engineering and work practice controls which could include treatment booths, local exhaust ventilation, or isolation rooms with HEPA-filtered ventilation systems.
Written emergency procedures should be posted and affected personnel be trained as to what to do in a spill or release of a hazardous drug. Personal contamination, small and large spills should be addressed in the plan.

It is advisable to include personnel who may be potentially exposed to hazardous drugs in a comprehensive medical monitoring program including preplacement examination, periodic medical examinations, postexposure examination, and exit examinations.

Hazardous drug programs should closely follow aspects of the Hazard Communication Standard. Because hazardous drugs are a health hazard, they should be included on a worksite’s chemical inventory list as part of the Hazard Communication Standard.

**Applicable References**

29 CFR 1910.1200
OSHA Instruction TED 1.15, Sept. 22, 1995, *Controlling Occupational Exposure to Hazardous Drugs*
OSHA Publication 8-1.1, *Workplace Practice Guidelines for Personnel Dealing with Cytotoxic Drugs*
OSHA Handout 97-07, *OSHA Hazardous Drug Guidelines*
*Safe Handling of Cytotoxic Drugs—Study Guides.* American Society of Healthcare System Pharmacists
INDOOR AIR QUALITY

Intent
The intent of this guideline is to assist healthcare organizations in improving indoor air quality (IAQ).

Guidelines for Compliance

- Indoor air quality problems may be prompted by a variety of causes: outside air pollutants, inadequate ventilation, poor building design, chemical or microbial contaminants or the habits of occupants, for instance smoking.
- OSHA advises healthcare organizations to follow the ASHRAE recommendations regarding ventilation rates for indoor environments.
- Develop a process of investigation to determine the cause of an IAQ problem. This might include an investigative evaluation tool and a checklist to monitor IAQ hazards.
- Conduct an EPA occupant interview on individuals who display or report symptoms classic to indoor pollutants.
- Internal processes for engineering baseline evaluation of IAQ problems and medical monitoring baseline should be established for each IAQ event. Unresolved IAQ events may require external action by soliciting the expertise of a certified industrial hygienist or other independent expert. South Carolina OSHA Voluntary Programs provides a free IAQ survey by contacting (803)734-9599.
- Particular attention should be given to evaluation of building ventilation, responsible for up to one-half of the primary IAQ complaints. Poor building design often creates uneven distribution of airflow in buildings causing ventilation or fresh air-related problems, such as high CO₂ levels greater than 1,000 ppm.
- Develop an engineering procedure to routinely check HVAC systems, conduct preventive maintenance, and conduct periodic checks for humidity and gases.
- Develop specific employee health protocols for employees presenting with IAQ complaint or symptoms.
- Control microbial contamination by clean up, repair or removal of stagnant water, leaking equipment, moldy, mildew, damp carpets, ceiling tiles, records, etc.
- Implement administrative building management controls such as limiting or banning smoking, room layouts to maintain airflow, oversee structural renovations that can affect airflow and balance.
- Review products used in indoor environments, such as latex gloves and products, that can give off volatile organic or inorganic vapors (synthetics, carpets, floor and seating coverings).

Applicable References

Occupational Safety and Health Act, Section 5 (General Duty Clause)
OSHA technical manual, section II, chapter 2, TED 1.15
OSHA proposed rule on IAQ, April 5, 1994
ASHRAE Standard 62-1989

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One North Franklin, Chicago, Illinois 60606
INDOOR AIR QUALITY INTERVIEW FORM

Employee Name: _______________________________ Date:

Building Name:

Work Location:

Completed by: _______________________________ Date:

Symptom Patterns
What kind of symptoms or discomfort are you experiencing?

Are you aware of other people with similar symptoms or concerns? Yes____ No ______

If so, what are their names and locations?

Do you have health conditions that may make you particularly susceptible to environmental problems?
Contact lenses  Chronic cardiovascular disease  Undergoing chemotherapy or radiation therapy
Allergies  Chronic respiratory disease  Immune system suppressed or disease or chronic neurological
problems  Other causes

Timing Patterns
When did your symptoms begin?

When are they generally worst?

Do they go away? If so, when?

Have you noticed any other events (such as weather, temperature or humidity changes, or activities in the
building) that tend to occur around the same time as your symptoms? If so, what events?
**Spatial Patterns**
Where are you when you experience symptoms or discomfort?

Where do you spend most of your time in the building?

**Additional Information**
Have you sought medical attention for your symptoms?

If so, what were the medical diagnosis?

Do you have additional comments?

**Diary**
Please record each occasion when you experience a symptom or discomfort that you think might be linked to an environmental condition in this building. It is important to record the time, date and location within the building as accurately as possible to help us identify conditions that may be associated with your problem. Also, please record the severity (e.g., mild, severe) and the duration of the symptom. You may record any other observations in the “comment” column.

*Time/Date*

*Location*

*Symptom*

*Severity/Duration*

*Comments*
**LADDER SAFETY**

29 CFR 1910.25, 1910.26, & 1910.27

**Intent**

The intent of this section of the Code is to provide guidance for the safe use of ladders in the workplace.

**Guidelines for Compliance**

**Portable wooden and metal ladders, 29 CFR 1910.25 and 1910.26**

—All portable ladders should have a label indicating that the ladder is “manufactured to meet OSHA standards.”
—Never use a ladder which is bent, broken, has loose or cracked rungs or is damaged in any way. Remove from service. [paragraph (2)(iii)]
—Use ladders with correct duty rating. Rating should be indicated on the ladder.
—Do not splice short ladders together. [paragraph (2)(ix)]
—Do not position ladders in front of door openings unless the door is locked or guarded. [paragraph (2)(iv)] Do not use ladders for purposes for which ladders are not intended. [paragraph (2)(xi)]
—Do not climb on ladder’s bracing (back side of the ladder).
—Make sure that spreaders are locked open before climbing the ladder.
—Never stand on the top rung of the ladder. [paragraph (2)(xii)]
—Climb and work on the middle of the ladder rung.
—Never position the ladder on a slippery surface. [paragraph (2)(i)]
—Do not place ladders on top of boxes, barrels, or other unstable surfaces. Always position ladders on a firm, level base before climbing. [paragraph (2)(v)]
—Do not use a ladder on a scaffold to gain greater height. [paragraph (2)(ii)]
—Face ladder when climbing and descending. Maintain firm hold on the ladder when working.
—**NEVER** use a metal ladder when working in proximity to power lines or other energized circuits. [paragraph (3)(viii)]
—Conduct training upon initial assignment and annually thereafter.

**Fixed ladders, 29 CFR 1910.27**

—Ladder rungs shall have a minimum diameter of 1/2 inch for metal and 1 and 1/2 inch for wood ladders. [paragraph (b)(1)(I)]
—Distance between rungs shall not be greater than 12 inches. [paragraph (b)(1)(ii)]
—Metal fixed ladders shall be painted or otherwise protected from corrosion. [paragraph (b)(7)(I)]
—Wooden fixed ladders, when used under conditions where decay may occur, shall be treated with a nonirritating preservative. [paragraph (b)(7)(ii)]
—Cages, wells, ladder safety devices, or offset platforms shall be installed where fixed ladders are used to ascend heights of 20 feet or more. [paragraph (d)(7)(ii)]
—Landing platforms shall be provided at least every 30 feet where ladders are used to ascend heights greater than 20 feet. [paragraph (d)(2)]
—Ladders shall extend 3 feet above parapets and landing platforms. [paragraph (d)(3)]
—The step across distance from the nearest edge of a ladder shall not be more than 12 inches nor less than 2 inches. [paragraph (d)(2)(I)]
—Conduct training upon initial assignment and annually thereafter.

**Applicable References**

OSHA Pamphlet 3124, *Stairwell and Ladders*
LATEX

Intent
The intent of this guideline is to assist healthcare organizations in preventing allergic reactions to natural rubber latex among workers who use gloves and other products that include latex. Products containing latex include: medical supplies, personal protective equipment, and numerous household objects. Exposures to latex may result in skin rashes; hives; flushing; itching; nasal, eye, or sinus symptoms; asthma; and shock.

Guidelines for Compliance
- NIOSH recommends that employers adopt policies to protect workers from undue latex exposures.
- The Americans with Disabilities Act (ADA) requires that employers make reasonable accommodation for latex sensitive employees.
- Provide workers with nonlatex gloves to use when there is little potential for contact with infectious materials (for example, in food services).
- Appropriate barrier protection is necessary when handling infectious materials. If latex is chosen, provide protein, powder-free gloves to protect workers from infectious materials.
- Provide workers with education programs and training materials about the risks of occupational latex allergy.
- Periodically screen high-risk workers for latex allergy symptoms.
- Evaluate current prevention strategies whenever a worker is diagnosed with latex allergy.
- Use appropriate work practices to reduce the chance of reaction to latex.
- Use good housekeeping practices to remove latex-containing dust from the workplace:
  —Frequently clean areas contaminated with latex dust (upholstery, carpets, ventilation ducts).
  —Frequently change ventilation filters and vacuum bags used in latex-contaminated areas.

Applicable References
NIOSH Alert, June 1997
LAUNDRY OPERATIONS
29 CFR 1910.264

Intent
The intent of this section of the Code is to provide those health care facilities who conduct laundry operations with guidelines to protect their employees from the dangers they are exposed to in the workplace.

Guidelines for Compliance
- The washing machines and dryers must have a means for holding open the door during loading and unloading. [paragraph (c)(ii)(b) and (c)(iii)(b)]
- Appropriate personal protective equipment shall be furnished for and worn by those handling soiled linens. Personnel shall be warned against touching the eyes, mouth or any broken skin area with the soiled linen or their hands until their hands are thoroughly washed. [paragraph (d)(i)(iii)]
- There shall be an eyewash and shower located near the chemicals.
- Appropriate PPE shall be furnished for and worn by those individuals handling the chemicals.
- Exhaust fan blades and motor parts that are less than seven feet above the floor shall be properly guarded [29 CFR 1910.212(a)(5)] and exhaust from the clean area across the soiled area.
- Training must be done upon initial assignment, annually thereafter, and if duties change.

Applicable References
LEAD

Intent
The intent of this section of the Code is to protect employees from exposure to lead in the workplace. Although the preferred method is to have no lead in the workplace, it is recognized that this is not possible in certain situations. Lead can be found in old piping and in paint. In those situations, management of or preferable engineering methods must be used to limit exposure to that prescribed in the Code.

Guidelines for Compliance


- Buildings constructed prior to 1980 are likely to have lead in the paint or pipes. Assess all areas that might contain lead and determine potential exposure. Lead can also be found in radiology mold rooms.
- Have a proactive lead management program in place if you have lead in your facility or you have employees who work with lead.
- If you have lead:
  - perform initial air sampling, as necessary, to determine the amount of exposure to your employees (the PEL for lead is 50 micrograms/8-hour exposure);
  - institute a medical surveillance program to monitor those exposed at the action level of 30 Fg/m³. For those individuals, monitor at least every 6 months. [paragraph (d)(6)] There is not a requirement to monitor individuals who are exposed under the permissible limits unless there is a change in personnel or there is a suspected change in quality. Inform employees of monitoring results in writing. [paragraph (d)(7)]
  - mechanical ventilation is the preferred method of engineering control. Velocities must be measured every 3 months. If the air is recirculated, there must be a filtration system at the point where the air leaves the room of exposure. [paragraph (e)(5)] Other methods, such as wet methods and process enclosure, are also preferred.
  - post proper warning signs where PEL is exceeded (communication of the hazard). [paragraph (m)]
  - provide proper respiratory protection (where engineering controls do not reduce exposure to appropriate levels) and protective clothing to employees whose work requires exposure. Fit test respirators. [paragraphs (f) & (g)]
- Establish initial assignment training programs for employees whose exposure might be above the PEL. Besides the initial training (within 180 days from the effective date of employment), conduct training annually thereafter. [paragraph (l)]
- Maintain exposure records for a 40-year period or for the duration of employment plus 20 years, which ever is longer.
- Provide appropriate foot covers (and ensure they are worn) and walk off mats to prevent migration to other areas of the facility.

Construction Industry, 29 CFR 1926.62

- Construction work is defined as work from construction, alteration, and repair, including painting and decorating. It includes, but is not limited to:
— demolition
— removal of materials containing lead
— installing materials containing lead
— transporting materials containing lead

Assess all areas where employees might be exposed above the action level (30 Fg/m³ as an 8-hour TWA, without consideration of respirators).

Establish and implement a written compliance program. This program should contain descriptions of activities where lead may be present, control methods, air monitoring and a work practice program.

When appropriate, provide respirators when PEL (50 Fg/m³ as an 8-hour TWA) is exceeded.

Provide PPE for employees whose exposure exceeds the PEL.

Make available initial medical surveillance to employees occupationally exposed to lead at or above the action level.

Post warning signs in areas where the PEL is exceeded.

Maintain exposure records for a 40-year period or for the duration of employment plus 20 years, whichever is longer.

**Applicable References**


EPA Lead-Based Paint Regulation

OSHA Title X. *Residential Lead-Based Paint Hazards Reduction Act of 1992*
LOCKOUT/TAGOUT

29 CFR 1910.147

Intent
The intent of this section of the Code is to protect employees from being injured by exposure to hazardous energy: hydraulic, steam, pneumatic, electrical, etc.

Guidelines for Compliance
- The employer shall establish a program consisting of an energy control procedure. The program shall have employee training to ensure that before employees perform servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury. Training/retraining should be done upon initial assignment, annually thereafter, when changes to the existing program, machines, procedures occur, or if the employer believes there is a need to retrain an employee. [paragraph (a)(3)]
- The machine or equipment shall be isolated, and rendered inoperative. [paragraph (c)(1)]
- Whenever major repair, renovation, or modification of machines or equipment is performed, energy isolating devices for such machines or equipment shall be designed to accept a lockout device. Whenever new machines or equipment are installed, they shall be designed to accept a lockout device. [paragraph (c)(2)(iii)]
- When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the source location that the lockout device would have been attached. [paragraph (c)(3)]
- Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees in these energized areas. These procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy. [paragraph (c)(4)(ii)]
- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing, or blocking of machines or equipment from energy sources. [paragraph (c)(5)]
- Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected. [paragraph (c)(5)(A)]
- Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: color, shape, size, and in the case of tagout devices, print and format shall be standardized. [paragraph (c)(5)(B)]
- Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as the use of bolt cutters or other metal cutting tools. [paragraph (c)(5)(C)]
- Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s). [paragraph (c)(5)(D)]

Applicable References
OSHA 3120, Control of Hazardous Energy (Lockout/Tagout)
ANSI Standard ANSI Z244.1-1982, Safety Requirements for Lockout/Tagout of Energized Sources
MACHINERY GUARDING


Intent
The intent of this section of the Code is to protect machine operators and other employees from injury caused by unguarded machinery in the machine area from hazards such as those created by point of operation, ingoing nip points, rotating parts, flying chips, and sparks.

Guidelines for Compliance

29 CFR 1910.212:
— Guards shall be affixed to the machinery where possible or secured elsewhere if for any reason it is not possible. The guard shall not offer a hazard within itself. [paragraph (a)(2)]
— Point of operation guarding protects the employee where the machine work is performed. Examples of point of operation machinery are: shears, guillotine cutters, power saws, portable power tools, etc. [paragraph (a)(3)(iv)]
— Fan blades shall be guarded when the fan is less than 7 feet above the floor. The openings of the guard shall be no larger than 1/2 inch. [paragraph (a)(5)]
— Initial training shall be provided to the employee.

29 CFR 1910.213:
— Circular saws shall be firmly secured and belts, pulleys, and other moving parts shall be guarded. The frames and all exposed noncurrent-carrying metal parts of portable electric woodworking machinery operated at more than 90 volts to ground shall be grounded and other portable motors driving electric tools which are held in the hand while being operated shall be grounded if they operate at more than 90 volts to ground. The ground shall be provided through use of a separate ground wire and polarized plug and receptacle. [paragraph (a)(6)(9)(11)]
— Power controls for the machinery shall be located within easy reach of the operator so that the machine can be cut off without the operator leaving his position. [paragraph (b)(1) & (4)]
— Circular hand-fed ripsaws shall be guarded by a hood which shall completely enclose that portion of the saw above the table and that portion of the saw above the material being cut. It shall have a spreader to prevent material from squeezing the saw and nonkickback fingers to prevent material from being thrown back on the operator. [paragraph (c)(1) to (3)]
— All portions of bandsaws shall be enclosed or guarded, except for the working portion of the blade between the bottom of the guide rolls and the table. [paragraph (I)]
— Initial training shall be provided to the employee.

29 CFR 1910.215:
— Explains the guarding of various types of abrasive machinery. It contains nine tables of minimum dimensions. [paragraphs (a) to (d)]
— Initial training shall be provided to the employee.

Applicable References
29 CFR 1910.243
MEANS OF EGRESS
29 CFR 1910.37

Intent
The intent of this section of the Code is to allow employees to exit from fire hazards in the workplace by ensuring that the building is protected, illuminated and maintained. This section is intended to also address nonclinical areas (e.g., administrative areas, maintenance, dietary, etc.).

Guidelines for Compliance
- Means of egress shall be protected by smoke tight, fire resistant, rated separations. Any opening shall be protected by an approved self-closing door. [paragraph (b)(3)]
- When more than one exit is required from a story, at least two of the exits shall be remote from each other and so arranged as to minimize any possibility that both may be blocked by any one fire or other emergency condition. [paragraph (e)]
- A door in the means of egress shall be side-hinged and swing in the direction of the flow of egress. [paragraph (f)(2)]
- There can be no obstructions in the means of egress. If furniture or equipment is required to be in the means of egress, they must be movable. [paragraph (g)(4)]
- All exits must discharge and continue to a public way. [paragraph (h)]
- If exit stairways continue past the point of discharge, a barrier shall be provided to prevent persons continuing down the stairs. [paragraph (h)(2)]
- Exits shall be marked by clearly visible exit signs designating the direction of travel or the discharge exit. If a door or passage way is located so that it can be mistaken as being an exit, it shall be marked with a “Not an Exit” sign. [paragraph (q)(2)]
- Exit signs shall be illuminated by not less than 5-foot candles of light. [paragraph (q)(6)]
- Exits shall not be locked unless the locking system can be overridden by a panic bar, automatic release, or other operable mechanisms controlled by the fire suppression or alarm systems.

Applicable References
29 CFR 1910.37
NFPA. 101, Life Safety Code
JCAHO. Comprehensive Accreditation Manual for Hospitals
**Mercury**

*29 CFR 1910.1000*

**Intent**
The intent of this section of the Code is to protect employees from exposure to acute and long-term health effects of mercury. OSHA regulates exposure to mercury through the Air Contaminant Standard, 29 CFR 1910.1000, including a PEL of 0.1 mg/m³ or 0.05 mg/m³ as an 8-hour TWA for mercury vapor.

**Guidelines for Compliance**
- Assess all areas where mercury is used. Mercury may be used in equipment found in laboratories, biomedical engineering, clinics and patient wards.
- Conduct exposure monitoring as applicable by a competent surveyor in identified areas of use to determine if the OSHA PEL is exceeded.
- Institute controls to protect employees from skin absorption and inhalation of vapor, the two routes of mercury exposure transmission.
- PPE and workpractice controls should be implemented where skin contact with elemental mercury is likely.
- Where mercury vapor is likely, dedicated ventilation systems should be installed to maintain mercury vapors below the PEL.
- Implement a mercury hazard reduction plan to reduce mercury in the workplace by switching to alternative products.
- Provide medical monitoring for employees who may be exposed to mercury.
- Provide initial training to affected employees, including the safe handling and disposal of mercury, PPE, and spill protocols.

**Applicable References**
- 29 CFR 1910.1000
- 29 CFR 1910.1200
- NIOSH PB 89-148621, September 1988
- ACGIH TLVs, Chemical Substances, Physical Agents, Biological Exposure
- Compliance/Enforcement Activities, OSHA memo Aug. 5, 1993
METHYL METHACRYLATE
29 CFR 1910.1000

**Intent**
The intent of this section of the Code is to protect employees from exposure to methyl methacrylate in the workplace, often used as a bone glue and in other adhesives. Although there is no specific section of the Code describing how OSHA wants you to deal with methyl methacrylate, the chemical is listed in 29 CFR 1910.1000 having permissible exposure limits (PEL), which employees are allowed to receive.

**Guidelines for Compliance**
- Assess all areas where methyl methacrylate might be used and determine potential exposure (e.g., surgery suites, dental surgery suites, prosthetic labs and maintenance areas).
- Establish initial assignment training program and repeat whenever a new exposure to methyl methacrylate is introduced and/or at least annually.
- Conduct initial exposure monitoring by a competent surveyor to determine the amount of exposure to your employees. The PEL is 100 ppm in air averaged over an 8-hour period. Repeat monitoring when processes change.
- Employees should be notified of their monitoring results.
- Local exhaust hoods or scavenging systems should be used in areas where methyl methacrylate is mixed.
- To minimize exposure, ensure that employees wear proper gloves when working with methyl methacrylate.
- Proper gloves and eye protection should be worn when working with methyl methacrylate. Respirators should be used if employee is over exposed.

**Applicable References**
METHYLENE CHLORIDE

29 CFR 1910.1052

Intent
The intent of this section of the code is to protect employees from exposure to methylene chloride (MeCl) in the workplace. Methylene chloride is often found in maintenance departments, housekeeping, dietary and grounds areas of hospitals. MeCl acts as an anesthetic in short-term exposures and is also a suspect carcinogen. It may cause irritation and burns to skin and eyes.

Guidelines for Compliance

- Determine if methylene chloride is used within the facility. (MeCl is often found in strippers, heavy cleaners, degreasers, and oven cleaners.)
- Replace products containing MeCl with less hazardous products if possible.
- If you have to use MeCl you must ensure that:
  - Initial monitoring has been conducted (PEL is 25ppm for 8 hours, STEL is 125ppm for 15 minutes). [paragraph (d)]
  - An MSDS is available for employees and employees have been trained on the hazards of methylene chloride.
  - PPE is provided where a splash hazard or a potential for skin contact exists (apron, face shield, and gloves).
  - An eyewash and shower is provided in the area of use for products containing 0.1 percent or greater MeCl.
- If the PEL or STEL is exceeded, there are additional requirements:
  - Establish a regulated area. [paragraph (e)]
  - Engineering and work practice controls are required. [paragraph (f)]
  - Respirators and a respirator program are required. [paragraph (g)]
  - Medical surveillance must be available for exposed employees. [paragraph (j)]
  - Employer must retain records of monitoring and medical surveillance for a 30-year period. [paragraph (m)]

Applicable References

MYCOBACTERIUM TUBERCULOSIS

Intent

The intent of this guideline is for the prevention of spreading *Mycobacterium tuberculosis* (TB) among healthcare workers and others within the healthcare facility. There is no specific standard governing TB, but OSHA recognizes the CDC Draft Guidelines for Preventing the Transmission of Tuberculosis in Healthcare Facilities, 2nd edition, which was published in the October 28, 1994 Federal Register. OSHA also applies the “General Duty Clause” to the prevention of the spread of TB.

Guidelines for Compliance

- Establish a protocol for the early identification of individuals with tuberculosis. A suspected case is one in which the facility has identified an individual as having symptoms consistent with TB. The CDC has identified the symptoms to be sputum-producing cough, coughing up blood, weight loss, loss of appetite, lethargy/weakness, night sweats or fever.
- Training and information to ensure employee knowledge of the hazard of TB transmission, its signs and symptoms, medical surveillance and therapy, site-specific protocols including the purpose and proper use of controls.
- Free medical screening including preplacement evaluation, administration and interpretation of Mantoux skin tests. Retests shall be given every six months for workers with potential exposure to individuals with TB or who are involved in high-risk procedures, while retests will be given annually for the others.
- Evaluate and manage workers who have a positive skin test or a history of positive skin tests who are exhibiting symptoms of TB. This includes work restrictions for infectious employees.
- Acid-fast bacilli (AFB) isolation rooms are required for suspected or confined infectious patients. These isolation rooms and areas in which high hazards procedures are performed must be maintained under greater negative pressure and appropriately ventilated exhaust to remove contaminated air from the workplace.
- Provide respiratory protection, for employees, that has been approved by the NIOSH and require employees to use respirators when employees perform high hazard procedures, enter isolation rooms housing individuals who may have TB or transporting such individuals in a closed vehicle. Currently, the N-95 series respirator or a respirator equipped with HEPA filters provide the minimal protection necessary to protect employees in such work situations as changing filters and maintenance on exhaust systems. Whenever respiratory protection is indicated, a complete respiratory protection program must be in place.
- Warning signs must be posted outside a respiratory isolation room, stating “Special respiratory isolation” or “AFB isolation.” The warnings must say what precautions are required.
- Records of employee exposures to TB, skin tests, and medical evaluations and treatment must be kept. Tuberculosis infections (positive Mantoux skin tests) and tuberculosis disease are both recordable illnesses in the high-risk facilities by the CDC.
- Label roof outlets and exhaust ducts.
Applicable References
General Duty Clause [Section 5(a)(1)]
29 CFR 1904
NOISE EXPOSURE
29 CFR 1910.95

Intent
The intent of this section of the Code is to assist healthcare organizations in protecting their employees from high levels of occupational noise exposure. Noise concerns can be in the engineering and maintenance areas, laundry, and food service.

Guidelines for Compliance
- Monitoring must be implemented if there is a potential that an 8-hour TWA of 85 decibels (db) is equaled or exceeded. [paragraph (e) & (d)]
- If employees are exposed to TWA of 85db or higher, the employer must notify the employee. The employer must then administer a continuing hearing conservation program for them. An audiometric testing program should be made available them. Where employees are exposed to the 85 db level; the noise standard must be posted in the work area, hearing protection (two types) must be offered to them and appropriate training administered. Within 6 months of employees’ first exposure, the employer shall establish a valid baseline audiogram and at least annually thereafter. [paragraph (e) & (g)]
- Where noise exposure exceeds 90 db, hearing protection is mandatory and engineering controls must be provided if feasible.
- Hearing protection shall be made available to employees exposed to an 8-hour TWA of 85db or higher. The employer shall ensure that the protective equipment is worn.
- The employer shall maintain records of all employee exposure measurements (two-year period) and audiometric test records (for duration of the affected employee’s employment). [paragraph (m), (2)&(3)]
- Audiometric test rooms and acoustic calibration of audiometers used to evaluate your employees must meet the requirements of 29 CFR 1910.95, Appendices D and E. Have firm performing the tests provide you with this information.
- Protection shall also be provided to employees when sound levels exceed those shown below when measured on the A scale of a standard sound level meter at slow response. [paragraph (a)]
- Standard threshold shifts should be recorded on the OSHA 200 log.
- Permissible noise exposure limits:

<table>
<thead>
<tr>
<th>Duration per day in hours</th>
<th>db level</th>
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</thead>
<tbody>
<tr>
<td>8</td>
<td>90</td>
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<tr>
<td>6</td>
<td>92</td>
</tr>
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<td>97</td>
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<td>100</td>
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<td>110</td>
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<tr>
<td>0.5 or less</td>
<td>115</td>
</tr>
<tr>
<td>For any amount of time</td>
<td>140</td>
</tr>
</tbody>
</table>

Applicable References
29 CFR 1910.95
OXYGEN
29 CFR 1910.104

Intent
This section of the Code applies to the installation of bulk oxygen systems (more than 13,000 cubic feet) at hospitals and the use of oxygen in health care facilities. These systems and cylinder storage containers pose potential dangers to anyone who works with or around them.

Guidelines for Compliance
- Oxygen, within itself, will not burn. However, oxygen supports combustion and flammable materials burn faster when oxygen is present.
- When oxygen comes into contact with oil, grease or fuel oils, the possibility of ignition is very high. Employees who work with or on oxygen systems shall receive training on the proper methods of handling these systems.
- Even though healthcare facilities are smoke-free, proper “No Smoking” warning signs are required where oxygen is used or stored. When used in patient rooms, there should be warning signs at the entrance to the room. [NFPA 99, 8-6.4.2]
- Bulk oxygen systems shall be located above ground out of doors or in a noncombustible construction, adequately vented, and used for that purpose exclusively. It will be readily accessible to mobile supply trucks. Where liquid oxygen is stored, the surface of the pad where the tank is located and the pad where refill operations occur shall be of noncombustible surfacing. The minimum distance from bulk storage to exposures shall be 50 feet for less than 5,000 cubic feet and 90 feet for 5,000 cubic feet or more. There shall be permanent placards with the words “OXYGEN—NO SMOKING—NO OPEN FLAMES.” [29 CFR 1910.104, paragraph (b)]
- Oxygen cylinders shall be stored in accordance with NFPA 99, paragraph 8-3.1.11 and the Compressed Gas Association Pamphlet P-1-1965. [29 CFR 1910.101, paragraph (c)]

Applicable References
NFPA 99, Health Care Facilities
Compressed Gas Association Pamphlet, P-1-1965.
PERSONAL PROTECTIVE EQUIPMENT

29 CFR 1910.132

Intent
The intent of this section of the Code is to ensure that employers provide protection of eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers. Personal protective equipment (PPE) shall protect employees from injury or impairment to any part of the body caused through absorption, inhalation or physical contact.

Guidelines for Compliance
- The employer shall assess the workplace to determine what hazards are present, or are likely to be present, which will necessitate the use of PPE. This will be documented and kept on file. The documentation will include (1) identity of workplace assessed, (2) the person certifying that the assessment was performed, (3) the date(s) of the assessment, and (4) identity that this is the document is a certification of hazard assessment. [paragraph (d)]
- This code allows employees to furnish their own PPE. However, where employees do provide their own PPE, the employer shall be responsible to ensure that it is adequate for the task to be performed and that it is properly maintained and sanitized. [paragraph (b)]
- The employer shall provide training to each employee who is required by this section to use PPE. Before employees are allowed to perform work requiring PPE, they shall demonstrate an understanding of the use of the equipment. The employer shall maintain a written certification with the employee’s name, date of training, and subject of the certification. The employer shall retrain employees who have demonstrated that they do not understand the proper use of the equipment to be used. [paragraph (f)]

Applicable References
ANSI Standard ANSI Z87.1-1989, Practice for Occupational and Educational Eye and Face Protection
ANSI Standard ANSI Z89.1-1986, Protective Headwear for Industrial Workers
OSHA 3074, Hearing Conservation
OSHA 3077, Personal Protective Equipment
POWER TOOL GUARDING
29 CFR 1910.243

Intent
The intent of this section of the Code is to protect power tool operators and other employees from injury caused by unguarded tools.

Guidelines for Compliance
- All portable power-circular saws having a blade diameter of greater than 2 inches shall have a guard above and below the base plate. The control will shut off the power if released. [paragraph (a)(1) and (2)]
- Portable belt sanding machines will have guards at each nip point where the sand belt runs onto a
- Portable abrasive wheels shall have a safety guard that covers the spindle end, nut and flange projections. Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180° pulley [paragraph (a)(3)] and the guard shall be between the operator and the wheel. [paragraph (c)(ii) and (3)]
- Explosive actuated fastening tools shall meet ANSI Standard A10.3-1970. The operator shall wear proper head and face protection. The tool shall be designed so that it does not operate unless it held against a work surface and it can only fire on at least two separate distinct operations. [paragraph (d)(1)(ii), (e) and (h)(b)(2)]
- Power mowers, walk-behind and riding, must meet ANSI Standard B71.1-X1968. All chains and belts must be guarded. Mower blades shall be enclosed, except on the bottom. The word “CAUTION” shall be near the discharge opening. [paragraph (e)]

Applicable References
29 CFR 1910.243
The intent of this section of the Code is to protect healthcare workers from exposure to radiation. Nonionizing radiation can be infrared radiation (IR), ultrasound, microwave, lasers, ultraviolet radiation (UV), or radio frequency. Ionizing radiation can be Alpha particles, Beta particles, Gamma rays, X-rays, high-speed electrons and protons and other atomic particles. These hazards can be found in radiology departments, nuclear medicine departments, laboratories, dental services, dietary, clinics, nurseries, surgical suites, and patient wards.

Guidelines for Compliance

Nonionizing radiation, 29 CFR 1910.97

- Nonionizing radiation sources are mainly used in patient treatment.
  - Ultrasound is used in physical therapy and in obstetrics. Ultrasound is sound waves transmitted at a frequency too high for the average ear to detect. This form of nonionizing radiation is generally not considered hazardous to employees or patients.
  - Ultraviolet light is used in certain dermatological procedures. It is also used as a germicidal lamp in the control of tuberculosis, warming lights for food service, sterilization equipment, bilirubin lights, and lamps for lighting.
  - Microwave is generally used to cook or warm food in dietary or on the patient ward. It can also be found in areas such as physical therapy or in surgery being used to warm various items. Microwaves can cause heart pacemakers to malfunction. Warning signage should be posted wherever microwaves are present.
  - Radiofrequencies are found in communication systems which transmit radio waves to beepers, walkie-talkies and cellular phones used through out the building. They are also found in telemetry systems and cardiac monitors, and magnetic resonance. Where radio frequencies may cause a hazard, appropriate warning symbols shall be posted. [paragraph (a)(3)]
  - Infrared radiation exposures can happen during laser procedures or thermography. They can cause skin burns.
  - Lasers are considered to be the most dangerous of the nonionizing radiation due to the heat produced, electrical shock and the potential for eye damage. Areas where lasers are used shall have appropriate warning signs restricting access to the area. Eye protection shall be worn by everyone involved in the laser procedure. Measures should be in place to protect the employee from inhaling the smoke produced in the laser plume. Laser beams should be properly controlled and kept away from flammable and/or reflective materials.

- Each facility that utilizes laser technology shall have a laser safety officer and a laser safety committee that oversees the laser safety program.

Ionizing radiation, 29 CFR 1910.96

- The amount of ionizing radiation absorbed by the body is measured by a dose. Doses are measured in Rads and Rems. [paragraph (a)(1-7)]
Employers shall conduct surveys to determine the radiation hazard incident to release, disposal or presence of radioactive materials. This includes a physical survey of equipment and measurements of levels radiation present. [paragraph (d)]

Employers shall supply appropriate personal monitoring equipment, such as film badges, pocket dosimeters, etc. [paragraph (d)(2)]

Caution signs shall be posted in areas where radioactive material is present. These signs shall display the appropriate symbol for radiation and utilize radiation caution colors (magenta or purple on yellow background). Additional wording shall be utilized as appropriate to the radiation area. [paragraph (e)(1-6)]

Each facility that has a radiology department shall have a radiation safety officer and a radiation safety committee that oversees the radiation safety program.

Nuclear medicine department shall store radiation doses in “hot lab” areas with proper lead protection. Radiology departments shall assure that exposure rooms have proper lead protection. Employees and patients shall be provided with the proper lead-lined PPE as appropriate.

Exposure rooms shall be equipped with protective shielding for radiographic technicians and shunt switches that turn equipment off if a door to the room is opened.

**Applicable References**


NFPA 99, *Health Care Facilities*


ANSI Standard ANSI Z136.3-1988, *Safe Use of Lasers in Health Care Facilities*
RECORD KEEPING/POSTING REQUIREMENTS
29 CFR 1904

Intent
The intent of this regulation is to provide employees with information regarding their rights under the OSH Act and provide a method of analyzing injury and illness trends. It also assists employers in their requirements for record keeping and posting of appropriate posters to comply with the OSH Act.

Guidelines for Compliance
■ Post OSHA poster in facility where employees will see it (in a break room, by time clock, etc.).
■ Maintain OSHA form 101 for each recordable injury (Workers Compensation First Report of Injury is acceptable).
■ Maintain OSHA 200 log for all recordable injuries and illnesses. These should be kept for 5 years.
■ Post the summary portion of the OSHA 200 log during the month of February each year where employees may see it (you do not have to post the part that includes names).
■ Guidelines for recordability:
   —All occupational deaths are recorded.
   —All occupational illnesses are recordable.
   —All injuries that involve medical treatment (other than first aid), loss of consciousness, restriction of work or motion, or transfer to another job are recordable.

Applicable References
29 CFR 1904
O.M.B. No. 1220-0029, Record Keeping Guidelines for Occupational Injuries and Illness
RESPIRATORY PROTECTION
29 CFR 1910.134

Intent
This intent of this section of the Code is for the protection of employees from breathing air contaminated with dusts, fogs, fumes, gases, mists, smokes, sprays, and vapors. (This standard does not apply to TB)

Guidelines for Compliance

■ Written program—where respirators are required [paragraph (c)(1)]
  —A trained and knowledgeable program administrator must administer work-site specific procedure for respiratory use. Must include procedures for selection and use, medical evaluation, fit testing, routine and emergency use of respirators, cleaning and maintenance, adequate air quality and quality for atmosphere supplying respirators, and training.

■ Written program—voluntary [paragraph (c)(2)]
  —This section does not apply to voluntary use of dust masks.
  —Employer may provide respirators or allow employees to supply adequate respirators.
  —Must determine that use of respirators will not present another hazard.
  —Must establish elements of a written program that cover medical evaluation, storage, cleaning and maintenance of respirators.

■ Must provide respirators, training, and medical evaluation at no cost to the employee. [paragraph (c)(4)]
■ Selection of respirators should be based on the hazard where they will be used, and they should be NIOSH certified and approved by NIOSH for the intended use. [paragraph (d)]
■ IDLH atmosphere (Immediately Dangerous to Life or Health) must either use a full-face pressure-demand SCBA (30-minute) or a full-facepiece pressure-demand supplied air respirator with an auxiliary SCBA. [paragraph (d)(2),(g)(3)]
  —Also, at least one employee should act as an attendant outside the IDLH atmosphere and be trained and equipped to provide rescue, communication must be maintained between the entrant and attendant, and retrieval equipment and positive pressure SCBA or SAR with auxiliary SCBA should be on hand.

■ For non-IDLH atmosphere, the following selections should be made: [paragraph (d)(3)]
  —Gases and vapors: atmosphere supplying respirator or air-purifying respirator with end of service life indicator (or use objective data to determine how often to change cartridges,
  —Particulate: atmosphere-supplying or air-purifying respirator certified by NIOSH as HEPA or particulate filter.

■ Medical evaluation must be provided and the healthcare provider must determine if the employee is able to wear a respirator. [paragraph (e)]
■ Fit testing must be performed prior to initial use and annually for tight fitting respirators. Qualitative fit testing is acceptable for negative pressure air-purifying respirators that must achieve a fit factor of 100 or less or for atmosphere-supplying and tight-fitting powered air-purifying respirators. [paragraph (f)]
■ Quantitative fit testing must be performed where a fit factor of 100 is needed for tight-fitting respirators or for full-faced pieces where a fit factor of 500 is necessary.
Facial hair must not interfere with the seal on tight-fitting respirators. [paragraph (g)(1)]

Inspections should be performed before each use and during cleaning. Emergency use respirators must be inspected before they are carried into the area for use and should be certified with a tag on the respirator. SCBA must be inspected monthly. [paragraph (h)(3)]

The respirator program should be evaluated as often as necessary to ensure effectiveness. [paragraph (l)]

**Applicable References**


DHHS, NIOSH Respirator User Notice, May 2, 1997
RESPIRATORY PROTECTION FOR TB
29 CFR 1910.139

Intent
This intent of this section of the Code is for the protection of employees from tuberculosis (TB).

Guidelines for Compliance

- A written standard operating procedure governing the selection and use of respirators shall be established. These procedures shall cover safe use of respirators for the protection from tuberculosis. They shall be regularly evaluated to determine the effectiveness of the program. [paragraph (b)]
- When and where effective engineering control measures are not feasible or during periods of the engineering controls being inoperable, appropriate respirators shall be used. [paragraph (a)(1)]
- Respirators shall be furnished by the employer when necessary to protect the health of the employee. The employer shall also maintain the respirators and establish a maintenance program. [paragraph (a)(2)]
- The user shall receive initial assignment instruction and training in the proper use of respirators and their limitations. They shall receive fitting instructions and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. [paragraph (e)(4)(I)]
- Initial fit testing is required and redone when facial features change or new style respirators are introduced. [paragraph (e)(4)(I)]
- Employees should not be assigned tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the respirator. A healthcare worker can determine what limitations are pertinent. Monitor for employee exposure and stress. [paragraph (b)]

Applicable References
DHHS, NIOSH Respirator User Notice, May 2, 1997
OSHA 3079, Respiratory Protection
VIOLENCE IN THE WORKPLACE

Intent
The intent of this guideline is to eliminate or reduce employee exposure to conditions that lead to death or injury in the workplace caused by the violence of another individual. Currently, there is no Code, other than the “General Duty Clause,” that directly addresses providing a workplace free of potential violence, and it only references by insinuation.

Guidelines for Compliance
- Management commitment—To ensure an effective program, management and front-line employees must work together. Management must show endorsement, and visible involvement.
- Your organization shall have a written program incorporated into the overall safety and health program. This program should have a clear policy of zero-tolerance for workplace violence, verbal and nonverbal threats, and related actions. Managers, employees, patients, clients, and visitors must be informed of this policy. There must be no reprisals against anyone who reports or experiences workplace violence. The program should contain a Post-Incident Response section. Remember to include not only those directly victimized but co-workers also.
- A worksite analysis must be performed to identify existing or potential hazards. This assessment should be done by a team made of representatives from senior management, safety, security, legal, operations, engineering, and human resources. Analyze not only the physical plant but also OSHA 200 log, insurance records, safety and security reports, and workers’ compensation records.
- After the analysis is performed, engineering or administrative and work practices must be instituted as tools to prevent future incidents. Many of the engineering devices may be too expensive to purchase right away. Budget over several years to help reduce the costs. In the mean time, administrative and work practice controls can be readily implemented.
- Every employee should receive training on the specific hazards associated with their workplace. This training should be given at initial job assignment, when the hazard changes and at least annually thereafter. Training should include the organization’s policy, early warning signs, diffusing situations, response, reporting, etc.
- Records must be kept of incidents and evaluated to determine overall effectiveness of the program. OSHA 200 log, medical reports, incident reports, minutes of safety meetings, and training records are examples of records to be kept.
- The written program, and safety and security measures must be evaluated. Deficiencies should be identified and corrective action taken.

Applicable References
OSHA 3148, 1996. Guidelines for Preventing Workplace Violence for Health Care and Social Service Workers.
WARNING SIGNS

Intent
The intent of this guideline to make those responsible for health care safety aware of the need to post warning signs to inform employees of certain potential dangers that they may face in the workplace. There is no specific regulation governing warning signs. The requirements are found within each regulation that requires them. Even though certain regulations do not require warning signs, each situation should be evaluated to determine if posting one would make for a safer environment.

Guidelines for Compliance
- Unless otherwise specified, sign colors follow a general pattern. You must be consistent throughout your facility with sign design and colors.
  - **Danger signs** indicating immediate danger are red, black, and white.
  - **Caution signs** warn against potential hazards or unsafe work practices. These signs have a yellow background with black letters, and a black panel with yellow letters.
  - **Safety instruction signs** used for safety instructions are usually green panel with white letters and a white background.
  - **Specific signs** are used for areas such as biological hazard (orange-red) and radiation (purple and yellow).
- The following is a list of regulations that require signs to be posted. This list should not be considered all-encompassing. Refer to the CFR for wording.

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<tr>
<th>Subject</th>
<th>Regulation number</th>
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<td>1910.22(b)(2); (d)(1)</td>
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<td>Portable metal ladders</td>
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<td>1910.110(b)(5), (11), (15); (c)(2); (g)(2), (12); (h)(3), (12)</td>
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<td>1910.144(a)(1)(I)-(iii), (3)</td>
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<td>Accident prevention signs</td>
<td>1910.145(a)-(f)</td>
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Applicable References

All of the above referenced regulations
WASTE ANESTHETIC GASES

Intent
The intent of this guideline is to protect employees from the hazards associated with exposure to waste anesthetic gases, including nitrous oxide, enflurane, halothane or other anesthetic gases. OSHA has not issued a specific standard for waste gases, but workplace inspectors will check for proper controls when conducting hospital safety inspections and exposure concerns can be cited under the General Duty Clause.

Guidelines for Compliance
■ Employee exposure to waste anesthetic gases occurs when gases escape through leaks in equipment or when exhaled by postoperative patients. Operating room, labor/delivery, recovery room, and emergency room employees may be at risk for exposure.
■ Conduct exposure monitoring by a competent surveyor to determine any exposure to employees. ACGIH recommends specific TWA exposure limits for each anesthetic gas.
■ Conduct medical monitoring for employees who are potentially exposed to anesthetic gases. Exposure monitoring records should be kept and sent to employee health for inclusion into affected employee’s medical records.
■ Install and maintain a scavenging system to remove waste gases from site of use.
■ In affected areas, install nonrecirculating HVAC systems that maintain a minimum of 15 room air exchanges per hour.
■ Conduct preventative maintenance, performance and leak testing on anesthesia equipment on a periodic basis. Quarterly testing is recommended.
■ Employees involved in the administration of anesthetic gases or present during procedures where gases are administered should be trained in correct workpractices including ways to reduce the risk of exposure to waste anesthetic gases (machine operation, fit-test mask) and scavenging system operation and maintenance.

Applicable References
ACGIH TLVs (chemical, physical, biological)
NFPA 99, Health Care Facilities
NIOSH publication No. 77-140
NIOSH Alert (DHHS NIOSH 94-100)
WELDING
29 CFR 1910.252

Intent
The intent of this section of the Code is to provide instructions in basic precautions for safety concerning welding, cutting, and brazing.

Guidelines for Compliance

- Any fire hazards in the vicinity of the object being welded shall be taken to a safe place if the object itself is not readily movable. If any holes or cracks are in the floor or wall, take necessary measures so that combustible material on the floor below or in the room will not be exposed to sparks. Guards shall be used if fire hazards are not movable to confine heat, sparks, and slag. [paragraph (a)(1)(I-iii)&(2)(I)]
- Fire extinguishers or other firefighting equipment shall be readily available.
- Areas where welding, cutting, or brazing are accomplished should be well ventilated and free from any explosive atmospheres, such as mixtures of flammable gases, vapors, liquids or dust in the air.
- Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop or when:
  — Combustible materials are closer than 35 feet or more than 35 feet and are easily ignited by sparks.
  — Fire watchers shall have extinguishing equipment readily available and be trained in their use as well as procedures for sounding the facility fire alarm.
  — A fire watch shall be maintained for at least one-half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires. [paragraph (a)(2)(iii)(A)(1-4) & (B)]
- Based on fire potential of facilities, establish areas and procedures for welding and cutting. Welders, cutters and supervisors should be suitably trained in the safe operation of the equipment. Advise all contractors about flammable materials or hazardous conditions of which they may not be aware. [paragraph (a)(2)(xiii)(A-D)]
- Welding or cutting in confined spaces shall meet all the requirements of 29 CFR §1910.146. Cylinders shall be secured and gas leaks prevented. [paragraph (b)(4)]
- Appropriate personal protective equipment shall be worn according to the type of welding, cutting, or brazing operations being done. Helpers shall also be provided with proper eye protection. [paragraph (b)(A-I)]

Applicable References
NFPA Code 51B, Fire Prevention in Use of Cutting and Welding
ANSI Standard Z49.1-1967, Welding and Cutting Safety
XYLENE
29 CFR 1910.1000

Intent
The intent of this section of the Code is to protect employees from exposure to xylene in the workplace. Xylene is typically used in laboratories and maintenance areas.

Guidelines for Compliance
- Assess all areas where xylene might be used and determine potential exposure.
- Establish initial assignment training program and repeat whenever a new exposure to xylene is introduced and/or at least annually.
- Conduct exposure monitoring by a competent surveyor to determine the amount of exposure to your employees. The PEL is 100 ppm in air averaged over an 8-hour period. The EPA allows no more than 10 milligrams of xylene per liter of water (10 mg/L) in a public water system. Employees should be notified of their exposure.
- Engineering and workplace controls should be maintained to keep the employee exposure below the PEL (fume hoods, filters, etc.).
- To minimize exposure, enasure that employees wear proper gloves when working with xylene. Only work in well-ventilated areas.
- Xylene is a flammable substance. Keep away from heat, sparks, and open flames. Store in a properly rated flammable storage container/cabinet.
- Post appropriate warning labels (flammability and health) on containers of xylene and warning signage in areas of exposure.
- Policies and procedures establishing emergency spill plans, contingency planning and training should be established.
- MSDS shall be available to employees 24 hours-a-day, 7 days-a-week.
- Maintain exposure monitoring records for a 30-year period.

Applicable References
Resource Conservation and Recovery Act (RCRA) for spills and disposal
Department of Transportation (DOT) for shipping
RESOURCES

American Association of Occupational Health Nurses
770-455-7757 www.aaohn.org/

American Conference of Governmental Industrial Hygienists
513-742-2020 www.acgih.org/

American Industrial Hygiene Association
703-849-8888 www.aiha.org/

American National Standards Institute
212-642-4900 www.ansi.org/

American Society for Healthcare Engineering
312-422-3800 www.ashe.org/

American Society of Heating, Refrigeration and Air Conditioning Engineers
404-636-8400 www.ashrae.org/

American Society of Safety Engineers
708-692-4121 www.ASSE.org/

Canadian Center for Occupational Health and Safety
www.ccohs.ca

Centers for Disease Control and Prevention
404-639-3311 www.cdc.gov/

Compressed Gas Association
703-412-0900 www.cganet.com/

Department of Health and Human Services
202-690-7000 www.os.dhhs.gov/

Department of Transportation
202-565-1650 www.dot.gov/

Environmental Health Center/National Safety Council
412-683-6400 envirolink.org

Environmental Protection Agency
202-260-2090 www.epa.gov/

Federal Government homepage
www.fedworld.gov/

Food and Drug Administration
www.fda.gov/

International Asssociation for Healthcare Safety and Security
708-953-0990 www.iahss.org/

Joint Commission on Accreditation of Healthcare Organizations
630-916-5600 www.jcaho.org/

National Fire Protection Association
617-770-3000 www.nfpa.org/

National Institute for Occupational Safety and Health
800-356-4674 www.niosh.gov/
National Safety Council
   630-285-1121       www.nsc.org/
OSHA Federal Office (Region 4, Atlanta)
   404-347-4197       www.osha.gov/
OSHA Publications/Software, Safety Online
   www.safetyonline.net
Superintendent of Documents Government Printing Office
   202-512-1800       www.access.gpo.gov/su=docs/dsearch.html
SUMMARY

The *Road Map to Health Care OSHA Compliance* was developed for individuals in healthcare facilities who are designated a “safety manager” along with their normal duties. A part of the safety program is compliance with OSHA standards in order to provide a safe workplace for the staff. Sometimes those OSHA standards can be verbose and hard to understand. The *Road Map* helps to simplify the standards. It is not intended to take the place of the standards, only to make them easier to understand. Organizations must understand that they are required to comply with the OSHA standards as depicted in the *Code of Federal Regulations*. 