



**Occupational
Safety and Health
Administration**

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Training Requirements in OSHA Standards





Occupational Safety and Health Act of 1970

“To assure safe and healthful working conditions for working men and women; by authorizing enforcement of the standards developed under the Act; by assisting and encouraging the States in their efforts to assure safe and healthful working conditions; by providing for research, information, education, and training in the field of occupational safety and health.”

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This publication provides a general overview of a variety of standards-related topics. This publication does not alter or determine compliance responsibilities which are set forth in OSHA standards, and the *Occupational Safety and Health Act*. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the courts.

This guidance document is not a standard or regulation, and it creates no new legal obligations. It contains descriptions of mandatory safety and health standards. The Occupational Safety and Health Act requires employers to comply with safety and health standards and regulations promulgated by OSHA or by a state with an OSHA-approved state plan. In addition, the Act's General Duty Clause, Section 5(a)(1), requires employers to provide their employees with a workplace free from recognized hazards likely to cause death or serious physical harm.

Training Requirements in OSHA Standards

Occupational Safety and Health Administration
U.S. Department of Labor



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Training Requirements for Workplace Safety

Under the *Occupational Safety and Health Act of 1970*, employers are responsible for providing a safe and healthful workplace. No person should ever have to be injured, become ill, or die for a paycheck.

OSHA's mission is to ensure the protection of workers and prevent work-related injuries, illnesses, and deaths by setting and enforcing standards, and by providing training, outreach, education and assistance. Many OSHA standards, which have prevented countless workplace tragedies, include explicit safety and health training requirements to ensure that workers have the required skills and knowledge to safely do their work. These requirements reflect OSHA's belief that training is an essential part of every employer's safety and health program for protecting workers from injuries and illnesses. Researchers conclude that those who are new on the job have a higher rate of injuries and illnesses than more experienced workers.

To assist employers, safety and health professionals, training directors and others with a need to know, OSHA's training-related requirements have been excerpted and collected in this updated booklet. Requirements for posting information, warning signs, labels, and the like are excluded, as are most references to the qualifications of people assigned to test workplace conditions or equipment.

Training in the safe way for workers to do their jobs well is an investment that will pay back over and over again in fewer injuries and illnesses, better morale, lower insurance premiums and more.

It is a good idea to keep a record of all safety and health training. Documentation can also supply an answer to one of the first questions an incident investigator will ask: "Did the employee receive adequate training to do the job?"

OSHA Standards: Protection on the Job

In this booklet, the training requirements contained in OSHA's standards are organized into five categories of OSHA standards: General Industry, Maritime, Construction, Agriculture, and Federal Employee Programs. An example of a training requirement is found in the revised Hazard Communication standard (Title 29 Code of Federal Regulations, Part 1910.1200, effective May 25, 2012), which improves the quality and consistency of hazard information in the workplace. This standard states:

Employers shall provide employees with effective information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area. Information and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific information must always be available through labels and safety data sheets.

This booklet identifies the training requirements in specific OSHA standards. For information on training techniques and resources for developing training programs, please see *Resource for Development and Delivery of Training to Workers*.

Injury and Illness Prevention Programs

Training and education are elements of a strong injury and illness prevention program that can help employers find and fix workplace hazards before workers get hurt.

Injury and illness prevention programs are systems that can substantially reduce the number and severity of workplace injuries and illnesses while reducing costs to employers. Thousands of employers across the United States already manage safety using injury and illness prevention programs, and OSHA believes that all employers can and should do the same. Thirty-four states have requirements or voluntary guidelines for workplace injury and illness prevention programs.

Most successful injury and illness prevention programs are based on a common set of key elements. These include management leadership, worker participation, hazard identification, hazard prevention and control, education and training, and program evaluation and improvement. Visit OSHA's Injury and Illness Prevention Programs web page at www.osha.gov/dsg/topics/safetyhealth for more information.

Educational Information

OSHA has many types of educational materials in English, Spanish, Vietnamese and other languages available in print or online. These include:

- Brochures/booklets;
- Fact Sheets;
- Guidance documents that provide detailed examinations of specific safety and health issues;
- Online Safety and Health Topics pages;
- Posters;
- Small, laminated QuickCards™ that provide brief safety and health information; and
- *QuickTakes*, OSHA's free, twice-monthly online newsletter with the latest news about OSHA initiatives and products to assist employers and workers in finding and preventing workplace hazards. To sign up for *QuickTakes*, visit www.osha.gov/quicktakes.

To view materials available online or for a listing of free publications, visit www.osha.gov/publications. You can also call 1-800-321-OSHA (6742) to order publications.

OSHA's web site also has information on job hazards and injury and illness prevention for employers and workers. To learn more about OSHA's safety and health resources online, visit www.osha.gov or www.osha.gov/html/a-z-index.html.

OSHA Training Institute (OTI) Education Centers

OTI Education Centers are nonprofit organizations authorized by OSHA to deliver occupational safety and health training to workers, supervisors and employers. These organizations are selected through a competitive process based on various criteria, including their occupational safety and health training experience, location and training facilities, and ability to provide training throughout a given region.

The OTI Education Centers offer courses and seminars on a variety of safety and health topics. They also contribute to the OSHA training mission through other safety and health programs, including community outreach efforts, courses offered in Spanish, and various youth initiatives.

The OTI Education Centers also support the Voluntary OSHA Outreach Training Program by offering trainer courses and processing trainer requests for course completion cards. The Outreach Training Program is a voluntary program that is not

required by OSHA—nor does it fulfill any OSHA requirements. Still the outreach program can provide basic safety and health information and education. However, under the OSHA law, all required training must be provided by and paid for by employers. Through the outreach program, safety professionals can become authorized to deliver 10-hour and 30-hour classes on the recognition, avoidance, abatement, and prevention of safety and health hazards in workplaces. The program also provides information about workers' rights, employer responsibilities, and how to file a complaint. **It is important to note that this is a voluntary program and does not meet training requirements for any OSHA standards.** Although some states, municipalities, or organizations may require outreach training as a condition of employment, it is not an OSHA requirement. None of the courses within the Outreach Training Program is considered a certification.

For more information, including course descriptions and prerequisites, class schedules, tuition and fees, and featured organizations, visit OSHA's website: www.osha.gov/otiec.

Worker Participation in Developing Training Programs

Training programs help ensure that *safe jobs are no accident*. Safe jobs exist because employers make a conscious decision, each and every day of the year, to make protecting workers a priority in the workplace. When this effort includes participation from workers, workplace injury and illness prevention programs are improved because workers can identify missing safety procedures, make recommendations for changes and help ensure a safe workplace. When workers have a voice in the workplace and input about how training is developed, training programs are more accurately focused on specific workplace hazards.

Readers with questions concerning worker safety and health training should contact their OSHA Regional or Area office listed at the end of this publication and on OSHA's website: www.osha.gov.



Photo: Sheryl Quatermas, New Jersey State Plan

General Industry

The following training requirements have been excerpted from **Title 29, Code of Federal Regulations Part 1910**. Note that additional training requirements may appear in certain other standards (ANSI, NFPA, etc.) adopted by reference in **Part 1910** and are therefore mandatory.

29 CFR 1910

Subpart E – Exit Routes and Emergency Planning

1910.38 Emergency action plans

- (a) through (f)
- (a) **Application.** An employer must have an emergency action plan whenever an OSHA standard in this part requires one. The requirements in this section apply to each such emergency action plan.
 - (b) **Written and oral emergency action plans.** An emergency action plan must be in writing, kept in the workplace, and available to employees for review. However, an employer with 10 or fewer employees may communicate the plan orally to employees.
 - (c) **Minimum elements of an emergency action plan.** An emergency action plan must include at a minimum:
 - (1) Procedures for reporting a fire or other emergency;
 - (2) Procedures for emergency evacuation, including type of evacuation and exit route assignments;

- (3) Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;
 - (4) Procedures to account for all employees after evacuation;
 - (5) Procedures to be followed by employees performing rescue or medical duties; and
 - (6) The name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan.
- (d) **Employee alarm system.** An employer must have and maintain an employee alarm system. The employee alarm system must use a distinctive signal for each purpose and comply with the requirements in §1910.165.
- (e) **Training.** An employer must designate and train employees to assist in a safe and orderly evacuation of other employees.
- (f) **Review of emergency action plan.** An employer must review the emergency action plan with each employee covered by the plan:
- (1) When the plan is developed or the employee is assigned initially to a job;
 - (2) When the employee's responsibilities under the plan change; and
 - (3) When the plan is changed

1910.39 Fire prevention plans

- (a) through (d)
- (a) **Application.** An employer must have a fire prevention plan when an OSHA standard in this part requires one. The requirements in this section apply to each such fire prevention plan.
- (b) **Written and oral fire prevention plans.** A fire prevention plan must be in writing, be kept in the workplace, and be made available to employees for review. However, an employer with 10 or fewer employees may communicate the plan orally to employees.
- (c) **Minimum elements of a fire prevention plan.** A fire prevention plan must include:
- (1) A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard;
 - (2) Procedures to control accumulations of flammable and combustible waste materials;

- (3) Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials;
 - (4) The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires; and
 - (5) The name or job title of employees responsible for the control of fuel source hazards.
- (d) **Employee information.** An employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed. An employer must also review with each employee those parts of the fire prevention plan necessary for self-protection.

Subpart F – Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms

1910.66 Powered platforms for building maintenance

- (i) and (j) (i) **Operations**
 - (1) *Training.*
 - (i) Working platforms shall be operated only by persons who are proficient in the operation, safe use and inspection of the particular working platform to be operated.
 - (ii) All employees who operate working platforms shall be trained in the following:
 - (A) Recognition of, and preventive measures for, the safety hazards associated with their individual work tasks.
 - (B) General recognition and prevention of safety hazards associated with the use of working platforms, including the provisions in the section relating to the particular working platform to be operated.
 - (C) Emergency action plan procedures required in paragraph (e)(9) of this section.
 - (D) Work procedures required in paragraph (i)(1)(iv) of this section.
 - (E) Personal fall arrest system inspection, care, use and system performance.

- (iii) Training of employees in the operation and inspection of working platforms shall be done by a competent person.
 - (iv) Written work procedures for the operation, safe use and inspection of working platforms shall be provided for employee training. Pictorial methods of instruction may be used, in lieu of written work procedures, if employee communication is improved using this method. The operating manuals supplied by manufacturers for platform system components can serve as the basis for these procedures.
 - (v) The employer shall certify that employees have been trained in operating and inspecting a working platform by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training and the date that training was completed. The certification record shall be prepared at the completion of the training required in paragraph (i)(1)(ii) of this section, and shall be maintained in a file for the duration of the employee's employment. The certification record shall be kept readily available for review by the Assistant Secretary of Labor or the Assistant Secretary's representative.
- (2) *Use*
- (i) Working platforms shall not be loaded in excess of the rated load, as stated on the platform load rating plate.
 - (ii) Employees shall be prohibited from working on snow, ice, or other slippery material covering platforms, except for the removal of such materials.
 - (iii) Adequate precautions shall be taken to protect the platform, wire ropes and life lines from damage due to acids or other corrosive substances, in accordance with the recommendations of the corrosive substance producer, supplier, platform manufacturer or other equivalent information sources. Platform members which have been exposed to acids or other corrosive substances shall be washed down with a neutralizing solution, at a frequency recommended by the corrosive substance producer or supplier.
 - (iv) Platform members, wire ropes and life lines shall be protected when using a heat producing process. Wire ropes and life lines which have been contacted by the heat producing process shall be considered to be permanently damaged and shall not be used.

- (v) The platform shall not be operated in winds in excess of 25 miles per hour (40.2 km/hr) except to move it from an operating to a storage position. Wind speed shall be determined based on the best available information, which includes on-site anemometer readings and local weather forecasts which predict wind velocities for the area.
- (vi) On exterior installations, an anemometer shall be mounted on the platform to provide information of on-site wind velocities prior to and during the use of the platform. The anemometer may be a portable (hand held) unit which is temporarily mounted during platform use.
- (vii) Tools, materials and debris not related to the work in progress shall not be allowed to accumulate on platforms. Stabilizer ties shall be located so as to allow unencumbered passage along the full length of the platform and shall be of such length so as not to become entangled in rollers, hoists or other machinery.
- (j) **Personal fall protection.** Employees on working platforms shall be protected by a personal fall arrest system meeting the requirements of appendix C, section I, of this standard, and as otherwise provided by this standard.

Appendix C to 1910.66 — Personal fall arrest system

Section I (Mandatory)

(e) Care and Use

- (9) Before using a personal fall arrest system, and after any component or system is changed, employees shall be trained in accordance with the requirements of paragraph 1910.66(i)(1), in the safe use of the system.

Subpart G – Occupational Health and Environmental Control

1910.95 Occupational noise exposure

(i)(4);
(k) and (l)

(i) Hearing protectors

- (4) The employer shall provide training in the use and care of all hearing protectors provided to employees.

(k) Training program

- (1) The employer shall institute a training program for all employees who are exposed to noise at or above an 8-hour time weighted average of 85 decibels, and shall ensure employee participation in such program.
- (2) The training program shall be repeated annually for each employee included in the hearing conservation program. Information provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.
- (3) The employer shall ensure that each employee is informed of the following:
 - (i) The effects of noise on hearing;
 - (ii) The purpose of hearing protectors, the advantages, disadvantages, and attenuation of various types, and instructions on selection, fitting, use, and care; and
 - (iii) The purpose of audiometric testing, and an explanation of the test procedures.

(l) Access to Information and Training Materials

- (1) The employer shall make available to affected employees or their representatives copies of this standard and shall also post a copy in the workplace.
- (2) The employer shall provide to affected employees any informational materials pertaining to the standard that are supplied to the employer by the Assistant Secretary.
- (3) The employer shall provide, upon request, all materials related to the employer's training and education program pertaining to this standard to the Assistant Secretary and the Director.

Subpart H – Hazardous Materials

1910.106 Flammable liquids

(b)(5)(vi)(v)
(2) and (3) **(b) Tank storage**

- (5) Supports, foundations, and anchorage for all tank locations –
 - (vi) *Flood areas.* Where a tank is located in an area that may be subjected to flooding, the applicable precautions outlined in this subdivision shall be observed.
 - (v) *Inspections.* The Assistant Secretary or his designated representative shall make periodic inspections of all plants where the storage of flammable liquids is such as to require compliance with the foregoing requirements, in order to assure the following:
 - (2) That detailed printed instructions of what to do in flood emergencies are properly posted.
 - (3) That station operators and other employees depended upon to carry out such instructions are thoroughly informed as to the location and operation of such valves and other equipment necessary to effect these requirements.

1910.109 Explosive and blasting agents

(d)(3)(i) and
(iii), (g)(3)(iii)
(a), (g)(6)(ii),
and (h)(4)(ii)(b) **(d) Transportation of explosives**

- (3) *Operation of transportation vehicles.*
 - (i) Vehicles transporting explosives shall only be driven by and be in the charge of a driver who is familiar with the traffic regulations, State laws, and the provisions of this section.
 - (iii) Every motor vehicle transporting any quantity of Class A or Class B explosives shall, at all times, be attended by a driver or other attendant of the motor carrier. This attendant shall have been made aware of the class of the explosive material in the vehicle and of its inherent dangers, and shall have been instructed in the measures and procedures to be followed in order to protect the public from those dangers. He shall have been made familiar with the vehicle he is assigned, and shall be trained, supplied with the necessary means, and authorized to move the vehicle when required.

(g) Blasting agents

(3) *Bulk delivery and mixing vehicles.*

(iii) Operation of bulk delivery vehicles shall conform to the requirements of this subdivision. These include the placarding requirements as specified by Department of Transportation.

(a) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. The employer shall assure that the operator is familiar with the commodities being delivered and the general procedure for handling emergency situations.

(6) *Transportation of packaged blasting agents.*

(ii) Vehicles transporting blasting agents shall only be driven by and be in the charge of a driver in possession of a valid motor vehicle operator's license. Such a person shall also be familiar with the State's vehicle and traffic laws.

(h) Water gel (Slurry) explosives and blasting agents

(4) *Bulk delivery and mixing vehicles.*

(ii) Operation of bulk delivery and mixing vehicles shall comply with the requirements of this subdivision.

(b) The operator shall be trained in the safe operation of the vehicle together with its mixing, conveying, and related equipment. He shall be familiar with the commodities being delivered and the general procedure for handling emergency situations.

1910.110 Storage and handling of liquefied petroleum gases

(b)(16),
(d)(12)(i)

(b) Basic rules

(16) *Instructions.* Personnel performing installation, removal, operation, and maintenance work shall be properly trained in such functions.

(d) Storage systems using containers other than DOT containers

(12) General provisions applicable to systems in industrial plants (of 2,000 gallons water capacity and more) and to bulk filling plants.

(i) When standard watch service is provided, it shall be extended to the LP-Gas installation and personnel properly trained.

1910.111 Storage and handling of anhydrous ammonia

(b)(13)(ii) **(b) Basic rules.** This paragraph applies to all paragraphs of this section unless otherwise noted.

(13) Tank car unloading points and operations

- (ii) The employer shall insure that unloading operations are performed by reliable persons properly instructed and given the authority to monitor careful compliance with all applicable procedures.

1910.119 Process safety management of highly hazardous chemicals

(g), (h)(3)(i)
through (iv),
and (j)(3) **(g) Training**

(1) *Initial training.*

- (i) Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in paragraph (f) of this section. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.
- (ii) In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

(2) *Refresher training.* Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

(3) *Training documentation.* The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee understood the training.

(h) Contractors

(3) *Contract employer responsibilities.*

- (i) The contract employer shall assure that each contract employee is trained in the work practices necessary to perform his/her job.
- (ii) The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.
- (iii) The contract employer shall document that each contract employee has received and understood the training required by this paragraph. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.
- (iv) The contract employer shall assure that each contract employee follows the safety rules of the facility including the safe work practices required by paragraph (f)(4) of this section.

(j) Mechanical integrity

- (3) *Training for process maintenance activities.* The employer shall train each employee involved in maintaining the ongoing integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.

1910.120 Hazardous waste operations and emergency response

(e)(1) through
(9); (o)(1);
(p)(7); (p)(8)(iii);
(q)(4) through
(8), and (11)

(e) Training

(1) *General.*

- (i) All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations that could expose them to hazardous substances, safety, or health hazards, and they shall receive review training as specified in this paragraph.

- (ii) Employees shall not be permitted to participate in or supervise field activities until they have been trained to a level required by their job function and responsibility.
- (2) *Elements to be covered.* The training shall thoroughly cover the following:
 - (i) Names of personnel and alternates responsible for site safety and health;
 - (ii) Safety, health and other hazards present on the site;
 - (iii) Use of personal protective equipment;
 - (iv) Work practices by which the employee can minimize risks from hazards;
 - (v) Safe use of engineering controls and equipment on the site;
 - (vi) Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards; and
 - (vii) The contents of paragraphs (G) through (J) of the site safety and health plan set forth in paragraph (b)(4)(ii) of this section.
- (3) *Initial training.*
 - (i) General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience under the direct supervision of a trained, experienced supervisor.
 - (ii) Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.
 - (iii) Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the

characterization indicates that there are no health hazards or the possibility of an emergency developing, shall receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience under the direct supervision of a trained, experienced supervisor.

- (iv) Workers with 24 hours of training who are covered by paragraphs (e)(3)(ii) and (e)(3)(iii) of this section, and who become general site workers or who are required to wear respirators, shall have the additional 16 hours and two days of training necessary to total the training specified in paragraph (e)(3)(i).
- (4) *Management and supervisor training.* On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs (e)(3)(ii) and (e)(3)(iii)) and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's safety and health program and the associated employee training program, personal protective equipment program, spill containment program, and health hazard monitoring procedure and techniques.
- (5) *Qualifications for trainers.* Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a training program for teaching the subjects they are expected to teach, or they shall have the academic credentials and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.
- (6) *Training certification.* Employees and supervisors that have received and successfully completed the training and field experience specified in paragraphs (e)(1) through (e)(4) of this section shall be certified by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A written certificate shall be given to each person so certified. Any person who has not been so certified or who does not meet the requirements of paragraph (e)(9) of this section shall be prohibited from engaging in hazardous waste operations.

- (7) *Emergency response.* Employees who are engaged in responding to hazardous emergency situations at hazardous waste cleanup sites that may expose them to hazardous substances shall be trained in how to respond to such expected emergencies.
 - (8) *Refresher training.* Employees specified in paragraph (e)(1) of this section, and managers and supervisors specified in paragraph (e)(4) of this section, shall receive eight hours of refresher training annually on the items specified in paragraph (e)(2) and/or (e)(4) of this section, critiques of incidents that have occurred in the past year that can serve as training examples of any related work, and other relevant topics.
 - (9) *Equivalent training.* Employers who can show by documentation or certification that an employee's work experience and/or training has resulted in training equivalent to that training required in paragraphs (e)(1) through (e)(4) of this section shall not be required to provide the initial training requirements of those paragraphs to such employees and shall provide a copy of the certification or documentation to the employee upon request. However, certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site experience.
- (o) New technology programs**
- (1) The employer shall develop and implement procedures for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean-up operations, and the same shall be implemented as part of the site safety and health program to assure that employee protection is being maintained.
- (p) Certain Operations Conducted Under the Resource Conservation and Recovery Act of 1976 (RCRA).** Employers conducting operations at treatment, storage and disposal (TSD) facilities specified in paragraph (a)(1)(iv) of this section shall provide and implement the programs specified in this paragraph. See the "Notes and Exceptions" to paragraph (a)(2)(iii) of this section for employers not covered.

(7) *Training Program.*

- (i) *New employees.* The employer shall develop and implement a training program, which is part of the employer's safety and health program, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not to endanger themselves or other employees. The initial training shall be for 24 hours and refresher training shall be for eight hours annually. Employees who have received the initial training required by this paragraph shall be given a written certificate attesting that they have successfully completed the necessary training.
- (ii) *Current employees.* Employers who can show by an employee's previous work experience and/or training that the employee has had training equivalent to the initial training required by this paragraph, shall be considered as meeting the initial training requirements of this paragraph as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. Current employees shall receive eight hours of refresher training annually.
- (iii) *Trainers.* Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the academic credentials and instruction experience necessary to demonstrate a good command of the subject matter of the courses and competent instructional skills.

(8) *Emergency Response Program.*

- (iii) *Training.*
 - (A) Training for emergency response employees shall be completed before they are called upon to perform in real emergencies. Such training shall include the elements of the emergency response plan, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents.
Note: Exception #1: An employer need not train all employees to the degree specified if the employer divides the work force in a manner such

that a sufficient number of employees who have responsibility to control emergencies have the training specified, and all other employees, who may first respond to an emergency incident, have sufficient awareness training to recognize that an emergency response situation exists and that they are instructed in that case to summon the fully trained employees and not attempt control activities for which they are not trained.

Note: Exception #2: An employer need not train all employees to the degree specified if arrangements have been made in advance for an outside fully trained emergency response team to respond in a reasonable period and all employees, who may come to the incident first, have sufficient awareness training to recognize that an emergency response situation exists and they have been instructed to call the designated outside, fully trained emergency response team for assistance.

- (B) Employee members of TSD [treatment, storage and disposal] facility emergency response organizations shall be trained to a level of competence in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the safe operating procedures to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to overexposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from overexposures.
- (C) The employer shall certify that each covered employee has attended and successfully completed the training required in paragraph (p)(8)(iii) of this section, or shall certify the employee's competency for certification of training shall be recorded and maintained by the employer.

(q) Emergency response to hazardous substance releases

- (4) *Skilled support personnel.* Personnel, not necessarily an employer's own employees, who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this paragraph for the employer's regular employees. However, these personnel shall be given an initial briefing at the site prior to their participation in any emergency response. The initial briefing shall include instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees shall be used to assure the safety and health of these personnel.
- (5) *Specialist employees.* Employees who, in the course of their regular job duties, work with and are trained in the hazards of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the individual in charge, shall receive training or demonstrate competency in the area of their specialization annually.
- (6) *Training.* Training shall be based on the duties and function to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this standard, shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate in emergency response, shall be given training in accordance with the following paragraphs:
 - (i) *First responder awareness level.* First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. First

responders at the awareness level shall have sufficient training or have had sufficient experience to objectively demonstrate competency in the following areas:

- (A) An understanding of what hazardous substances are, and the risks associated with them in an incident.
 - (B) An understanding of the potential outcomes associated with an emergency created when hazardous substances are present.
 - (C) The ability to recognize the presence of hazardous substances in an emergency.
 - (D) The ability to identify the hazardous substances, if possible.
 - (E) An understanding of the role of the first responder awareness individual in the employer's emergency response plan including site security and control and the U.S. Department of Transportation's *Emergency Response Guidebook*.
 - (F) The ability to realize the need for additional resources, and to make appropriate notifications to the communications center.
- (ii) *First responder operations level*. First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in the following areas in addition to those listed for the awareness level and the employer shall so certify:
- (A) Knowledge of the basic hazard and risk assessment techniques.
 - (B) Know how to select and use proper personal protective equipment provided to the first responder operational level

- (C) An understanding of basic hazardous materials terms.
 - (D) Know how to perform basic control, containment and/or confinement operations within the capabilities of the resources and personal protective equipment available to the unit.
 - (E) Know how to implement basic decontamination procedures.
 - (F) An understanding of the relevant standard operating procedures and termination procedures.
- (iii) *Hazardous materials technician.* Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:
- (A) Know how to implement the employer's emergency response plan.
 - (B) Know the classification, identification and verification of known and unknown materials by using field survey instruments and equipment.
 - (C) Be able to function within an assigned role in the Incident Command System.
 - (D) Know how to select and use proper specialized chemical personal protective equipment provided to the hazardous materials technician.
 - (E) Understand hazard and risk assessment techniques.
 - (F) Be able to perform advance control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available to the unit.
 - (G) Understand and implement decontamination.
 - (H) Understand termination procedures.
 - (I) Understand basic chemical and toxicological terminology and behavior.

- (iv) *Hazardous materials specialist.* Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with federal, state, local and other government authorities for site activities. Hazardous materials specialists shall have received at least 24 hours of training equal to the technician level and in addition have competency in the following areas and the employer shall so certify:
- (A) Know how to implement the local emergency response plan.
 - (B) Understand classification, identification and verification of known and unknown materials by using advanced survey instruments and equipment.
 - (C) Know the state emergency response plan.
 - (D) Be able to select and use proper specialized chemical personal protective equipment provided to the hazardous materials specialist.
 - (E) Understand in-depth hazard and risk assessment techniques.
 - (F) Be able to perform specialized control, containment, and/or confinement operations within the capabilities of the resources and personal protective equipment available.
 - (G) Be able to determine and implement decontamination procedures.
 - (H) Have the ability to develop a site safety and control plan.
 - (I) Understand chemical, radiological and toxicological terminology and behavior.
- (v) *On scene incident commander.* Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in the following areas and the employer shall so certify:

- (A) Know and be able to implement the employer's incident command system.
 - (B) Know how to implement the employer's emergency response plan.
 - (C) Know and understand the hazards and risks associated with employees working in chemical protective clothing.
 - (D) Know how to implement the local emergency response plan.
 - (E) Know of the state emergency response plan and of the Federal Regional Response Team.
 - (F) Know and understand the importance of decontamination procedures.
- (7) *Trainers.* Trainers who teach any of the above training subjects shall have satisfactorily completed a training course for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they shall have the training and/or academic credentials and instructional experience necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.
- (8) *Refresher Training.*
- (i) Those employees who are trained in accordance with paragraph (q)(6) of this section shall receive annual refresher training of sufficient content and duration to maintain their competencies, or shall demonstrate their competency in those areas at least yearly.
 - (ii) A statement shall be made on the training or competency, and if a statement of competency is made, the employer shall keep a record of the methodology used to demonstrate competency.
- (11) *Post-emergency response operations.* Upon completion of the emergency response, if it is determined that it is necessary to remove hazardous substances, health hazards and materials contaminated with them (such as contaminated soil or other elements of the natural environment) from the site of the incident, the employer conducting the clean-up shall comply with one of the following:

- (i) Meet all the requirements of paragraphs (b) through (o) of this section; or
- (ii) Where the clean-up is done on plant property using plant or workplace employees, such employees shall have completed the training requirements of the following: 29 CFR 1910.38, 1910.134, 1910.1200, and other appropriate safety and health training made necessary by the tasks they are expected to perform such as personal protective equipment and decontamination procedures.

Appendix C to 1910.120 — Compliance guidelines

1. *Occupational Safety and Health Program.* Each hazardous waste site clean-up effort will require an occupational safety and health program headed by the site coordinator or the employer's representative. The purpose of the program will be the protection of employees at the site and will be an extension of the employer's overall safety and health program...

...Each site or workplace safety and health program will need to include the following...

...(4) means for the training of supervisors and employees to develop the needed skills and knowledge to perform their work in a safe and healthful manner...

2. *Training.* The training program for employees subject to the requirements of paragraph (e) of this standard should address:
 - the safety and health hazards employees should expect to find on hazardous waste clean-up sites;
 - what control measures or techniques are effective for those hazards;
 - what monitoring procedures are effective in characterizing exposure levels;
 - what makes an effective employer's safety and health program;
 - what a site safety and health program should include;
 - hands-on training with personal protective equipment and clothing they may be expected to use;
 - the contents of the OSHA standards relevant to the employee's duties and functions; and
 - employee's responsibilities under OSHA and other regulations.

Supervisors will need training in their responsibilities under the safety and health program and its subject areas such as the spill containment program, the personal protective equipment program, the medical surveillance program, and the emergency response plan and other areas.

The training programs for employees subject to the requirements of paragraph (p) of this standard should address:

- the employer's safety and health program elements impacting employees;
- the hazard communication program;
- the medical surveillance program;
- the hazards and the controls for such hazards that employees need to know for their job duties and functions.

All require annual refresher training.

The training programs for employees covered by the requirements of paragraph (q) of this standard should address those competencies required for the various levels of response such as:

- hazards associated with hazardous substances;
- hazard identification and awareness;
- notification of appropriate persons;
- need for and use of personal protective equipment including respirators;
- decontamination procedures to be used;
- preplanning activities for hazardous substance incidents including the emergency response plan;
- company standard operating procedures for hazardous substance emergency responses;
- use of the incident command system and other subjects.

Hands-on training should be stressed whenever possible. Critiques done after an incident which include an evaluation of what worked and what did not and how could the incident be better handled the next time may be counted as training time.

For hazardous materials specialists (usually members of hazardous materials teams), the training should address the care, use and/or testing of chemical protective clothing including totally encapsulating suits, the medical surveillance program, the standard operating procedures for the hazardous materials team including the use of plugging and patching equipment and other subject areas.

Officers and leaders who may be expected to be in charge at an incident should be fully knowledgeable of their company's incident command system. They should know where and how to obtain additional assistance and be familiar with the local district's emergency response plan and the state emergency response plan.

Specialist employees such as technical experts, medical experts or environmental experts that work with hazardous materials in their regular jobs, who may be sent to the incident scene by the shipper, manufacturer or governmental agency to advise and assist the person in charge of the incident should have training on an annual basis. Their training should include the care and use of personal protective equipment including respirators; knowledge of the incident command system and how they are to relate to it; and those areas needed to keep them current in their respective field as it relates to safety and health involving specific hazardous substances.

Those skilled support personnel, such as employees who work for public works departments or equipment operators who operate bulldozers, sand trucks, backhoes, etc., who may be called to the incident scene to provide emergency support assistance, should have at least a safety and health briefing before entering the area of potential or actual exposure. These skilled support personnel, who have not been a part of the emergency response plan and do not meet the training requirements, should be made aware of the hazards they face and should be provided all necessary protective clothing and equipment required for their tasks.

There are two National Fire Protection Association standards, NFPA 472—“Standard for Professional Competence of Responders to Hazardous Material Incidents” and NFPA 471—“Recommended Practice for Responding to Hazardous Material Incidents,” which are excellent resource documents to aid fire departments and other emergency response organizations in developing their training program materials. NFPA 472 provides guidance on the skills and knowledge needed for first responder awareness level, first responder operations level, hazmat technicians, and hazmat specialist. It also offers guidance for the officer corp who will be in charge of hazardous substance incidents.

Appendix E to 1910.120 — Training curriculum guidelines

The following non-mandatory general criteria may be used for assistance in developing site-specific training curriculum used to meet the training requirements of 29 CFR 1910.120(e); 29 CFR 1910.120(p)(7), (p)(8)(iii); and 29 CFR 1910.120(q)(6), (q)(7), and (q)(8). These are generic guidelines and they are not presented as a complete training curriculum for any specific employer. Site-specific training programs must be developed on the basis of a needs assessment of the hazardous waste site, RCRA/TSD, or emergency response operation in accordance with 29 CFR 1910.120.

It is noted that the legal requirements are set forth in the regulatory text of §1910.120. The guidance set forth here presents a highly effective program that in the areas covered would meet or exceed the regulatory requirements. In addition, other approaches could meet the regulatory requirements.

Suggested General Criteria

Definitions:

“Competent” means possessing the skills, knowledge, experience, and judgment to perform assigned tasks or activities satisfactorily as determined by the employer.

“Demonstration” means the showing by actual use of equipment or procedures.

“Hands-on training” means training in a simulated work environment that permits each student to have experience performing tasks, making decisions, or using equipment appropriate to the job assignment for which the training is being conducted.

“Initial training” means training required prior to beginning work.

“Lecture” means an interactive discourse with a class led by an instructor.

“Proficient” means meeting a stated level of achievement.

“Site-specific” means individual training directed to the operations of a specific job site.

“Training hours” means the number of hours devoted to lecture, learning activities, small group work sessions, demonstration, evaluations, or hands-on experience.

Suggested core criteria:

1. Training facility.

The training facility should have available sufficient resources, equipment, and site locations to perform didactic and hands-on training when appropriate. Training facilities should have sufficient organization, support staff, and services to conduct training in each of the courses offered.

2. Training Director.

Each training program should be under the direction of a training director who is responsible for the program. The Training Director should have a minimum of two years of employee education experience.

3. Instructors.

Instructors should be deemed competent on the basis of:

- previous documented experience in their area of instruction,
- successful completion of a “train-the-trainer” program specific to the topics they will teach,
- evaluation of instructional competence by the Training Director.

Instructors should be required to maintain professional competency by participating in continuing education or professional development programs or by completing successfully an annual refresher course and having an annual review by the Training Director.

The annual review by the Training Director should include

- observation of an instructor’s delivery,
- a review of those observations with the trainer, and
- an analysis of any instructor or class evaluations completed by the students during the previous year.

4. Course materials.

The Training Director should approve all course materials to be used by the training provider. Course materials should be reviewed and updated at least annually. Materials and equipment should be in good working order and maintained properly.

All written and audio-visual materials in training curricula should be peer reviewed by technically competent outside reviewers or by a standing advisory committee.

Reviewers should possess expertise in the following disciplines were applicable:

- occupational health,
- industrial hygiene and safety,
- chemical/environmental engineering,
- employee education, or emergency response.

One or more of the peer reviewers should be an employee experienced in the work activities to which the training is directed.

5. Students.

The program for accepting students should include:

- a. Assurance that the student is or will be involved in work where chemical exposures are likely and that the student possesses the skills necessary to perform the work.
- b. A policy on the necessary medical clearance.

6. Ratios.

Student-instructor ratios should not exceed 30 students per instructor. Hands-on activity requiring the use of personal protective equipment should have the following student-instructor ratios:

- For Level C or Level D personal protective equipment the ratio should be 10 students per instructor.
- For Level A or Level B personal protective equipment the ratio should be 5 students per instructor.

7. Proficiency assessment.

Proficiency should be evaluated and documented by the use of a written assessment and a skill demonstration selected and developed by the Training Director and training staff. The assessment and demonstration should evaluate the knowledge and individual skills developed in the course of training. The level of minimum achievement necessary for proficiency shall be specified in writing by the Training Director.

If a written test is used, there should be a minimum of 50 questions. If a written test is used in combination with a skills demonstration, a minimum of 25 questions should be used. If a skills demonstration is used, the tasks chosen and the means to rate successful completion should be fully documented by the Training Director.

The content of the written test or of the skill demonstration shall be relevant to the objectives of the course. The written test and skill demonstration should be updated as necessary to reflect changes in the curriculum and any update should be approved by the Training Director.

The proficiency assessment methods, regardless of the approach or combination of approaches used, should be justified, documented and approved by the Training Director.

The proficiency of those taking the additional courses for supervisors should be evaluated and documented by using proficiency assessment methods acceptable to the Training Director. These proficiency assessment methods must reflect the additional responsibilities borne by supervisory personnel in hazardous waste operations or emergency response.

8. Course certificate.

Written documentation should be provided to each student who satisfactorily completes the training course. The documentation should include:

- a. Student's name.
- b. Course title.
- c. Course date.
- d. Statement that the student has successfully completed the course.
- e. Name and address of the training provider.
- f. An individual identification number for the certificate.
- g. List of the levels of personal protective equipment used by the student to complete the course.

This documentation may include a certificate and an appropriate wallet-sized laminated card with a photograph of the student and the above information. When such course certificate cards are used, the individual identification number for the training certificate should be shown on the card.

9. Recordkeeping.

Training providers should maintain records that list:

- the dates courses were presented,
- the names of the individual course attenders,
- the names of those students successfully completing each course, and
- the number of training certificates issued to each successful student.

These records should be maintained for a minimum of five years after the date an individual participated in a training program offered by the training provider. These records should be available and provided upon the student's request or as mandated by law.

10. Program quality control.

The Training Director should conduct or direct an annual written audit of the training program. Program modifications to address deficiencies, if any, should be documented, approved, and implemented by the training provider. The audit and the program modification documents should be maintained at the training facility.

Suggested Program Quality Control Criteria

Factors listed here are suggested criteria for determining the quality and appropriateness of employee health and safety training for hazardous waste operations and emergency response.

A. Training Plan.

Adequacy and appropriateness of the training program's curriculum development, instructor training, distribution of course materials, and direct student training should be considered, including:

1. The duration of training, course content, and course schedules/agendas;
2. The different training requirements of the various target populations, as specified in the appropriate generic training curriculum;
3. The process for the development of curriculum, which includes appropriate technical input, outside review, evaluation, program pretesting;
4. The adequate and appropriate inclusion of hands-on, demonstration, and instruction methods;
5. Adequate monitoring of student safety, progress, and performance during the training.

B. Program management, Training Director, staff, and consultants.

Adequacy and appropriateness of staff performance and delivering an effective training program should be considered, including:

1. Demonstration of the training director's leadership in assuring quality of health and safety training.
2. Demonstration of the competency of the staff to meet the demands of delivering high quality hazardous waste employee health and safety training.
3. Organization charts establishing clear lines of authority.
4. Clearly defined staff duties including the relationship of the training staff to the overall program.
5. Evidence that the training organizational structure suits the needs of the training program.
6. Appropriateness and adequacy of the training methods used by the instructors.
7. Sufficiency of the time committed by the training director and staff to the training program.
8. Adequacy of the ratio of training staff to students.

9. Availability and commitment of the training program of adequate human and equipment resources in the areas of
 - a. Health effects,
 - b. Safety,
 - c. Personal protective equipment (PPE),
 - d. Operational procedures,
 - e. Employee protection practices/procedures.
10. Appropriateness of management controls.
11. Adequacy of the organization and appropriate resources assigned to assure appropriate training.
12. In the case of multiple-site training programs, adequacy of satellite centers management.

C. Training facilities and resources.

Adequacy and appropriateness of the facilities and resources for supporting the training program should be considered, including:

1. Space and equipment to conduct the training.
2. Facilities for representative hands-on training.
3. In the case of multiple-site programs, equipment and facilities at the satellite centers.
4. Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance.
5. Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action.
6. Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program.
7. Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

D. Quality control and evaluation.

Adequacy and appropriateness of quality control and evaluation plans for training programs should be considered, including:

1. A balanced advisory committee and/or competent outside reviewers to give overall policy guidance.
2. Clear and adequate definition of the composition and active programmatic role of the advisory committee or outside reviewers.

3. Adequacy of the minutes or reports of the advisory committee or outside reviewers' meetings or written communication.
4. Adequacy and appropriateness of the quality control and evaluations program to account for instructor performance.
5. Adequacy and appropriateness of the quality control and evaluation program to ensure appropriate course evaluation, feedback, updating, and corrective action.
6. Adequacy and appropriateness of disciplines and expertise being used within the quality control and evaluation program.
7. Adequacy and appropriateness of the role of student evaluations to provide feedback for training program improvement.

E. Students

Adequacy and appropriateness of the program for accepting students should be considered, including:

1. Assurance that the student already possess the necessary skills for their job, including necessary documentation.
2. Appropriateness of methods the program uses to ensure that recruits are capable of satisfactorily completing training.
3. Review and compliance with any medical clearance policy.

F. Institutional Environment and Administrative Support

The adequacy and appropriateness of the institutional environment and administrative support system for the training program should be considered, including:

1. Adequacy of the institutional commitment to the employee training program.
2. Adequacy and appropriateness of the administrative structure and administrative support.

G. Summary of Evaluation Questions

Key questions for evaluating the quality and appropriateness of an overall training program should include the following:

1. Are the program objectives clearly stated?
2. Is the program accomplishing its objectives?
3. Are appropriate facilities and staff available?
4. Is there an appropriate mix of classroom, demonstration, and hands-on training?
5. Is the program providing quality employee health and safety training that fully meets the intent of regulatory requirements?

6. What are the program's main strengths?
7. What are the program's main weaknesses?
8. What is recommended to improve the program?
9. Are instructors instructing according to their training outlines?
10. Is the evaluation tool current and appropriate for the program content?
11. Is the course material current and relevant to the target group?

Suggested Training Curriculum Guidelines

The following training curriculum guidelines are for those operations specifically identified in 29 CFR 1910.120 as requiring training. Issues such as qualifications of instructors, training certification, and similar criteria appropriate to all categories of operations addressed in 1910.120 have been covered in the preceding section and are not readdressed in each of the generic guidelines. Basic core requirements for training programs that are addressed include:

1. General Hazardous Waste Operations
2. Resource Conservation and Recovery Act (RCRA) operations—Treatment, storage, and disposal facilities.
3. Emergency Response.

A. General Hazardous Waste Operations and Site-specific Training

1. *Off-site training.* Training course content for hazardous waste operations, required by 29 CFR 1910.120(e), should include the following topics or procedures:
 - a. *Regulatory knowledge.*
 - (1) A review of 29 CFR 1910.120 and the core elements of an occupational safety and health program.
 - (2) The content of a medical surveillance program as outlined in 29 CFR 1910.120(f).
 - (3) The content of an effective site safety and health plan consistent with the requirements of 29 CFR 1910.120(b)(4)(ii).
 - (4) Emergency response plan and procedures as outlined in 29 CFR 1910.38 and 29 CFR 1910.120(l).
 - (5) Adequate illumination.
 - (6) Sanitation recommendation and equipment.
 - (7) Review and explanation of OSHA's Hazard Communication standard (29 CFR 1910.1200) and Lockout/Tagout standard (29 CFR 1910.147).

- (8) Review of other applicable standards including but not limited to those in the Construction standards (29 CFR part 1926).
 - (9) Rights and responsibilities of employers and employees under applicable OSHA and EPA laws.
- b. *Technical knowledge.*
- (1) Type of potential exposures to chemical, biological, and radiological hazards; types of human responses to these hazards and recognition of those responses; principles of toxicology and information about acute and chronic hazards; health and safety considerations of new technology.
 - (2) Fundamentals of chemical hazards including but not limited to vapor pressure, boiling points, flash points, ph, other physical and chemical properties.
 - (3) Fire and explosion hazards of chemicals.
 - (4) General safety hazards such as but not limited to electrical hazards, powered equipment hazards, motor vehicle hazards, walking-working surface hazards, excavation hazards, and hazards associated with working in hot and cold temperature extremes.
 - (5) Review and knowledge of confined space entry procedures in 29 CFR 1910.146.
 - (6) Work practices to minimize employee risk from site hazards.
 - (7) Safe use of engineering controls, equipment, and any new relevant safety technology or safety procedures.
 - (8) Review and demonstration of competency with air sampling and monitoring equipment that may be used in a site monitoring program.
 - (9) Container sampling procedures and safeguarding; general drum and container handling procedures including special requirement for laboratory waste packs, shock-sensitive wastes, and radioactive wastes.
 - (10) The elements of a spill control program.
 - (11) Proper use and limitations of material handling equipment.
 - (12) Procedures for safe and healthful preparation of containers for shipping and transport.
 - (13) Methods of communication including those used while wearing respiratory protection.

c. *Technical skills.*

- (1) Selection, use maintenance, and limitations of personal protective equipment including the components and procedures for carrying out a respirator program to comply with 29 CFR 1910.134.
- (2) Instruction in decontamination programs including personnel, equipment, and hardware; hands-on training including level A, B, and C ensembles and appropriate decontamination lines; field activities including the donning and doffing of protective equipment to a level commensurate with the employee's anticipated job function and responsibility and to the degree required by potential hazards.
- (3) Sources for additional hazard information; exercises using relevant manuals and hazard coding systems.

d. *Additional suggested items.*

- (1) A laminated, dated card or certificate with photo, denoting limitations and level of protection for which the employee is trained should be issued to those students successfully completing a course.
- (2) Attendance should be required at all training modules, with successful completion of exercises and a final written or oral examination with at least 50 questions.
- (3) A minimum of one-third of the program should be devoted to hands-on exercises.
- (4) A curriculum should be established for the 8-hour refresher training required by 29 CFR 1910.120(e)(8), with delivery of such courses directed toward those areas of previous training that need improvement or reemphasis.
- (5) A curriculum should be established for the required 8-hour training for supervisors. Demonstrated competency in the skills and knowledge provided in a 40-hour course should be a prerequisite for supervisor training.

2. *Refresher training.*

The 8-hour annual refresher training required in 29 CFR 1910.120(e)(8) should be conducted by qualified training providers. Refresher training should include at a minimum the following topics and procedures:

- (a) Review of and retraining on relevant topics covered in the 40-hour program, as appropriate, using reports by the students on their work experiences.

- (b) Update on developments with respect to material covered in the 40-hour course.
 - (c) Review of changes to pertinent provisions of EPA or OSHA standards or laws.
 - (d) Introduction of additional subject areas as appropriate.
 - (e) Hands-on review of new or altered PPE or decontamination equipment or procedures. Review of new developments in personal protective equipment.
 - (f) Review of newly developed air and contaminant monitoring equipment.
3. *On-site training.*
- a. The employer should provide employees engaged in hazardous waste site activities with information and training prior to initial assignment to their work area, as follows:
 - (1) The requirements of the hazard communication program including the location and availability of the written program, required lists of hazardous chemicals, and material safety data sheets.
 - (2) Activities and locations in their work area where hazardous substances may be present.
 - (3) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearances, or other evidence (sight, sound or smell) of hazardous chemicals being released, and applicable alarms from monitoring devices that record chemical releases.
 - (4) The physical and health hazards of substances known or potentially present in the work area.
 - (5) The measures employees can take to help protect themselves from work-site hazards, including specific procedures the employer has implemented.
 - (6) An explanation of the labeling system and material safety data sheets and how employees can obtain and use appropriate hazard information.
 - (7) The elements of the confined space program including special PPE, permits, monitoring requirements, communication procedures, emergency response, and applicable lock-out procedures.
 - b. The employer should provide hazardous waste employees information and training and should provide a review and access to the site safety and plan as follows:

- (1) Names of personnel and alternates responsible for site safety and health.
 - (2) Safety and health hazards present on the site.
 - (3) Selection, use, maintenance, and limitations of personal protective equipment specific to the site.
 - (4) Work practices by which the employee can minimize risks from hazards.
 - (5) Safe use of engineering controls and equipment available on site.
 - (6) Safe decontamination procedures established to minimize employee contact with hazardous substances, including:
 - (A) Employee decontamination,
 - (B) Clothing decontamination, and
 - (C) Equipment decontamination.
 - (7) Elements of the site emergency response plan, including:
 - (A) Pre-emergency planning.
 - (B) Personnel roles and lines of authority and communication.
 - (C) Emergency recognition and prevention.
 - (D) Safe distances and places of refuge.
 - (E) Site security and control.
 - (F) Evacuation routes and procedures.
 - (G) Decontamination procedures not covered by the site safety and health plan.
 - (H) Emergency medical treatment and first aid.
 - (I) Emergency equipment and procedures for handling emergency incidents.
- c. The employer should provide hazardous waste employees information and training on personal protective equipment used at the site, such as the following:
- (1) PPE to be used based upon known or anticipated site hazards.
 - (2) PPE limitations of materials and construction; limitations during temperature extremes, heat stress, and other appropriate medical considerations; use and limitations of respirator equipment as well as documentation procedures as outlined in 29 CFR 1910.134.
 - (3) PPE inspection procedures prior to, during, and after use.
 - (4) PPE donning and doffing procedures.
 - (5) PPE decontamination and disposal procedures.

- (6) PPE maintenance and storage.
- (7) Task duration as related to PPE limitations.
- d. The employer should instruct the employee about the site medical surveillance program relative to the particular site, including
 - (1) Specific medical surveillance programs that have been adapted for the site.
 - (2) Specific signs and symptoms related to exposure to hazardous materials on the site.
 - (3) The frequency and extent of periodic medical examinations that will be used on the site.
 - (4) Maintenance and availability of records.
 - (5) Personnel to be contacted and procedures to be followed when signs and symptoms of exposures are recognized.
- e. The employees will review and discuss the site safety plan as part of the training program. The location of the site safety plan and all written programs should be discussed with employees including a discussion of the mechanisms for access, review, and references described.

B. RCRA Operations Training for Treatment, Storage and Disposal Facilities.

- 1. As a minimum, the training course required in 29 CFR 1910.120(p) should include the following topics:
 - (a) Review of the applicable paragraphs of 29 CFR 1910.120 and the elements of the employer's occupational safety and health plan.
 - (b) Review of relevant hazards such as, but not limited to, chemical, biological, and radiological exposures; fire and explosion hazards; thermal extremes; and physical hazards.
 - (c) General safety hazards including those associated with electrical hazards, powered equipment hazards, lockout/tagout procedures, motor vehicle hazards and walking-working surface hazards.
 - (d) Confined space hazards and procedures.
 - (e) Work practices to minimize employee risk from workplace hazards.
 - (f) Emergency response plan and procedures including first aid meeting the requirements of paragraph (p)(8).
 - (g) A review of procedures to minimize exposure to hazardous waste and various type of waste streams, including the materials handling program and spill containment program.

- (h) A review of hazard communication programs meeting the requirements of 29 CFR 1910.1200.
 - (i) A review of medical surveillance programs meeting the requirements of 29 CFR 1910.120(p)(3) including the recognition of signs and symptoms of overexposure to hazardous substances including known synergistic interactions.
 - (j) A review of decontamination programs and procedures meeting the requirements of 29 CFR 1910.120(p)(4).
 - (k) A review of an employer's requirements to implement a training program and its elements.
 - (l) A review of the criteria and programs for proper selection and use of personal protective equipment, including respirators.
 - (m) A review of the applicable appendices to 29 CFR 1910.120.
 - (n) Principles of toxicology and biological monitoring as they pertain to occupational health.
 - (o) Rights and responsibilities of employees and employers under applicable OSHA and EPA laws.
 - (p) Hands-on exercises and demonstrations of competency with equipment to illustrate the basic equipment principles that may be used during the performance of work duties, including the donning and doffing of PPE.
 - (q) Sources of reference, efficient use of relevant manuals, and knowledge of hazard coding systems to include information contained in hazardous waste manifests.
 - (r) At least 8 hours of hands-on training.
 - (s) Training in the job skills required for an employee's job function and responsibility before they are permitted to participate in or supervise field activities.
2. The individual employer should provide hazardous waste employees with information and training prior to an employee's initial assignment into a work area. The training and information should cover the following topics:
- (a) The Emergency response plan and procedures including first aid.
 - (b) A review of the employer's hazardous waste handling procedures including the materials handling program and elements of the spill containment program, location of spill response kits or equipment, and the names of those trained to respond to releases.
 - (c) The hazardous communication program meeting the requirements of 29 CFR 1910.1200.

- (d) A review of the employer's medical surveillance program including the recognition of signs and symptoms of exposure to relevant hazardous substance including known synergistic interactions.
- (e) A review of the employer's decontamination program and procedures.
- (f) A review of the employer's training program and the parties responsible for that program.
- (g) A review of the employer's personal protective equipment program including the proper selection and use of PPE based upon specific site hazards.
- (h) All relevant site-specific procedures addressing potential safety and health hazards. This may include, as appropriate, biological and radiological exposures, fire and explosion hazards, thermal hazards, and physical hazards such as electrical hazards, powered equipment hazards, lockout/tagout hazards, motor vehicle hazards, and walking-working surface hazards.
- (i) Safe use engineering controls and equipment on site.
- (j) Names of personnel and alternates responsible for safety and health.

C. Emergency response training.

Federal OSHA standards in 29 CFR 1910.120(q) are directed toward private sector emergency responders. Therefore, the guidelines provided in this portion of the appendix are directed toward that employee population. However, they also impact indirectly through State OSHA or USEPA regulations some public sector emergency responders. Therefore, the guidelines provided in this portion of the appendix may be applied to both employee populations.

States with OSHA state plans must cover their employees with regulations at least as effective as the Federal OSHA standards. Public employees in states without approved state OSHA programs covering hazardous waste operations and emergency response are covered by the U.S. EPA under 40 CFR 311, a regulation virtually identical to §1910.120.

Since this is a non-mandatory appendix and therefore not an enforceable standard, OSHA recommends that those employers, employees or volunteers in public sector emergency response organizations outside Federal OSHA jurisdiction consider the following criteria in developing their own training programs. A unified approach to training at the community level between emergency response organizations covered by Federal OSHA and those not covered directly by Federal OSHA can help ensure an effective community response to the release or potential release of hazardous substances in the community.

a. *General considerations.*

Emergency response organizations are required to consider the topics listed in §1910.120(q)(6). Emergency response organizations may use some or all of the following topics to supplement those mandatory topics when developing their response training programs. Many of the topics would require an interaction between the response provider and the individuals responsible for the site where the response would be expected.

- (1) Hazard recognition, including:
 - (A) Nature of hazardous substances present,
 - (B) Practical applications of hazard recognition, including presentations on biology, chemistry, and physics.
- (2) Principles of toxicology, biological monitoring, and risk assessment.
- (3) Safe work practices and general site safety.
- (4) Engineering controls and hazardous waste operations.
- (5) Site safety plans and standard operating procedures.
- (6) Decontamination procedures and practices.
- (7) Emergency procedures, first aid, and self-rescue.
- (8) Safe use of field equipment.
- (9) Storage, handling, use and transportation of hazardous substances.
- (10) Use, care, and limitations of personal protective equipment.
- (11) Safe sampling techniques.
- (12) Rights and responsibilities of employees under OSHA and other related laws concerning right-to-know, safety and health, compensations and liability.
- (13) Medical monitoring requirements.
- (14) Community relations.

b. *Suggested criteria for specific courses.*

- (1) *First responder awareness level.*
 - (A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).
 - (B) Hands-on experience with the U.S. Department of Transportation's *Emergency Response Guidebook* (ERG) and familiarization with OSHA standard 29 CFR 1910.1201.

- (C) Review of the principles and practices for analyzing an incident to determine both the hazardous substances present and the basic hazard and response information for each hazardous substance present.
 - (D) Review of procedures for implementing actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including emergency notification procedures and follow-up communications.
 - (E) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.
 - (F) Awareness and knowledge of the competencies for the First Responder at the Awareness Level covered in the National Fire Protection Association's Standard No. 472, *Professional Competence of Responders to Hazardous Materials Incidents*.
- (2) *First responder operations level.*
- (A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).
 - (B) Hands-on experience with the U.S. Department of Transportation's *Emergency Response Guidebook* (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.
 - (C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles, the types and selection of the appropriate defensive strategy for containing the release.
 - (D) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.
 - (E) Review of the principles and practice for proper selection and use of personal protective equipment.
 - (F) Review of the principles and practice of personnel and equipment decontamination.

- (G) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.
 - (H) Awareness and knowledge of the competencies for the First Responder at the Operations Level covered in the National Fire Protection Association's Standard No. 472, *Professional Competence of Responders to Hazardous Materials Incidents*.
- (3) *Hazardous materials technician.*
- (A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).
 - (B) Hands-on experience with written and electronic information relative to response decision making including but not limited to the U.S. Department of Transportation's *Emergency Response Guidebook* (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.
 - (C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, the likely behavior of the hazardous substance and its container, the types of hazardous substance transportation containers and vehicles involved in the release, the appropriate strategy for approaching release sites and containing the release.
 - (D) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, and the current edition of DOT's ERG including extended emergency notification procedures and follow-up communications.
 - (E) Review of the principles and practice for proper selection and use of personal protective equipment.
 - (F) Review of the principles and practices of establishing exposure zones, proper decontamination and medical surveillance stations and procedures.
 - (G) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.

- (H) Awareness and knowledge of the competencies for the Hazardous Materials Technician covered in the National Fire Protection Association's Standard No. 472, *Professional Competence of Responders to Hazardous Materials Incidents*.
- (4) *Hazardous materials specialist*.
 - (A) Review of and demonstration of competency in performing the applicable skills of 29 CFR 1910.120(q).
 - (B) Hands-on experience with retrieval and use of written and electronic information relative to response decision making including but not limited to the U.S. Department of Transportation's *Emergency Response Guidebook* (ERG), manufacturer material safety data sheets, CHEMTREC/CANUTEC, shipper or manufacturer contacts, computer data bases and response models, and other relevant sources of information addressing hazardous substance releases. Familiarization with OSHA standard 29 CFR 1910.1201.
 - (C) Review of the principles and practices for analyzing an incident to determine the hazardous substances present, their physical and chemical properties, and the likely behavior of the hazardous substance and its container, vessel, or vehicle.
 - (D) Review of the principles and practices for identification of the types of hazardous substance transportation containers, vessels and vehicles involved in the release; selecting and using the various types of equipment available for plugging or patching transportation containers, vessels or vehicles; organizing and directing the use of multiple teams of hazardous material technicians and selecting the appropriate strategy for approaching release sites and containing or stopping the release.
 - (E) Review of procedures for implementing continuing response actions consistent with the local emergency response plan, the organization's standard operating procedures, including knowledge of the available public and private response resources, establishment of an incident command post, direction of hazardous material technician teams, and extended emergency notification procedures and follow-up communications.
 - (F) Review of the principles and practice for proper selection and use of personal protective equipment.
 - (G) Review of the principles and practices of establishing exposure zones and proper decontamination, monitoring and medical surveillance stations and procedures.

- (H) Review of the expected hazards including fire and explosions hazards, confined space hazards, electrical hazards, powered equipment hazards, motor vehicle hazards, and walking-working surface hazards.
 - (I) Awareness and knowledge of the competencies for the Off-site Specialist Employee covered in the National Fire Protection Association's Standard No. 472, *Professional Competence of Responders to Hazardous Materials Incidents*.
- (5) *Incident commander*.

The incident commander is the individual who, at any one time, is responsible for and in control of the response effort. This individual is the person responsible for the direction and coordination of the response effort. An incident commander's position should be occupied by the most senior, appropriately trained individual present at the response site. Yet, as necessary and appropriate by the level of response provided, the position may be occupied by many individuals during a particular response as the need for greater authority, responsibility, or training increases. It is possible for the first responder at the awareness level to assume the duties of incident commander until a more senior and appropriately trained individual arrives at the response site.

Therefore, any emergency responder expected to perform as an incident commander should be trained to fulfill the obligations of the position at the level of response they will be providing including the following:

- (A) Ability to analyze a hazardous substance incident to determine the magnitude of the response problem.
- (B) Ability to plan and implement an appropriate response plan within the capabilities of available personnel and equipment.
- (C) Ability to implement a response to favorably change the outcome of the incident in a manner consistent with the local emergency response plan and the organization's standard operating procedures.
- (D) Ability to evaluate the progress of the emergency response to ensure that the response objectives are being met safely, effectively, and efficiently.
- (E) Ability to adjust the response plan to the conditions of the response and to notify higher levels of response when required by the changes to the response plan.

Subpart I – Personal Protective Equipment

1910.132 General requirements

(f)(1) (f) **Training**
through (3)

- (1) The employer shall provide training to each employee who is required by this section to use PPE. Each such employee shall be trained to know at least the following:
 - (i) When PPE is necessary;
 - (ii) What PPE is necessary;
 - (iii) How to properly don, doff, adjust and wear PPE;
 - (iv) The limitations of the PPE; and,
 - (v) The proper care, maintenance, useful life, and disposal of the PPE.
- (2) Each affected employee shall demonstrate an understanding of the training specified in paragraph (f)(1) of this section and the ability to use PPE properly before being allowed to perform work requiring the use of PPE.
- (3) When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by paragraph (f)(2) of this section, the employer shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:
 - (i) Changes in the workplace render previous training obsolete, or
 - (ii) Changes in the types of PPE to be used render previous training obsolete; or
 - (iii) Inadequacies in an affected employee's knowledge or use of assigned PPE indicate that the employee has not retained the requisite understanding or skill.

Paragraphs (d) and (f) of this section apply only to 1910.133, 1910.135, 1910.136, and 1910.138. Paragraphs(d) and (f) of this section do not apply to 1910.134 and 1910.137.

1910.134 Respiratory protection

(k)(1)
through (6)

- (k) Training and information.** This paragraph requires the employer to provide effective training to employees who are required to use respirators. The training must be comprehensive, understandable, and recur annually, and more often if necessary. This paragraph also requires the employer to provide the basic information on respirators in Appendix D of this section to employees who wear respirators when not required by this section or by the employer to do so.
- 1) The employer shall ensure that each employee can demonstrate knowledge of at least the following:
 - (i) Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator;
 - (ii) What the limitations and capabilities of the respirator are;
 - (iii) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions;
 - (iv) How to inspect, put on and remove, use, and check the seals of the respirator;
 - (v) What the procedures are for maintenance and storage of the respirator;
 - (vi) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators; and
 - (vii) The general requirements of this section.
 - (2) Training shall be conducted in a manner that is understandable to the employee.
 - (3) The employer shall provide the training prior to requiring the employee to use a respirator in the workplace.
 - (4) An employer who is able to demonstrate that a new employee has received training within the last 12 months that addresses the elements specified in paragraph (k)(1)(i) through (vii) is not required to repeat such training provided that, as required by paragraph (k)(1), the employee can demonstrate knowledge of those element(s). Previous training not repeated initially by the employer must be provided no later than 12 months from the date of the previous training.

- (5) Retraining shall be administered annually and when the following situations occur:
 - (i) Changes in the workplace or the type of respirator render previous training obsolete;
 - (ii) Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill; or
 - (iii) Any other situation arises in which retraining appears necessary to ensure safe respirator use.
- (6) The basic advisory information on respirators, as presented in Appendix D of this section, shall be provided by the employer in any written or oral format, to employees who wear respirators when such use is not required by this section or by the employer.

Subpart J – General Environmental Controls

1910.142 Temporary labor camps

(k)(1)(2) **(k) First aid**

- (1) Adequate first-aid facilities approved by a health authority shall be maintained and made available in every labor camp for the emergency treatment of injured persons.
- (2) Such facilities shall be in charge of a person trained to administer first aid and shall be readily accessible for use at all times.

1910.145 Specifications for accident prevention signs and tags

(c)(1)(ii), (2)
(ii) and (3) **(c) Classification of signs according to use**

- (1) *Danger signs.*
 - (ii) All employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.
- (2) *Caution signs.*
 - (ii) All employees shall be instructed that caution signs indicate a possible hazard against which proper precautions should be taken.
- (3) *Safety instruction signs.* Safety instruction signs shall be used where there is a need for general instructions and suggestions relative to safety measures.

1910.146 Permit required confined spaces

(g) and (k)(1)(i)
through (iv)

(g) Training

- (1) The employer shall provide training so that all employees whose work is regulated by this section acquire the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this section.
- (2) Training shall be provided to each affected employee:
 - (i) Before the employee is first assigned duties under this section;
 - (ii) Before there is a change in assigned duties;
 - (iii) Whenever there is a change in permit space operations that presents a hazard about which an employee has not previously been trained;
 - (iv) Whenever the employer has reason to believe either that there are deviations from the permit space entry procedures required by paragraph (d)(3) of this section or that there are inadequacies in the employee's knowledge or use of these procedures.
- (3) The training shall establish employee proficiency in the duties required by this section and shall introduce new or revised procedures, as necessary, for compliance with this section.
- (4) The employer shall certify that the training required by paragraphs (g)(1) through (g)(3) of this section has been accomplished. The certification shall contain each employee's name, the signatures or initials of the trainers, and the dates of training. The certification shall be available for inspection by employees and their authorized representatives.

(k) Rescue and emergency services

- (1) An employer who designates rescue and emergency services, pursuant to paragraph (d)(9) of this section, shall:
 - (i) Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified;

Note to paragraph (k)(1)(i): What will be considered timely will vary according to the specific hazards involved in each entry. For example, §1910.134, Respiratory Protection, requires that employers provide a standby person or persons capable of immediate action to rescue employee(s) wearing respiratory protection while in work areas defined as IDLH atmospheres.

- (ii) Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified;
- (iii) Select a rescue team or service from those evaluated that:
 - (A) Has the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified;
 - (B) Is equipped for and proficient in performing the needed rescue services;
- (iv) Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site.

1910.147 The control of hazardous energy (lockout/tagout)

(a)(3)(ii); (a)(4)(i); (c)
(6)(i)(D); (a)(7) and (8);
(e)(3); and (f)(2)(i)

(a) Scope, application, and purpose

(3) Purpose.

- (ii) When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

(c) General

(4) Energy control procedure.

- (i) Procedures shall be developed, documented and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Note: Exception: The employer need not document the required procedure for a particular machine or equipment, when all of the following elements exist: (1) The machine or equipment has no potential for stored or residual energy or reaccumulation of stored energy after shut down which could endanger employees; (2) the machine or equipment has a single energy source which can be readily identified and isolated; (3) the isolation and locking out of that energy source will completely deenergize and deactivate the machine or equipment; (4) the machine or equipment is isolated from that energy source and locked out during servicing or maintenance; (5) a single lockout device will achieve a locked-out condition; (6) the lockout device is under the exclusive control of the authorized

employee performing the servicing or maintenance; (7) the servicing or maintenance does not create hazards for other employees; and (8) the employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.

(6) *Periodic Inspection.*

(i) The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.

(D) Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (c)(7)(ii) of this section.

(7) *Training and communication.*

(i) The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:

(A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

(B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.

(C) All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.

(ii) When tagout systems are used, employees shall also be trained in the following limitations of tags:

- (A) Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
 - (B) When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person for it, and it is never to be bypassed, ignored, or otherwise defeated.
 - (C) Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
 - (D) Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
 - (E) Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
 - (F) Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
- (iii) Employee retraining
- (A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
 - (B) Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c) (6) of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the knowledge or use of the energy control procedures.
 - (C) The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
- (iv) The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

- (8) *Energy isolation.* Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

(e) Release from lockout or tagout

- (3) *Lockout or tagout devices removal.* Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. *Exception to paragraph (e) (3):* When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it.

(f) Additional requirements

- (2) *Outside Personnel (contractors, etc.)*
- (i) Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.

Subpart K – Medical Services and First Aid

1910.151 Medical services and first aid

- (a)(b) (a) The employer shall ensure the ready availability of personnel for advice and consultation on matters of plant health.
- (b) In the absence of an infirmary, clinic, or hospital in near proximity to the workplace which is used for the treatment of all injured employees, a person or persons shall be adequately trained to render first aid. Adequate first aid supplies shall be readily available.

Subpart L – Fire Protection

1910.155 Fire protection

(c)(41) (c) **Definitions**

- (41) “Training” means the process of making proficient through instruction and hands-on practice in the operation of equipment, including respiratory protection equipment, that is expected to be used and in the performance of assigned duties.

1910.156 Fire brigades

(b)(1),
and (c)(1)
through (4) (b) **Organization**

- (1) *Organizational statement.* The employer shall prepare and maintain a statement or written policy which establishes the existence of a fire brigade; the basic organizational structure; the type, amount, and frequency of training to be provided to fire brigade members; the expected number of members in the fire brigade; and the functions that the fire brigade is to perform at the workplace. The organizational statement shall be available for inspection by the Assistant Secretary and by employees or their designated representatives.

(c) **Training and education**

- (1) The employer shall provide training and education for all fire brigade members commensurate with those duties and functions that fire brigade members are expected to perform. Such training and education shall be provided to fire brigade members before they perform fire brigade emergency activities. Fire brigade leaders and training instructors shall be provided with training and education which is more comprehensive than that provided to the general membership of the fire brigade.
- (2) The employer shall assure that training and education is conducted frequently enough to assure that each member of the fire brigade is able to perform the member’s assigned duties and functions satisfactorily and in a safe manner so as not to endanger fire brigade members or other employees. All fire brigade members shall be provided with training at least annually. In addition, fire brigade members who are expected to perform interior structural firefighting shall be provided with an education session or training at least quarterly.

- (3) The quality of the training and education program for fire brigade members shall be similar to those conducted by such fire training schools as the Maryland Fire and Rescue Institute; Iowa Fire Service Extension; West Virginia Fire Service Extension; Georgia Fire Academy; New York State Department, Fire Prevention and Control; Louisiana State University Firemen Training Program; or Washington State's Fire Service, Training Commission for Vocational Education. (For example, for the oil refinery industry, with its unique hazards, the training and education program for those fire brigade members shall be similar to those conducted by Texas A & M University, Lamar University, Reno Fire School, or the Delaware State Fire School.)
- (4) The employer shall inform fire brigade members about special hazards such as storage and use of flammable liquids and gases, toxic chemicals, radioactive sources, and water reactive substances, to which they may be exposed during fire and other emergencies. The fire brigade members shall also be advised of any changes that occur in relation to the special hazards. The employer shall develop and make available for inspection by fire brigade members, written procedures that describe the actions to be taken in situations involving the special hazards and shall include these in the training and education program.

1910.157 Portable fire extinguishers

(g)(1)
through (4)

(g) Training and education

- (1) Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting.
- (2) The employer shall provide the education required in paragraph (g)(1) of this section upon initial employment and at least annually thereafter.
- (3) The employer shall provide employees who have been designated to use fire fighting equipment as part of an emergency action plan with training in the use of the appropriate equipment.
- (4) The employer shall provide the training required in paragraph (g)(3) of this section upon initial assignment to the designated group of employees and at least annually thereafter.

1910.158 Standpipe and hose systems

(e)(2)(iv) **(e) Tests and maintenance**

(2) *Maintenance.*

- (vi) The employer shall designate trained persons to conduct all inspections required under this section.

1910.160 Fixed extinguishing systems

(b)(10) **(b) General requirements**

- (10) The employer shall train employees designated to inspect, maintain, operate, or repair fixed extinguishing systems and annually review their training to keep them up-to-date in the functions they are to perform.

1910.164 Fire detection systems

(c)(4) **(c) Maintenance and testing**

- (4) The employer shall assure that the servicing, maintenance and testing of fire detection systems, including cleaning and necessary sensitivity adjustments, are performed by a trained person knowledgeable in the operations and functions of the system.

1910.165 Employee alarm systems

(d)(5) **(d) Maintenance and testing**

- (5) The employer shall assure that the servicing, maintenance, and testing of employee alarms are done by persons trained in the designed operation and functions necessary for reliable and safe operation of the system.

Subpart N – Materials Handling and Storage

1910.177 Servicing of multi-piece and single-piece rim wheels

(c)(1)
through (3) **(c) Employee training**

- (1) The employer shall provide a training program to train all employees who service rim wheels in the hazards involved in servicing those rim wheels and the safety procedures to be followed.
- (i) The employer shall assure that no employee services any rim wheel unless the employee has been trained and

- instructed in correct procedures of servicing the type of wheel being serviced, and in the safe operating procedures described in paragraphs (f) and (g) of this section.
- (ii) Information to be used in the training program shall include at a minimum, the applicable data contained in the charts (rim manuals) and the contents of this standard.
 - (iii) Where an employer knows or has reason to believe that any of his employees is unable to read and understand the charts or rim manual, the employer shall assure that the employee is instructed concerning the contents of the charts and rim manual in a manner which the employee is able to understand.
- (2) The employer shall assure that each employee demonstrates and maintains the ability to service multi-piece rim wheels safely, including performance of the following tasks:
- (i) Demounting of tires (including deflation);
 - (ii) Inspection and identification of rim wheel components;
 - (iii) Mounting of tires (including inflation within a restraining device or other safeguards required by this section);
 - (iv) Use of the restraining device or barrier, and other equipment required by this section;
 - (v) Handling of rim wheels;
 - (vi) Inflation of tire when a single piece rim wheel is mounted on a vehicle;
 - (vii) An understanding of the necessity of standing outside the trajectory both during the inflation of the tire and during inspection of the rim wheel following inflation; and
 - (viii) Installation and removal of rim wheels.
- (3) The employer shall evaluate each employee's ability to perform these tasks and to service rim wheels safely and shall provide additional training as necessary to assure that each employee maintains his or her proficiency.
- (f) **Safe operating procedure — multi-piece rim wheels.** The employer shall establish a safe operating procedure for servicing multi-piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements:
- (1) Tires shall be completely deflated before demounting by removal of the valve core.

- (2) Tires shall be completely deflated by removing the valve core before a rim wheel is removed from the axle in either of the following situations:
 - (i) When the tire has been driven underinflated at 80% or less of its recommended pressure, or
 - (ii) When there is obvious or suspected damage to the tire or wheel components.
- (3) Rubber lubricant shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire, unless the tire or wheel manufacturer recommends against it.
- (4) If a tire on a vehicle is underinflated but has more than 80% of the recommended pressure, the tire may be inflated while the rim wheel is on the vehicle provided remote control inflation equipment is used, and no employees remain in the trajectory during inflation.
- (5) Tires shall be inflated outside a restraining device only to a pressure sufficient to force the tire bead onto the rim ledge and create an airtight seal with the tire and bead.
- (6) Whenever a rim wheel is in a restraining device the employee shall not rest or lean any part of his body or equipment on or against the restraining device.
- (7) After tire inflation, the tire and wheel components shall be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment to the tire or wheel components is necessary, the tire shall be deflated by removal of the valve core before the adjustment is made.
- (8) No attempt shall be made to correct the seating of side and lock rings by hammering, striking or forcing the components while the tire is pressurized.
- (9) Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated.
- (10) Whenever multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless the employer can demonstrate that performance of the servicing makes the employee's presence in the trajectory necessary.
- (11) No heat shall be applied to a multi-piece wheel or wheel component.

- (g) **Safe operating procedure — single piece rim wheels.** The employer shall establish a safe operating procedure for servicing single piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements:
- (1) Tires shall be completely deflated by removal of the valve core before demounting.
 - (2) Mounting and demounting of the tire shall be done only from the narrow ledge side of the wheel. Care shall be taken to avoid damaging the tire beads while mounting tires on wheels. Tires shall be mounted only on compatible wheels of matching bead diameter and width.
 - (3) Nonflammable rubber lubricant shall be applied to bead and wheel mating surfaces before assembly of the rim wheel, unless the tire or wheel manufacturer recommends against the use of any rubber lubricant.
 - (4) If a tire changing machine is used, the tire shall be inflated only to the minimum pressure necessary to force the tire bead onto the rim ledge while on the tire changing machine.
 - (5) If a bead expander is used, it shall be removed before the valve core is installed and as soon as the rim wheel becomes airtight (the tire bead slips onto the bead seat).
 - (6) Tires may be inflated only when contained within a restraining device, positioned behind a barrier or bolted on the vehicle with the lug nuts fully tightened.
 - (7) Tires shall not be inflated when any flat, solid surface is in the trajectory and within one foot of the sidewall.
 - (8) Employees shall stay out of the trajectory when inflating a tire.
 - (9) Tires shall not be inflated to more than the inflation pressure stamped in the sidewall unless a higher pressure is recommended by the manufacturer.
 - (10) Tires shall not be inflated above the maximum pressure recommended by the manufacturer to seat the tire bead firmly against the rim flange.
 - (11) No heat shall be applied to a single piece wheel.
 - (12) Cracked, broken, bent, or otherwise damaged wheels shall not be reworked, welded, brazed, or otherwise heated.

1910.178 Powered industrial trucks

(l)(1)
through (7)

(l) Operator training

(1) *Safe Operation.*

- (i) The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph (l).
- (ii) Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the training required by this paragraph (l), except as permitted by paragraph (l)(5).

(2) *Training Program Implementation.*

- (i) Trainees may operate a powered industrial truck only:
 - (A) Under the direct supervision of persons who have the knowledge, training, and experience to train operators and evaluate their competence.
 - (B) Where such operation does not endanger the trainee or other employees.
- (ii) Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.
- (iii) All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

(3) *Training program content.* Powered industrial truck operators shall receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace.

- (i) Truck-related topics:
 - (A) Operating instructions, warnings, and precautions for the types of truck the operator will be authorized to operate;
 - (B) Differences between the truck and the automobile;

- (C) Truck controls and instrumentation: where they are located, what they do, and how they work;
 - (D) Engine or motor operation;
 - (E) Steering and maneuvering;
 - (F) Visibility (including restrictions due to loading);
 - (G) Fork and attachment adaptation, operation, and use limitations;
 - (H) Vehicle capacity;
 - (I) Vehicle stability;
 - (J) Any vehicle inspection and maintenance that the operator will be required to perform;
 - (K) Refueling and/or charging and recharging of batteries;
 - (L) Operating limitations;
 - (M) Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.
- (ii) Workplace-related topics:
- (A) Surface conditions where the vehicle will be operated;
 - (B) Composition of loads to be carried and load stability;
 - (C) Load manipulation, stacking, and unstacking;
 - (D) Pedestrian traffic in areas where the vehicle will be operated;
 - (E) Narrow aisles and other restricted places where the vehicle will be operated;
 - (F) Hazardous (classified) locations where the vehicle will be operated;
 - (G) Ramps and other sloped surfaces that could affect the vehicle's stability;
 - (H) Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;
 - (I) Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.
- (iii) The requirements of this section.

- (4) *Refresher training and evaluation*
- (i) Refresher training, including an evaluation of the effectiveness of that training, shall be conducted as required by paragraph (l)(4)(ii) to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.
 - (ii) Refresher training in relevant topics shall be provided to the operator when:
 - (A) The operator has been observed to operate the vehicle in an unsafe manner;
 - (B) The operator has been involved in an accident or near-miss incident;
 - (C) The operator has received an evaluation that reveals that the operator is not operating the truck safely;
 - (D) The operator is assigned to drive a different type of truck;
 - (E) A condition in the workplace changes in a manner that could affect safe operation of the truck.
 - (iii) An evaluation of each powered industrial truck operator's performance shall be conducted at least once every three years.
- (5) *Avoidance of duplicative training.* If an operator has previously received training in a topic specified in paragraph (l)(3) of this section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.
- (6) *Certification.* The employer shall certify that each operator has been trained and evaluated as required by this paragraph (l). The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.
- (7) *Dates.* The employer shall ensure that operators of powered industrial trucks are trained, as appropriate, by the dates shown in the following table.

If the employee was hired:	The initial training and evaluation of that must be completed:
Before December 1, 1999	By December 1, 1999
After December 1, 1999	Before the employee is assigned to operate a powered industrial truck

1910.179 Overhead and gantry cranes

(n)(3)(ix) and
(o)(3)

(n) Handling the load

(3) *Moving the load.*

(ix) When two or more cranes are used to lift a load, one qualified responsible person shall be in charge of the operation. He shall analyze the operation and instruct all personnel involved in the proper positioning, rigging of the load, and the movements to be made.

(o) Other requirements — fire extinguishers

(3) *Fire extinguishers.* The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.

1910.180 Crawler locomotive and truck cranes

(i)(5)(ii)

(i) Other requirements

(5) *Fire extinguishers.*

(ii) Operating and maintenance personnel shall be made familiar with the use and care of the fire extinguishers provided.

Subpart O – Machinery and Machine Guarding

1910.217 Mechanical power presses

(e)(2) and (3);
(f)(2); (h)(13)

(e) Inspection, maintenance, and modification of presses

(2) *Modification.* It shall be the responsibility of any person modifying a power press to furnish instructions with the modification to establish new or changed guidelines for use and care of the power press so modified.

(3) *Training of maintenance personnel.* It shall be the responsibility of the employer to insure the original and continuing competence of personnel caring for, inspecting, and maintaining power presses.

(f) Operation of power presses

(2) *Instruction to operators.* The employer shall train and instruct the operator in the safe method of work before starting work on any operation covered by this section. The employer shall insure by adequate supervision that correct operating procedures are being followed.

(h) Presence sensing device initiation (PSDI)

(13) Operator training.

- (i) The operator training required by paragraph (f)(2) of this section shall be provided to the employee before the employee initially operates the press and as needed to maintain competence, but not less than annually thereafter. It shall include instruction relative to the following items for presses used in the PSDI mode:
 - (A) The manufacturer's recommended test procedures for checking operation of the presence sensing device. This shall include the use of the test rod required by paragraph (h)(10)(i) of this section.
 - (B) The safety distance required.
 - (C) The operation, function and performance of the PSDI mode.
 - (D) The requirements for hand tools that may be used in the PSDI mode.
 - (E) The severe consequences that can result if an operator attempts to circumvent or bypass any of the safeguard or operating functions of the PSDI system.
- (ii) The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed. The certification record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment. The certification record shall be made available upon request to the Assistant Secretary for Occupational Safety and Health.

1910.218 Forging machines

(a)(2)(iii) (a) General requirements

- (2) *Inspection and maintenance.* It shall be the responsibility of the employer to maintain all forge shop equipment in a condition which will ensure continued safe operation. This responsibility includes:
 - (iii) Training personnel for the proper inspection and maintenance of forging machinery and equipment.

Subpart Q – Welding, Cutting, and Brazing

1910.252 General requirements

(a)(2)(xiii)(C) (a) **Fire prevention and protection**

(2) *Special precautions.* When the nature of the work to be performed falls within the scope of paragraph (a)(1)(ii) of this section certain additional precautions may be necessary:

(xiii) *Management.* Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

(C) Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

1910.253 Oxygen-fuel gas welding and cutting

(a)(4) (a) **General requirements**

(4) *Personnel.* Workmen in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by their employers for this important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

1910.254 Arc welding and cutting

(a)(3) (a) **General**

(3) *Instruction.* Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment as specified in paragraph (d) of this section.

1910.255 Resistance welding

(a)(3) (a) **General**

(3) *Personnel.* Workers designated to operate resistance welding equipment shall have been properly instructed and judged competent to operate such equipment.

Subpart R – Special Industries

1910.261 Pulp, paper, and paperboard mills

(h)(3)(ii) **(h) Bleaching**

(3) *Liquid chlorine.*

- (ii) Gas masks capable of absorbing chlorine shall be supplied, conveniently placed, and regularly inspected, and workers who may be exposed to chlorine gas shall be instructed in their use.

1910.264 Laundry machinery and operating rules

(d)(1)(v) **(d) Operating rules**

(1) *General.*

- (v) *Instruction of employees.* Employees shall be properly instructed as to the hazards of their work and be instructed in safe practices, by bulletins, printed rules, and verbal instructions.

1910.266 Logging

(i)(1) through (10) **(i) Training**

- (1) The employer shall provide training for each employee, including supervisors, at no cost to the employee.
- (2) *Frequency.* Training shall be provided as follows:
 - (i) As soon as possible but not later than the effective date of this section for initial training for each current and new employee;
 - (ii) Prior to initial assignment for each new employee;
 - (iii) Whenever the employee is assigned new work tasks, tools, equipment, machines, or vehicles; and,
 - (iv) Whenever an employee demonstrates unsafe job performance.
- (3) *Content.* At a minimum, training shall consist of the following elements:
 - (i) Safe performance of assigned work tasks;
 - (ii) Safe use, operation, and maintenance of tools, machines, and vehicles the employee uses or operates, including emphasis on understanding and following the manufacturer's operating and maintenance instructions, warnings, and precautions;

- (iii) Recognition of safety and health hazards associated with the employee's specific work tasks, including the use of measures and work practices to prevent or control those hazards;
 - (iv) Recognition, prevention, and control of other safety and health hazards in the logging industry;
 - (v) Procedures, practices, and requirements of the employer's work site; and
 - (vi) The requirements of this standard.
- (4) Training of an employee due to unsafe job performance, or assignment of new work tasks, tools, equipment, machines, or vehicles may be limited to those elements in paragraph (i)(3) of this section which are relevant to the circumstances giving rise to the need for training.
- (5) *Portability of training.*
- (i) Each current employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements.
 - (ii) Each new employee who has received training in the particular elements specified in paragraph (i)(3) of this section shall not be required to be retrained in those elements prior to initial assignment.
 - (iii) The employer shall train each current and new employee in those elements for which the employee has not received training. The six-digit verification code is 130302
 - (iv) The employer is responsible for ensuring that each current and new employee can properly and safely perform the work tasks and operate the tools, equipment, machines, and vehicles used in their job.
- (6) Each new employee and each employee who is required to be trained as specified in paragraph (i)(2) of this section, shall work under the close supervision of a designated person until the employee demonstrates to the employer the ability to safely perform the new duties independently.
- (7) *First-aid training.*
- (i) The employer shall assure that each employee, including supervisors, receives or has received first-aid and CPR training meeting at least the requirements specified in Appendix B.

- (ii) The employer shall assure that each employee receives first-aid training at least every three years and receives CPR training at least annually.
- (iii) The employer shall assure that each employee's first-aid and CPR training and/or certificate of training remain current.
- (8) All training shall be conducted by a designated person.
- (9) The employer shall assure that all training required by this section is presented in a manner that the employee is able to understand. The employer shall assure that all training materials used are appropriate in content and vocabulary to the educational level, literacy, and language skills of the employees being trained.
- (10) *Certification of training.*
 - (i) The employer shall verify compliance with paragraph (i) of this section by preparing a written certification record. The written certification record shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. If the employer relies on training conducted prior to the employee's hiring or completed prior to the effective date of this section, the certification record shall indicate the date the employer determined the prior training was adequate.
 - (ii) The most recent training certification shall be maintained.

1910.268 Telecommunications

(b)(2)(i) and (c)(1) through (3); (j)(4)(iv)(D); (l)(1); (o)(1)(ii) and (3); (q)(1)(ii), (q)(2)(ii) and (iii)

(b) General

(2) Battery handling.

- (i) Eye protection devices which provide side as well as frontal eye protection for employees shall be provided when measuring storage battery specific gravity or handling electrolyte, and the employer shall ensure that such devices are used by the employees. The employer shall also ensure that acid resistant gloves and aprons shall be worn for protection against splattering. Facilities for quick drenching or flushing of the eyes and body shall be provided unless the storage batteries are of the enclosed type and equipped with explosion proof vents, in which case sealed water

rinse or neutralizing packs may be substituted for the quick drenching or flushing facilities. Employees assigned to work with storage batteries shall be instructed in emergency procedures such as dealing with accidental acid spills.

- (c) **Training.** Employers shall provide training in the various precautions and safe practices described in this section and shall insure that employees do not engage in the activities to which this section applies until such employees have received proper training in the various precautions and safe practices required by this section. However, where the employer can demonstrate that an employee is already trained in the precautions and safe practices required by this section prior to his employment, training need not be provided to that employee in accordance with this section. Where training is required, it shall consist of on-the-job training or classroom-type training or a combination of both. The employer shall certify that employees have been trained by preparing a certification record which includes the identity of the person trained, the signature of the employer or the person who conducted the training, and the date the training was completed. The certification record shall be prepared at the completion of training and shall be maintained on file for the duration of the employee's employment. The certification record shall be made available upon request to the Assistant Secretary for Occupational Safety and Health. Such training shall, where appropriate, include the following subjects:

- (1) Recognition and avoidance of dangers relating to encounters with harmful substances and animal, insect, or plant life;
- (2) Procedures to be followed in emergency situations; and,
- (3) First-aid training, including instruction in artificial respiration.

(j) **Vehicle-mounted material handling devices and other mechanical equipment**

- (4) *Derrick trucks and similar equipment.*
 - (iv) Derricks and the operation of derricks shall comply with the following requirements:
 - (D) Only persons trained in the operation of the derrick shall be permitted to operate the derrick.

(l) Cable fault locating and testing.

- (1) Employees involved in using high voltages to locate trouble or test cables shall be instructed in the precautions necessary for their own safety and the safety of other employees.

(o) Underground lines. The provisions of this paragraph apply to the guarding of manholes and street openings, and to the ventilation and testing for gas in manholes and unvented vaults, where telecommunications field work is performed on or with underground lines.

(1) *Guarding manholes and street openings.*

- (ii) While work is being performed in the manhole, a person with basic first aid training shall be immediately available to render assistance if there is cause for believing that a safety hazard exists, and if the requirements contained in paragraphs (d)(1) and (o)(1)(i) of this section do not adequately protect the employee(s). Examples of manhole worksite hazards which shall be considered to constitute a safety hazard include, but are not limited to:

- (A) Manhole worksites where safety hazards are created by traffic patterns that cannot be corrected by provisions of paragraph (d)(1) of this section.
- (B) Manhole worksites that are subject to unusual water hazards that cannot be abated by conventional means.
- (C) Manhole worksites that are occupied jointly with power utilities as described in paragraph (o)(3) of this section.

- (3) *Joint power and telecommunication manholes.* While work is being performed in a manhole occupied jointly by an electric utility and a telecommunication utility, an employee with basic first-aid training shall be available in the immediate vicinity to render emergency assistance as may be required. The employee whose presence is required in the immediate vicinity for the purposes of rendering emergency assistance is not to be precluded from occasionally entering a manhole to provide assistance other than in an emergency. The requirement of this paragraph (o)(3) does not preclude a qualified employee,

working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.

(q) Tree trimming — electrical hazards

(1) *General.*

(ii) Employees engaged in line clearing operations shall be instructed that:

- (A) A direct contact is made when any part of the body touches or contacts an energized conductor, or other energized electrical fixture or apparatus.
- (B) An indirect contact is made when any part of the body touches any object in contact with an energized electrical conductor, or other energized fixture or apparatus.
- (C) An indirect contact can be made through conductive tools, tree branches, trucks, equipment, or other objects, or as a result of communications wires, cables, fences, or guy wires being accidentally energized.
- (D) Electric shock will occur when an employee, by either direct or indirect contact with an energized conductor, energized tree limb, tool, equipment, or other object, provides a path for the flow of electricity to a grounded object or to the ground itself. Simultaneous contact with two energized conductors will also cause electric shock which may result in serious or fatal injury.

(2) *Working in proximity to electrical hazards.*

- (ii) Only qualified employees or trainees, familiar with the special techniques and hazards involved in line clearance, shall be permitted to perform the work if it is found that an electrical hazard exists.
- (iii) During all tree working operations aloft where an electrical hazard of more than 750V exists, there shall be a second employee or trainee qualified in line clearance tree trimming within normal voice communication.

1910.269 Electric power generation, transmission, and distribution

(a)(2); (b)(1); (a) **General**

(d)(2)(vi)
through (viii)

(2) *Training.*

- (i) Employees shall be trained in and familiar with the safety-related work practices, safety procedures, and other safety requirements in this section that pertain to their respective job assignments. Employees shall also be trained in and familiar with any other safety practices, including applicable emergency procedures (such as pole top and manhole rescue), that are not specifically addressed by this section but that are related to their work and are necessary for their safety.
- (ii) Qualified employees shall also be trained and competent in:
 - (A) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment,
 - (B) The skills and techniques necessary to determine the nominal voltage of exposed live parts,
 - (C) The minimum approach distances specified in this section corresponding to the voltages to which the qualified employee will be exposed, and
 - (D) The proper use of the special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools for working on or near exposed energized parts of electric equipment.

Note: For the purposes of this section, a person must have this training in order to be considered a qualified person.
- (iii) The employer shall determine, through regular supervision and through inspections conducted on at least an annual basis, that each employee is complying with the safety-related work practices required by this section.
- (iv) An employee shall receive additional training (or retraining) under any of the following conditions:
 - (A) If the supervision and annual inspections required by paragraph (a)(2)(iii) of this section indicate that the employee is not complying with the safety-related work practices required by this section, or

- (B) If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those which the employee would normally use, or
- (C) If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.

Note: OSHA would consider tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

- (v) The training required by paragraph (a)(2) of this section shall be of the classroom or on-the-job type.
- (vi) The training shall establish employee proficiency in the work practices required by this section and shall introduce the procedures necessary for compliance with this section.
- (vii) The employer shall certify that each employee has received the training required by paragraph (a)(2) of this section. This certification shall be made when the employee demonstrates proficiency in the work practices involved and shall be maintained for the duration of the employee's employment.

Note: Employment records that indicate that an employee has received the required training are an acceptable means of meeting this requirement.

(b) Medical services and first aid. The employer shall provide medical services and first aid as required in Section 1910.151 of this part. In addition to the requirements of Section 1910.151 of this part, the following requirements also apply:

- (1) *Cardiopulmonary resuscitation and first-aid training.* When employees are performing work on or associated with exposed lines or equipment energized at 50 volts or more, persons trained in first-aid including cardiopulmonary resuscitation (CPR) shall be available as follows:
 - (i) For field work involving two or more employees at a work location, at least two trained persons shall be available. However, only one trained person need be available if all new employees are trained in first aid, including CPR, within 3 months of their hiring dates.

- (ii) For fixed work locations such as generating stations, the number of trained persons available shall be sufficient to ensure that each employee exposed to electric shock can be reached within 4 minutes by a trained person. However, where the existing number of employees is insufficient to meet this requirement (at a remote substation, for example), all employees at the work location shall be trained.

(d) Hazardous energy control (lockout/tagout) procedures

(2) *General.*

- (vi) The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of energy controls are acquired by employees. The training shall include the following:
 - (A) Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and in the methods and means necessary for energy isolation and control.
 - (B) Each affected employee shall be instructed in the purpose and use of the energy control procedure.
 - (C) All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedures and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.
- (vii) When tagout systems are used, employees shall also be trained in the limitation of tags.
- (viii) Retraining shall be provided by the employer as follows:
 - (A) Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment, or processes that present a new hazard or whenever there is a change in the energy control procedures.

- (B) Retraining shall also be conducted whenever a periodic inspection under paragraph (d)(2)(v) of this section reveals, or whenever the employer has reason to believe, there are deviations from or inadequacies in an employee's knowledge or use of the energy control procedures.
- (C) The retraining shall reestablish employee proficiency and shall introduce new or revised control methods and procedures, as necessary.

1910.272 Grain handling facilities

(e)(1) and (2);
(g)(5); (h); (i)(2) **(e) Training**

- (1) The employer shall provide training to employees at least annually and when changes in job assignment will expose them to new hazards. Current employees, and new employees prior to starting work, shall be trained in at least the following:
 - (i) General safety precautions associated with the facility, including recognition and preventive measures for the hazards related to dust accumulations and common ignition sources such as smoking; and
 - (ii) Specific procedures and safety practices applicable to their job tasks including but not limited to, cleaning procedures for grinding equipment, clearing procedures for choked legs, housekeeping procedures, hot work procedures, preventive maintenance procedures and lock-out/tag-out procedures.
- (2) Employees assigned special tasks, such as bin entry and handling of flammable or toxic substances, shall be provided training to perform these tasks safely.

Note to paragraph (e)(2): Training for an employee who enters grain storage structures includes training about engulfment and mechanical hazards and how to avoid them.

(g) Entry into Bins, Silos, and Tanks

- (5) The employee acting as observer shall be trained in rescue procedures, including notification methods for obtaining additional assistance.

- (h) **Entry into flat storage structures.** For the purposes of this paragraph (h), the term “grain” means raw and processed grain and grain products in facilities within the scope of paragraph (b)(1) of this section.
- (i) **Contractors**
 - (2) The employer shall explain the applicable provisions of the emergency action plan to contractors.

Appendix A to 1910.272

3. Training

It is important that employees be trained in the recognition and prevention of hazards associated with grain facilities, especially those hazards associated with their own work tasks. Employees should understand the factors which are necessary to produce a fire or explosion, i.e., fuel (such as grain dust), oxygen, ignition source, and (in the case of explosions) confinement. Employees should be made aware that any efforts they make to keep these factors from occurring simultaneously will be an important step in reducing the potential for fires and explosions.

The standard provides flexibility for the employer to design a training program which fulfills the needs of a facility. The type, amount, and frequency of training will need to reflect the tasks that employees are expected to perform. Although training is to be provided to employees at least annually, it is recommended that safety meetings or discussions and drills be conducted at more frequent intervals.

The training program should include those topics applicable to the particular facility, as well as topics such as: Hot work procedures; lock-out/tag-out procedures; bin entry procedures; bin cleaning procedures; grain dust explosions; fire prevention; procedures for handling “hot grain”; housekeeping procedures, including methods and frequency of dust removal; pesticide and fumigant usage; proper use and maintenance of personal protective equipment; and, preventive maintenance. The types of work clothing should also be considered in the program at least to caution against using polyester clothing that easily melts and increases the severity of burns, as compared to wool or fire retardant cotton.

In implementing the training program, it is recommended that the employer utilize films, slide-tape presentations, pamphlets, and other information which can be obtained from such sources as the Grain Elevator and Processing Society, the Cooperative Extension Service of the U.S. Department of Agriculture, Kansas State University’s Extension Grain Science and Industry, and other state agriculture schools, industry associations, union organizations, and insurance groups.

Subpart S – Electrical Safety-Related Work Practices

1910.332 Training

- (a), (b) and (c) (a) **Scope.** The training requirements contained in this section apply to employees who face a risk of electric shock that is not reduced to a safe level by the electrical installation requirements of 1910.303 through 1910.308.

Note: Employees in occupations listed in Table S-4 face such a risk and are required to be trained. Other employees who also may reasonably be expected to face comparable risk of injury due to electric shock or other electrical hazards must also be trained.

(b) **Content of training**

- (1) *Practices addressed in this standard.* Employees shall be trained in and familiar with the safety-related work practices required by 1910.331 through 1910.335 that pertain to their respective job assignments.
- (2) *Additional requirements for unqualified persons.* Employees who are covered by paragraph (a) of this section but who are not qualified persons shall also be trained in and familiar with any electrically related safety practices not specifically addressed by 1910.331 through 1910.335 but which are necessary for their safety.
- (3) *Additional requirements for qualified persons.* Qualified persons (i.e., those permitted to work on or near exposed energized parts) shall, at a minimum, be trained in and familiar with the following:
 - (i) The skills and techniques necessary to distinguish exposed live parts from other parts of electric equipment.
 - (ii) The skills and techniques necessary to determine the nominal voltage of exposed live parts, and
 - (iii) The clearance distances specified in 1910.333(c) and the corresponding voltages to which the qualified person will be exposed.

Note 1: For the purposes of 1910.331 through 1910.335, a person must have the training required by paragraph (b)(3) of this section in order to be considered a qualified person.

Note 2: Qualified persons whose work on energized equipment involves either direct contact or contact by means of tools or materials must also have the training needed to meet 1910.333(C)(2).

- (c) **Type of training.** The training required by this section shall be of the classroom or on-the-job type. The degree of training provided shall be determined by the risk to the employee.

TABLE S-4 — Typical Occupational Categories of Employees

Facing a Higher Than Normal Risk of Electrical Accident

Occupation

Blue collar supervisors ¹	Material handling equipment operators ¹
Electrical and electronic engineers ¹	Mechanics and repairers ¹
Electrical and electronic equipment assemblers ¹	Painters ¹
Electrical and electronic technicians ¹	Riggers and roustabouts ¹
Electricians	Stationary engineers ¹
Industrial machine operators ¹	Welders

Footnote (1) Workers in these groups do not need to be trained if their work or the work of those they supervise does not bring them or the employees they supervise close enough to exposed parts of electric circuits operating at 50 volts or more to ground for a hazard to exist.

Subpart T – Commercial Diving Operations

1910.410 Qualifications of dive team

- (a)(1) **(a) Scope**
 - through (4);
 - (b)(1); (c)(2)
- (1) Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner.
 - (2) Each dive team member shall have experience or training in the following:
 - (i) The use of tools, equipment, and systems relevant to assigned tasks
 - (ii) Techniques of the assigned diving mode
 - (iii) Diving operations and emergency procedures

- (3) All dive team members shall be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent).
- (4) Dive team members who are exposed to or control the exposure of others to hyperbaric conditions shall be trained in diving-related physics and physiology.

(b) Application in emergencies

- (1) Each dive team member shall be assigned tasks in accordance with the employee's experience or training, except that limited additional tasks may be assigned to an employee undergoing training provided that these tasks are performed under the direct supervision of an experienced dive team member.

(c) Employer obligation

- (2) The designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.

Appendix C to Subpart T — Alternative conditions under 1910.401 for recreational diving instructors and diving guides (mandatory)

10. Diver Training

The employer must ensure that each diver receives training that enables the diver to perform work safely and effectively while using open-circuit SCUBAs or rebreathers supplied with nitrox breathing-gas mixtures. Accordingly, each diver must be able to demonstrate the ability to perform critical tasks safely and effectively, including, but not limited to: recognizing the effects of breathing excessive CO₂ and O₂; taking appropriate action after detecting excessive levels of CO₂ and O₂; and properly evaluating, operating, and maintaining their diving equipment under the diving conditions they encounter.

Subpart Z – Toxic and Hazardous Substances

1910.1001 Asbestos

(j)(7) and (m)(4) **(j) Communication of hazards to employees**

(7) *Employee information and training.*

- (i) The employer shall train each employee who is exposed to airborne concentrations of asbestos at or above the PEL and/or excursion limit in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.
- (ii) Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.
- (iii) The training program shall be conducted in a manner which the employee is able to understand. The employer shall ensure that each employee is informed of the following:
 - (A) The health effects associated with asbestos exposure;
 - (B) The relationship between smoking and exposure;
 - (C) The quantity, location, manner of use, release, and storage of asbestos, and the specific nature of operations which could result in exposure to asbestos;
 - (D) The engineering controls and work practices associated with the employee's job assignment;
 - (E) The specific procedures implemented to protect employees from exposure to asbestos, such as appropriate work practices, emergency and clean-up procedures, and personal protective equipment to be used;
 - (F) The purpose, proper use, and limitations of respirators and protective clothing, if appropriate;
 - (G) The purpose and a description of the medical surveillance program required by paragraph (l) of this section
 - (H) The content of this standard, including appendices;
 - (I) The names, addresses and phone numbers of public health organizations which provide information, materials, and/or conduct programs concerning

smoking cessation. The employer may distribute the list of such organizations contained in Appendix I to this section, to comply with this requirement.

- (J) The requirements for posting signs and affixing labels and the meaning of the required legends for such signs and labels.
- (iv) The employer shall also provide, at no cost to employees who perform housekeeping operations in an area which contains ACM or PACM, an asbestos awareness training course, which shall at a minimum contain the following elements: health effects of asbestos, locations of ACM and PACM in the building/facility, recognition of ACM and PACM damage and deterioration, requirements in this standard relating to housekeeping, and proper response to fiber release episodes, to all employees who perform housekeeping work in areas where ACM and/or PACM is present. Each such employee shall be so trained at least once a year.
- (v) Access to information and training materials
 - (A) The employer shall make a copy of this standard and its appendices readily available without cost to all affected employees.
 - (B) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the training program to the Assistant Secretary and the Director.
 - (C) The employer shall inform all employees concerning the availability of self-help smoking cessation program material. Upon employee request, the employer shall distribute such material, consisting of NIH Publication No. 89-1647, or equivalent self-help material, which is approved or published by a public health organization listed in Appendix I to this section.

(m) Recordkeeping

- (4) *Training.* The employer shall maintain all employee training records for (1) year beyond the last date of employment of that employee.

1910.1003 13 Carcinogens (4-Nitrobiphenyl, etc.)

(e)(4)(i) and (ii)

4-Nitrobiphenyl	1910.1003
Alpha-Naphthylamine	1910.1004
Methyl Chloromethyl Ether	1910.1006
3,3'-Dichlorobenzidine (and its salts)	1910.1007
Bis-Chloromethyl Ether	1910.1008
Beta-Naphthylamine	1910.1009
Benzidine	1910.1010
4-Aminodiphenyl	1910.1011
Ethyleneimine	1910.1012
Beta-Propiolactone	1910.1013
2-Acetylaminofluorene	1910.1014
4-Dimethylaminoazobenzene	1910.1015
N-Nitrosodimethylamine	1910.1016

(e) Communication of hazards

(4) Training and indoctrination.

- (i) Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program including, but not necessarily limited to:
 - (A) The nature of the carcinogenic hazards addressed by this section, including local and systemic toxicity;
 - (B) The specific nature of the operation involving a carcinogen addressed by this section that could result in exposure;
 - (C) The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;
 - (D) The purpose for and application of decontamination practices and purposes;
 - (E) The purpose for and significance of emergency practices and procedures;

- (F) The employee's specific role in emergency procedures;
 - (G) Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of a carcinogen addressed by this section;
 - (H) The purpose for and application of specific first-aid procedures and practices;
 - (I) A review of this section at the employee's first training and indoctrination program and annually thereafter.
- (ii) Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

1910.1017 Vinyl chloride

(j)(1)(i) through (ix) **(j) Training.** Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use.

- (1) The program shall include:
- (i) The nature of the health hazard from chronic exposure to vinyl chloride including specifically the carcinogenic hazard;
 - (ii) The specific nature of operations which could result in exposure to vinyl chloride in excess of the permissible limit and necessary protective steps;
 - (iii) The purpose for, proper use, and limitations of respiratory protective devices;
 - (iv) The fire hazard and acute toxicity of vinyl chloride, and the necessary protective steps;
 - (v) The purpose for and a description of the monitoring program;
 - (vi) The purpose for, and a description of, the medical surveillance program;
 - (vii) Emergency procedures;
 - (viii) Specific information to aid the employee in recognition of conditions which may result in the release of vinyl chloride; and
 - (ix) A review of this standard at the employee's first training and indoctrination program, and annually thereafter.

1910.1018 Inorganic arsenic

(o)(1) and (2) (o) Employee information and training

(1) *Training program.*

- (i) The employer shall train each employee who is subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is the possibility of skin or eye irritation from inorganic arsenic, in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.
- (ii) The training program shall be provided by October 1, 1978, for employees covered by this provision, at the time of initial assignment for those subsequently covered by this provision, and at least annually for other covered employees thereafter; and the employer shall assure that each employee is informed of the following:
 - (A) The information contained in Appendix A;
 - (B) The quantity, location, manner of use, storage, sources of exposure, and the specific nature of operations which could result in exposure to inorganic arsenic as well as any necessary protective steps;
 - (C) The purpose, proper use, and limitations of respirators;
 - (D) The purpose and a description of the medical surveillance program as required by paragraph (n) of this section;
 - (E) The engineering controls and work practices associated with the employee's job assignment; and
 - (F) A review of this standard.

(2) *Access to training materials.*

- (i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.
- (ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.

Appendix A to 1910.1018 — Inorganic arsenic substance information sheet

IX – Training and Notification

Additional information on all of these items plus training as to hazards of exposure to inorganic arsenic and the engineering and work practice controls associated with your job will also be provided by your employer. If you are exposed over the permissible exposure limit, your employer must inform you of that fact and the actions he is taking to reduce your exposures.

1910.1025 Lead

(l)(1) and (2); **(l) Employee Information and Training**
Appendix B

(1) *Training Program.*

- (i) Each employer who has a workplace in which there is a potential exposure to airborne lead at any level shall inform employees of the content of Appendices A and B of this regulation.
- (ii) The employer shall train each employee who is subject to exposure to lead at or above the action level, or for whom the possibility of skin or eye irritation exists, in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.
- (iii) The employer shall provide initial training by 180 days from the effective date for those employees covered by paragraph (l)(1)(ii) on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this paragraph.
- (iv) The training program shall be repeated at least annually for each employee.
- (v) The employer shall assure that each employee is informed of the following:
 - (A) The content of this standard and its appendices;
 - (B) The specific nature of the operations which could result in exposure to lead above the action level;
 - (C) The purpose, proper selection, fitting, use, and limitations of respirators;

- (D) The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);
 - (E) The engineering controls and work practices associated with the employee's job assignment;
 - (F) The contents of any compliance plan in effect; and
 - (G) Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician.
- (2) *Access to information and training materials.*
- (i) The employer shall make readily available to all affected employees a copy of this standard and its appendices.
 - (ii) The employer shall provide, upon request, all materials relating to the employee information and training program to the Assistant Secretary and the Director.
 - (iii) In addition to the information required by paragraph (l)(1)(v), the employer shall include as part of the training program, and shall distribute to employees, any materials pertaining to the Occupational Safety and Health Act, the regulations issued pursuant to that Act, and this lead standard, which are made available to the employer by the Assistant Secretary.

Appendix A to 1910.1025 — Substance Data Sheet for occupational exposure to lead

X. EMPLOYEE INFORMATION AND TRAINING — PARAGRAPH (I)

Your employer is required to provide an information and training program for all employees exposed to lead above the action level or who may suffer skin or eye irritation from lead. This program must inform these employees of the specific hazards associated with their work environment, protective measures which can be taken, the danger of lead to their bodies (including their reproductive systems), and their rights under the standard. In addition your employer must make readily available to all employees,