

# OSHA General Industry Standards Requiring Programs, Inspections, Procedures, Records and/or Training



Occupational Safety and Health Division

N.C. Department of Labor

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## **Foreword**

In North Carolina, the N.C. Department of Labor enforces the federal Occupational Safety and Health Act through a state plan approved by the U.S. Department of Labor. NCDOL offers many educational programs to the public and produces publications to help inform people about their rights and responsibilities regarding occupational safety and health.

When reading this guide, please remember the mission of the N.C. Department of Labor is greater than just regulatory enforcement. An equally important goal is to help citizens find ways to create safe workplaces. Everyone profits when managers and employees work together for safety. This guide, like the other educational materials produced by the N.C. Department of Labor, can help.

Cherie Berry  
Commissioner of Labor

## **Overview**

This industry guide is designed to assist employers in general industry in complying with standards that have special requirements such as written programs, inspections, competent persons, training and recordkeeping requirements that are applicable to general industry. We encourage you to use the information provided in this industry guide as necessary to accomplish this goal. You may also copy any of the material in this guide to be used in your safety and health efforts.

The information in this guide is provided voluntarily by the N.C. Department of Labor's Education, Training and Technical Assistance Bureau (ETTA) as a public service and is made available in good faith. It is provided as a compliance aid and does not constitute a legal interpretation of OSHA standards, nor does it replace the need to be familiar with and follow the OSHA standards (including any North Carolina-specific changes.)

While all attempts have been made to ensure the accuracy of the content and completeness in the information provided, it may not include all the standards that require programs, training, procedures, inspections and records that may be required by an OSHA standard. To ensure completeness in required documentation and records, the specific standard should be referenced for specific requirements.

The NCDOL Occupational Safety and Health Division's Consultative Services Bureau can be contacted for assistance in helping you set up your individual safety and health management program and with on-site surveys. Feel free to contact them at 1-800-NC-LABOR (1-800-625-2267) or 919-807-2899. You may also want to visit their website at <http://www.nclabor.com/osha/consult/consult.htm>.

For training events, publications, PowerPoint presentations and standard interpretations, please contact the Education, Training and Technical Assistance Bureau at 919-807-2875 or access the ETTA website at <http://www.nclabor.com/osha/etta/etta.htm>.

## How to Use This Industry Guide

This guide was developed to help employers comply with standards that have special requirements such as:

- Programs
- Policies
- Procedures
- Plans
- Inspections
- Tests
- Recordkeeping
- Certifications
- Training
- Exposure monitoring
- Medical surveillance
- Competent person
- Qualified person
- Instructions
- Signs
- Markings
- Tags
- Regulated areas
- Designs
- Professional registered engineer

The first section contains tables that provide a quick overview of the special requirements by standard; including North Carolina state-specific standards. The key for the tables are below.

**P: Programs, policies and procedures-related requirement:** Indicates required programs or policies, which can be written or unwritten, and/or be a mix of procedures (e.g.; work practices, controls), policies or plans required to meet a rule’s requirements.

**I: Inspections and tests requirement:** Indicates required inspections, workplace evaluations, hazard assessments, visual examinations tests, and/or surveys, documented and undocumented.

**RK: Recordkeeping requirement:** Indicates rules that have recordkeeping requirements for activities such as injury reporting, equipment inspections, surveys, tests, medical monitoring, exposure monitoring, training, records and other documentation requirements. (Other than signs, markings, tags and labels)

**C: Certification requirement:** Indicates rules that have a certification component. Certification will usually mean a written, signed, and dated statement confirming the performance of a requirement—also called a “certification record” in many rules.

**T: Training and communications requirement:** Indicates rules that have requirements for employee training, instruction, communications and/or providing information.

**EM: Exposure monitoring requirement:** Indicates rules that require exposure monitoring or other monitoring components for workplace hazards such as noise, chemicals and air contaminants.

**MS: Medical surveillance requirement:** Indicates rules that require regular medical examinations and consultations for employees who may be overexposed to hazardous substances during their work and/or a medical or a physically qualified component.

**CP: Competent person requirement:** Indicates rules that have requirements for “competent persons.” An OSHA “competent person” is defined as “one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.”

**QP: Qualified person requirement:** Indicates rules that have requirements for “qualified persons.” “Qualified” means one who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his or her ability to solve or resolve problems

relating to the subject matter, the work, or the project. This will include registered professional engineers, physicians, audiologists, and other qualified persons.

**SMT: Signs, markings, tags requirement:** Indicates rules that have requirements for some type of labeling component for equipment, machines and tools or signs for regulated areas, or requirement for establishing a regulated area, a posting requirement or placarding.

**O: Other requirements:** Indicates rules that have special requirements other than those listed above.

Section 2 contains state-specific standards, Section 3 contains recordkeeping standards, and Section 4 contains general industry standards. These sections are broken out by subpart and sections within the subpart that have special requirements. Each section will contain a “**Scope/Application**” that explains the scope or application of the standard (who or what it applies to). This will help the user identify whether the standard applies to them. If there is an “**Exception**” to the scope, that will also be provided following the “**Scope/Application.**”

Following the “**Scope/Application**” (or “**Exception**”) will be a list of the “**Standard Highlights**” that is the special requirements found in the standard. Following the “**Standard Highlights,**” each special requirement will be broken into sections containing individual rules that have that special requirement. Key words within each rule are *italicized* for quick review while written and/or implied documentation requirements are *italicized and bolded*.



# SECTION 1

## 13 NORTH CAROLINA ADMINISTRATIVE CODE CHAPTER 7—OFFICE OF OCCUPATIONAL SAFETY AND HEALTH

### SUBCHAPTER 7A—GENERAL RULES AND OPERATIONAL PROCEDURES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
7A.0600—Safety and Health Programs and Committees	X	X	X		X						

## 13 NORTH CAROLINA ADMINISTRATIVE CODE CHAPTER 7—OFFICE OF OCCUPATIONAL SAFETY AND HEALTH

### SUBCHAPTER 7F—STANDARDS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
7F.0100—General Industry Standards			X	X	X				X		
7F.0600—Communication Tower Standards	X	X	X	X	X			X	X	X	

## 29 CFR PART 1904—RECORDKEEPING

### SUBPARTS B-F—RECORDING AND REPORTING OCCUPATIONAL INJURIES AND ILLNESSES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1904.0—Purpose—1904.46—Definitions	X		X	X	X					X	

## 29 CFR PART 1910—GENERAL INDUSTRY

### SUBPART D—WALKING AND WORKING SURFACES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.22—General Requirements		X							X		
1910.23—Ladders		X								X	
1910.24—Step Bolts and Man Hole Steps		X									
1910.27—Scaffolds and Rope Descent Systems		X	X	X	X				X		X
1910.28—Duty to Have Fall Protection and Falling Object Protection	X	X	X		X				X	X	X
1910.29—Fall Protection Systems and Falling Object Protection-Criteria and Practices	X	X	X		X						X
1910.30—Training Requirements	X	X			X				X		

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART E—MEANS OF EGRESS**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.38—Emergency Action Plan	X		X		X						X
1910.39—Fire Prevention Plan	X		X		X						X

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART F—POWERED PLATFORMS, MANLIFTS AND VEHICLE-MOUNTED WORK PLATFORMS**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.66—Powered Platforms for Maintenance	X	X	X	X	X			X			
1910.67—Vehicle-Mounted Elevating and Rotating Work Platforms		X			X						
1910.68—Manlifts		X	X	X	X			X	X		

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART G—OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.94—Ventilation	X	X	X								
1910.95—Occupational Noise Exposure	X	X	X	X	X	X	X		X	X	
1910.97—Ionizing Radiation										X	

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART H—HAZARDOUS MATERIALS**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.103—Hydrogen		X									
1910.104—Oxygen		X									
1910.106—Flammable Liquids	X	X	X	X	X				X	X	
1910.107—Spray Finishing Using Flammable and Combustible Materials		X									
1910.109—Explosives and Blasting Agents	X	X			X				X		
1910.110—Storage and Handling of Liquefied Petroleum Gases		X			X						
1910.111—Storage and Handling of Anhydrous Ammonia		X	X	X					X		
1910.119—Process Safety Management of Highly Hazardous Chemicals	X	X	X	X	X	X			X		
1910.120—Hazardous Waste Operations and Emergency Response	X	X	X	X	X	X	X		X		
1910.124—General Requirements for Dipping and Coating Operations		X									

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART I—PERSONAL PROTECTIVE EQUIPMENT**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.132—General Requirements	X	X	X	X	X						
1910.134—Respiratory Protection	X	X	X	X	X	X	X		X	X	
1910.137—Electrical Protective Equipment		X	X	X						X	
1910.140—Personal Fall Protection Systems	X	X	X					X	X		

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART J—GENERAL ENVIRONMENTAL CONTROLS**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.141—Sanitation	X										
1910.145—Specifications for Accident Prevention Signs and Tags					X						
1910.146—Permit-Required Confined Spaces	X	X	X	X	X	X			X		X
1910.147—The Control of Hazardous Energy (Lockout/Tagout)	X	X	X	X	X				X	X	

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART K—MEDICAL SERVICES AND FIRST AID**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.151—Medical Services and First Aid					X						

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART L—FIRE PROTECTION**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.156—Fire Brigades	X	X	X	X	X						
1910.157—Portable Fire Extinguishers	X	X	X	X	X						
1910.158—Standpipe and Hose Systems		X			X						
1910.159—Automatic Sprinkler Systems		X	X								
1910.160—Fixed Extinguishing Systems, General		X	X		X					X	
1910.164—Fire Detection Systems		X									
1910.165—Employee Alarm Systems	X	X			X					X	

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART M—COMPRESSED GAS AND COMPRESSED AIR EQUIPMENT**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.169—Air Receivers		X									

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART N—MATERIALS HANDLING AND STORAGE**

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.176—Handling Materials—General										X	
1910.177—Servicing Multi-Piece and Single-Piece Rim Wheels	X	X	X	X	X				X	X	
1910.178—Powered Industrial Trucks	X	X	X	X	X			X			
1910.179—Overhead and Gantry Cranes	X	X	X	X	X				X	X	
1910.180—Crawler, Locomotive and Truck Cranes		X	X	X	X				X	X	
1910.181—Derricks	X	X	X	X	X				X	X	
1910.183—Helicopters					X						
1910.184—Slings		X	X	X				X		X	

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART O—MACHINERY AND MACHINE GUARDING**

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.215—Abrasive Wheel Machinery		X								X	
1910.217—Mechanical Power Presses	X	X	X	X	X			X		X	
1910.218—Forging Machines		X	X	X	X						
1910.219—Mechanical and Power Transmission Apparatus		X									

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART P—HAND AND PORTABLE POWERED TOOLS AND OTHER HAND-HELD EQUIPMENT**

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.243—Guarding of Portable Powered Tools		X								X	
1910.244—Other Portable Tools and Equipment		X								X	

**29 CFR PART 1910—GENERAL INDUSTRY****SUBPART Q—WELDING, CUTTING AND BRAZING**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.252—General Requirements	X	X	X		X				X	X	
1910.253—Oxygen-Fuel Gas Welding and Cutting		X	X		X					X	
1910.254—Arc Welding and Cutting		X	X		X						
1910.255—Resistance Welding		X	X	X	X						

**29 CFR PART 1910—GENERAL INDUSTRY****SUBPART R—SPECIAL INDUSTRIES**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.261—Pulp, Paper and Paperboard Mills	X	X			X					X	
1910.263—Bakery Equipment		X								X	
1910.264—Laundry Machinery and Operations	X		X		X						
1910.265—Sawmills		X								X	
1910.266—Logging Operations		X	X		X						
1910.268—Telecommunications	X	X	X	X	X	X		X	X	X	
1910.269—Electric Power Generation, Transmission and Distribution	X	X	X	X	X	X		X	X	X	
1910.272—Grain Handling Facilities	X	X	X	X	X					X	

**29 CFR PART 1910—GENERAL INDUSTRY****SUBPART S—ELECTRICAL**

<b>SECTION</b>	<b>P</b>	<b>I</b>	<b>RK</b>	<b>C</b>	<b>T</b>	<b>EM</b>	<b>MS</b>	<b>CP</b>	<b>QP</b>	<b>SMT</b>	<b>O</b>
1910.304—Wiring Design and Protection	X	X	X					X			
1910.305—Wiring Methods, Components and Equipment for General Use	X		X							X	
1910.308—Special Systems									X	X	
1910.332—Training					X						
1910.333—Selection and Use of Work Practices	X	X	X		X				X		
1910.334—Use of Equipment		X									
1910.335—Safeguards for Personal Protection		X								X	

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART T—COMMERCIAL DIVING OPERATIONS**

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.410—Qualifications of Dive Team					X				X		
1910.420—Safe Practices Manual	X		X								
1910.421—Pre-Dive Procedures	X	X	X		X				X	X	X
1910.423—Post-Dive Procedures	X		X		X						
1910.430—Equipment	X	X	X								
1910.440—Recordkeeping Requirements			X								

**29 CFR PART 1910—GENERAL INDUSTRY**

**SUBPART Z—TOXIC AND HAZARDOUS SUBSTANCES**

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1910.1000—Air Contaminants	X							X	X		
1910.1001—Asbestos	X	X	X		X	X	X	X	X	X	
1910.1003—13 Carcinogens	X		X		X		X		X	X	
1910.1017—Vinyl Chloride	X		X		X	X	X		X	X	
1910.1018—Inorganic Arsenic	X		X		X	X	X		X		
1910.1020—Access to Employee Exposure and Medical Records			X		X		X		X	X	
1910.1024—Beryllium	X		X		X	X	X		X	X	
1910.1025—Lead	X		X		X	X	X		X	X	
1910.1026—Chromium (VI)	X		X		X	X	X		X	X	
1910.1027—Cadmium	X		X		X	X	X		X	X	
1910.1028—Benzene	X		X		X	X	X		X	X	
1910.1029—Coke Oven Emissions	X	X	X	X	X	X	X		X	X	
1910.1030—Bloodborne Pathogens	X	X	X	X	X	X	X		X	X	
1910.1043—Cotton Dust	X		X		X	X	X		X	X	
1910.1044—1,2-dibromo-3-chloropropane	X		X		X	X	X		X	X	
1910.1045—Acrylonitrile	X	X	X		X	X	X		X	X	
1910.1047—Ethylene Oxide	X		X		X	X	X		X	X	
1910.1048—Formaldehyde	X	X	X		X	X	X		X	X	
1910.1050—Methylenedianiline	X	X	X		X	X	X		X	X	
1910.1051—1,3-Butadiene	X		X		X	X	X		X	X	
1910.1052—Methylene Chloride	X		X		X	X	X		X	X	
1910.1053—Respirable Crystalline Silica	X		X		X	X	X		X	X	
1910.1096—Ionizing Radiation		X	X		X	X	X			X	
1910.1200—Hazard Communication	X		X		X				X	X	
1910.1201—Retention of DOT Markings, Placards and Labels										X	
1910.1450—Occupational Exposure to Hazardous Chemicals in Laboratories	X	X	X		X	X	X		X	X	

## SECTION 2

### 13 NCAC Chapter 7—Office of Occupational Safety and Health Subchapter 07A—General Rules and Operational Procedures

#### 07A.0600—Safety and Health Programs and Committees

**Scope/Application:** *This section sets forth rules of procedure for implementation of N.C. General Statute (NCGS) 95, Article 22, which is titled “Safety and Health Programs and Committees.”*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—training, audits, accident investigations, plans, inspections, communications, applicable programs, committees
- Inspections and Tests—quarterly inspections, self-audits, checklists
- Recordkeeping—reporting requirements
- Training and Communications—on or off-site, knowledgeable trainer, applicable standards

#### Programs, Policies and Procedures

**07A.0601(b)—Purpose and Scope**—The purpose of this Section is to *establish programs* which will promote safety and health for all North Carolina employers *with a workers’ compensation experience rate modifier of 1.5 or above. Employee Safety and Health Committees will be established by all North Carolina employers having 11 or more employees and an experience rate modifier of 1.5 or above. [Reference Section 07A.0603(b) for Minimum Elements of the Safety and Health Programs and N.C. Gen. Stat. § 95-251(b)(1)-(9) for specific requirements].*

**07A.0603 Safety and Health Programs**—(b) The *written program* shall also include:

- (4) The manner in which workplace accidents *will be investigated and corrective action* implemented. The employer shall keep a **comprehensive record** of accident investigations, findings, and corresponding corrective action taken.
- (5) The manner in which near-miss incidents will be investigated. Special emphasis will be placed on identifying all contributing factors to any near-miss incident. The employer shall keep a **comprehensive record** of each such incident and the findings relating to it, and *shall keep a record* of all corresponding *corrective action* taken.
- (6) The *methods used to identify, analyze and control* new or existing hazards, conditions and operations, and the manner in which changes will be incorporated into the **safety program, safety committee checklist, and communicated** to all affected employees.
- (7) **Written compliance plans** as required by either the Mine Safety laws or OSHA standards, whichever is applicable to the employer. **Written compliance plans** shall include, the following OSHA standards, when applicable: Excavations, Hazard Communication, Occupational Noise Exposure, Control of Hazardous Energy Sources (Lockout/Tagout), Respiratory Protection, Process Safety Management of Highly Hazardous Chemicals, Bloodborne Pathogens, Life Safety Code, Cotton Dust, and Confined Spaces.
- (8) A **written checklist** of all potential hazards to *be inspected during the quarterly inspections* required pursuant to G.S. 95-252(c)(4)d, if applicable, including, but not limited to, checking for properly **marked** doors (including exit doors and doors not leading to an exit); properly working fire extinguishers; unlisted hazardous substances, improperly located hazardous substances, or hazardous substances for which there are no **safety data sheets**; doorways or exit pathways that are cluttered; improperly grounded equipment and exposed live wiring and parts; and unguarded machinery. Each item on the aforementioned **written checklist** shall be checked during the *quarterly inspections* and a **copy of the list shall be retained** by the employer for not less than *two years*. All conditions or items deemed to be out of compliance shall be immediately abated, unless circumstances beyond the control of the employer requires a longer period of time.
- (9) The employer *shall conduct an annual self-audit* of all required safety and health programs. **Written findings and a statement** of remedial actions taken shall be **retained for not less than two years**. Companies with less than 11 employees that are not required to have safety and health committees *shall appoint a company safety officer* to conduct the *annual self-audit*.



**07A.0606 Training and Education**—(b) There shall also be established for employees whether or not a safety and health committee is required:

- (1) *A system for training and education* of all employees in occupational safety and health hazards at the work-site. The system shall contain specific requirements that new employees not be allowed to begin work, except when participating in *carefully supervised on-the-job training, until thoroughly trained* in the safe use of all applicable equipment and substances, and *procedures* relating to their workplace environment.
- (2) *A system of training and education* for any existing employee given a new work assignment.
- (3) *A system of training and education* for all affected employees when a new substance, process, *procedure* or piece of equipment is introduced into the workplace and presents a new hazard to safety or health.
- (4) *A system of training and education* for all affected employees when any new personal protective equipment or different *work practice* is used on existing hazards.

**07A.0604—Selection of Safety Committees**—(a) An employer *may elect to implement any one of the selection processes [found in 13 NCAC 07A .0604] as a means of meeting the requirements for selection of representatives to employee Safety and Health committees* pursuant to G.S. 95-252(d). The employer *shall retain written documentation* outlining any utilized selection process. An employer whose employees are represented by a collective bargaining representative must utilize either subsection 8, 9, or 10 for committee selection purposes. Any non-management employees who choose not to participate in the collective bargaining process are still considered to be represented by the collective bargaining representative for purposes of this Rule for committee selection purposes. *[Reference Section 07A.0604 [Selection of Safety Committees], Section 07A.0605 [Safety and Health Committee Requirements], and NCGS § 95-252(d) [Safety and Health Committees] for specific requirements].*

**07A.0605—Safety & Health Committee Requirements**—(b) Multi-Employer Worksites:

- (2) The general contractor or equivalent *shall designate a representative* to attend the Safety and Health Committee meetings of the notifying employer(s).
- (3) The notifying employer shall work with the general contractor or equivalent to *distribute information as required by G.S. 95-251(b)(9)*.

## Inspections and Tests

**07A.0603—Safety and Health Programs**—(b) The *written program* shall also include:

- (8) *A written checklist* of all potential hazards to be *inspected during the quarterly inspections* required pursuant to G.S. 95-252(c)(4)d, if applicable, including, but not limited to, checking for properly *marked* doors (including exit doors and doors not leading to an exit); properly working fire extinguishers; unlisted hazardous substances, improperly located hazardous substances, or hazardous substances for which there are no *safety data sheets*; doorways or exit pathways that are cluttered; improperly grounded equipment and exposed live wiring and parts; and unguarded machinery. Each item on the aforementioned *written checklist* shall be checked during the *quarterly inspections* and a *copy of the list shall be retained* by the employer for not less than *two years*. All conditions or items deemed to be out of compliance shall be immediately abated, unless circumstances beyond the control of the employer requires a longer period of time.
- (9) The employer *shall conduct an annual self-audit* of all required safety and health programs. *Written findings and a statement* of remedial actions taken shall be *retained for not less than two years*. Companies with less than 11 employees that are not required to have safety and health committees *shall appoint a company safety officer* to conduct the *annual self-audit*.

## Recordkeeping

**07A.0603—Safety and Health Programs**—(b) The *written program* shall also include:

- (4) The manner in which workplace accidents *will be investigated and corrective action* implemented. The employer shall keep a *comprehensive record* of accident investigations, findings, and corresponding corrective action taken.
- (5) The manner in which near-miss incidents will be investigated. Special emphasis will be placed on identifying all contributing factors to any near-miss incident. The employer shall keep a *comprehensive record* of each

such incident and the findings relating to it, and *shall keep a record* of all corresponding corrective action taken.

- (6) The *methods used to identify, analyze and control* new or existing hazards, conditions and operations, and the manner in which changes will be incorporated into the **safety program, safety committee checklist, and communicated** to all affected employees.
- (7) **Written compliance plans** as required by either the Mine Safety laws or OSHA standards, whichever is applicable to the employer. **Written compliance plans** shall include, the following OSHA standards, when applicable: Excavations, Hazard Communication, Occupational Noise Exposure, Control of Hazardous Energy Sources (Lockout/Tagout), Respiratory Protection, Process Safety Management of Highly Hazardous Chemicals, Bloodborne Pathogens, Life Safety Code, Cotton Dust, and Confined Spaces.
- (8) A **written checklist** of all potential hazards to be *inspected during the quarterly inspections* required pursuant to G.S. 95-252(c)(4)d, if applicable, including, but not limited to, checking for properly **marked** doors (including exit doors and doors not leading to an exit); properly working fire extinguishers; unlisted hazardous substances, improperly located hazardous substances, or hazardous substances for which there are no **safety data sheets**; doorways or exit pathways that are cluttered; improperly grounded equipment and exposed live wiring and parts; and unguarded machinery. Each item on the aforementioned **written checklist** shall be checked during the *quarterly inspections and a copy of the list shall be retained* by the employer for not less than *two years*. All conditions or items deemed to be out of compliance shall be immediately abated, unless circumstances beyond the control of the employer requires a longer period of time.
- (9) The employer *shall conduct an annual self-audit* of all required safety and health programs. **Written findings and a statement** of remedial actions taken shall be **retained for not less than two years**. Companies with less than 11 employees that are not required to have safety and health committees *shall appoint a company safety officer* to conduct the *annual self-audit*.

**07A.0604—Selection of Safety Committees—(a)** An employer *may elect to implement any one of the selection processes [found in 13 NCAC 07A.0604] as a means of meeting the requirements for selection of representatives to employee Safety and Health committees* pursuant to G.S. 95-252(d). The employer *shall retain written documentation* outlining any utilized selection process. An employer whose employees are represented by a collective bargaining representative must utilize either subsection 8, 9, or 10 for committee selection purposes. Any non-management employees who choose not to participate in the collective bargaining process are still considered to be represented by the collective bargaining representative for purposes of this Rule for committee selection purposes. [Reference Section 07A.0604 [Selection of Safety Committees], Section 07A.0605 [Safety and Health Committee Requirements], and N.C. Gen. Stat. § 95-252(d) [Safety and Health Committees for specific requirements]].

**07A.0607—Reports—**The **report forms** required from employers *within 60 days of notification by the Commissioner of Labor of inclusion in the program* shall include specific information. [Reference Section 07A.0607 [Reports for Specific Requirements]].

**07A.0607—Reports—(10)** A *timetable for delivery of training to employees and committee members. In no case shall the timetable for delivery of training exceed an additional 90 days beyond notification* to the Commissioner of Labor of compliance with these Rules.

## **Training and Communications**

**7A.0603—Safety and Health Programs—(b)** The **written program** shall also include:

- (2) The manner in which the **plan** will be *communicated* to all affected employees so that *they are informed of work-related hazards and controls*.
- (6) The methods used to identify, analyze and control new or existing hazards, conditions and operations, and the manner in which changes will be incorporated into the **safety program, safety committee checklist, and communicated** to all affected employees.
- (11) The methods used to *communicate requirements of the program to other employers or subcontractors and their employees who may be present at the same site*.

**07A.0606—Training and Education—(a)** All safety and health committee members *shall receive training and education* based on the type of business activity in which the employer is involved and the scope of the committee’s duties. *[Reference Section 7A.0606—Training and Education for specific training requirements.]*

**07A.0606—Training and Education—(b)** There shall also be established for employees whether or not a safety and health committee is required:

- (5) *Training to comply with all applicable OSHA employee training requirements, including, but not limited within General Industry to Means of Egress; Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms; Occupational Health and Environmental Control; Hazardous Materials; Personal Protective Equipment; General Environmental Controls; Medical and First Aid; Fire Protection; Materials Handling and Storage; Machinery and Machine Guarding; Welding, Cutting and Brazing; Special Industries; Electrical; Commercial Diving Operations; Toxic and Hazardous Substances, and Occupational Exposure to Hazardous Chemicals in Laboratories; including, but not limited within the Construction Industry to General Safety and Health Provisions; Occupational Health and Environmental Controls; Personal Protective and Life Saving Equipment; Fire Protection and Prevention; Signs, Signals, and Barricades; Tools—Hand and Power; Welding and Cutting; Electrical; Ladders and Scaffolding; Cranes, Derricks, Hoists, Elevators and Conveyors; Motor Vehicles, Mechanized Equipment, and Marine Operations; Excavations; Concrete and Masonry Construction; Underground Construction, Caissons, Cofferdams and Compressed Air; Demolitions; Blasting and Use of Explosives; Power Transmission Distribution; Stairways and Ladders; including, but not limited within Agriculture to Roll-Over Protective Structures, and Safety for Agricultural Equipment; and including, but not limited to the Process Safety Management Standard, the Confined Spaces Standard, Hazard Communication Standard, and the Bloodborne Pathogens Standard.*

**07A.0606—Training and Education—(c)** The required safety and health training *shall be provided by someone trained to recognize, evaluate and control safety and health hazards. The training may be provided on-site or off-site.*

# 13 NCAC Chapter 7—Office of Occupational Safety and Health

## Subchapter 07F—Standards

### SECTION 07F .0100—GENERAL INDUSTRY STANDARDS

**Scope/Application:** *The provisions for the Occupational Safety and Health Standards for General Industry, Title 29 of the Code of Federal Regulations Part 1910 promulgated as of April 3, 2012, and exclusive of subsequent amendments, are incorporated by reference except as modified or amended in 13 NCAC 07F .0103 through .0106.*

#### STANDARD HIGHLIGHTS

- Recordkeeping—certification
- Certification—training
- Training and Communications—certification, reference 1910.120
- Qualified Person—reference 1910.269

#### Recordkeeping

**07F .0103 Hazardous Materials—Subpart H—Hazardous Materials, 29 CFR 1910.120, Hazardous waste operations and emergency response, 1910.120(q)(6) is amended by adding a new level of training:**

“(vi) First responder operations plus level. First responders at operations plus level are individuals who respond to hydrocarbon fuel tank leaks where the leaking tanks contain a hydrocarbon fuel which is used to propel the vehicle on which the tank is located. Only those vehicles designed for highway use or those used for industrial, agricultural or construction purposes are covered. First responders at the operations plus level *shall have received at least training equal to first responder operations level and, in addition, shall receive training or have had sufficient experience to objectively demonstrate competency in the specific areas and the employer shall so certify.*” [Reference Section 07F .0103—Hazardous Materials for specific training requirements.]

#### Certification

**07F .0103—Hazardous Materials—Subpart H—Hazardous Materials, 29 CFR 1910.120, Hazardous waste operations and emergency response, 1910.120(q)(6) is amended by adding a new level of training:**

“(vi) First responder operations plus level. First responders at operations plus level are individuals who respond to hydrocarbon fuel tank leaks where the leaking tanks contain a hydrocarbon fuel which is used to propel the vehicle on which the tank is located. Only those vehicles designed for highway use or those used for industrial, agricultural or construction purposes are covered. First responders at the operations plus level *shall have received at least training equal to first responder operations level and, in addition, shall receive training or have had sufficient experience to objectively demonstrate competency in the specific areas and the employer shall so certify.*” [Reference Section 07F .0103—Hazardous Materials for specific training requirements.]

#### Training and Communications

**07F .0103 Hazardous Materials—Subpart H—Hazardous Materials, 29 CFR 1910.120, Hazardous waste operations and emergency response, 1910.120(q)(6) is amended by adding a new level of training:**

“(vi) First responder operations plus level. First responders at operations plus level are individuals who respond to hydrocarbon fuel tank leaks where the leaking tanks contain a hydrocarbon fuel which is used to propel the vehicle on which the tank is located. Only those vehicles designed for highway use or those used for industrial, agricultural or construction purposes are covered. First responders at the operations plus level *shall have received at least training equal to first responder operations level and, in addition, shall receive training or have had sufficient experience to objectively demonstrate competency in the specific areas and the employer shall so certify.*” [Reference Section 07F .0103—Hazardous Materials for specific training requirements.]

#### Qualified Person

**07F .0105—Special Industries—Subpart R—Special Industries—incorporation by reference of final rule for 29 CFR 1910.269, Electric Power Generation, Transmission, and Distribution, including Appendices A through E, published in 59 FR (January 31, 1994) pages 4437–4475, all typographical and grammatical corrections to 1910.269 as published in 59 FR (June 30, 1994) pages 33660–33664, and the amendment to 1910.269(g)(2)(i) as published in 59**

FR (August 9, 1994) page 40729, except that 29 CFR 1910.269(g)(2)(v) is amended to read:

“(v) Fall arrest equipment, work positioning equipment, or travel restricting equipment shall be used by employees working at elevated locations more than 4 feet (1.2 m) above the ground on poles, towers or similar structures if other fall protection has not been provided. A fall protection system as defined in 29 CFR 1926, *Subpart M—Fall Protection*, is required to be used by all employees when ascending, descending or changing locations on poles, towers or similar structures. However, the use of non-locking snap hooks with any fall protection system is prohibited as of July 1, 1995. *Qualified employees* may free climb wood poles if the employer can ensure (1) that the employee is able to comfortably and safely grip the pole with both hands while climbing, (2) that the pole is free from attachments or any configurations of attachments that will materially impair the ability of a *qualified employee* to safely free climb the pole, (3) that the pole is otherwise free from impediments, contaminants or conditions of any type, including but not limited to ice, high winds or chemical treatments which materially impair the ability of a *qualified employee* to safely free climb the pole, and (4) that the employee is able to climb such structures without material physical impairments including over-exertion, lack of sleep or other physical stresses.”

## SECTION 07F .0600—COMMUNICATION TOWER STANDARDS

**Scope/Application:** *The rules in this Section contain requirements for policies, procedures, and safe work practices to protect employees throughout North Carolina from the hazards of working on communication towers during construction, alteration, repair, operation, inspection, and maintenance activities. A communication tower is defined as any tower over six feet in height that is used primarily as an antenna or to host one or more antennas. Where the communication tower is affixed to another structure, such as an electrical transmission tower, church steeple, building rooftop, or water tower, the applicable part of any controlling regulation for protection of employees (e.g., 29 CFR 1910.268, 29 CFR 1910.269 and 29 CFR 1926 Subpart V for transmission towers) shall apply up to the point of access to the communication tower.*

**Exception:** *The rules in this Section shall not apply to communication towers that are mounted on motor vehicles.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency procedures, fall protection plan, training program
- Inspections and Tests—competent person, hazard assessment, visual inspections
- Recordkeeping—retention requirements
- Certification—first aid/CPR
- Training and Communications—initial and retraining, first aid/CPR
- Competent Person—inspections
- Qualified Person—inspections, approvals
- Signs, Markings and Tags—signs, markings

### Programs, Policies and Procedures

**07F .0605—Fall Protection—(c) Fall Protection Systems.** In order to comply with the requirements of *Subparagraph (a)(1)* of this Rule, the employer may permit employees to utilize the 100% fall protection systems described in *Paragraphs (d) through (g) [Fall Protection]* of this Rule. If the fall protection systems described therein are not present on the tower, the employer shall not permit employees to climb the tower at heights above six feet unless:

- (3) The employer *can demonstrate* that the requirements for a **fall protection plan** under *Paragraph (i) [Emergency and Rescue Procedures]* of this Rule have been met.

**07F .0605—Fall Protection—(h) Fall Protection Plan.** This Paragraph applies when employees are working on a structure where no adequate tie-off anchorage point(s) exist, the fall protection systems described in *Paragraph (c) [Fall Protection Systems]* of this Rule are not feasible or create a greater hazard, and the work cannot be completed utilizing an alternative means of access to the work area such as an aerial lift or elevated work platform. If an employer demonstrates the foregoing conditions are present, then in addition to the criteria in 29 CFR 1926.502(k) [*Fall Protection Systems Criteria and Practices*], the employer shall conform to specific provisions. [*Reference Section 07F .0605—Fall Protection for specific program requirements.*]

- (2) The **fall protection plan** shall be made **available** and communicated to exposed employee(s) prior to the employee(s) beginning work, and such **communication** shall be **documented**.

**07F .0605—Fall Protection—(i) Emergency and Rescue Procedures.**

- (1) The employer *shall establish procedures for rescue* of employees in the event of an emergency, which shall include whether the employer will designate its own employees to *perform the rescue procedures* or whether the employer will designate a third-party to *perform the rescue procedures*. The **procedures shall be documented** and **available** for review by the Deputy Commissioner of Labor for Occupational Safety and Health or his designee, upon request.

**07F .0606—Non-Ionizing Radiation—(b) Protection from Radiation Exposure.**

- (2) **Control Procedures.** Prior to employees performing work in areas on a communication tower where RF exposure levels exceed the occupational/controlled MPE values stated in 47 CFR 1.1310, the employer *shall enact and enforce written control procedures* that provide for the reduction, elimination, avoidance or protection from such RF levels.

**07F .0606—Non-Ionizing Radiation—(d) RF Safety Program.** When employees are exposed to RF fields in excess of the general population/uncontrolled MPE limits established in 47 CFR 1.1310 as a consequence of their employment, the employer *shall develop, implement, and maintain a written safety and health program with site specific procedures and elements* based on the electromagnetic radiation hazards present, in accordance with *13 NCAC 07F .0609(g) [RF Training]*.

**07F .0607—Hoists and Gin Poles—(a) Hoists.** Hoists used during the construction, alteration, repair, maintenance, or demolition of communication towers shall meet the following requirements:

- (3) Employers *shall maintain at the work site the operating manual developed by the manufacturer for the specific make and model hoist being used, as well as documentation for any inspection, testing, and operator training certification* required by the rules in this Section.

**07F .0609—Training—(c) Written Work Procedures.**

- (1) The employer's **written work procedures** *shall be provided to employees* as part of their training.

**07F .0609—Training—(e) Fall Protection Training.**

- (1) The employer *shall provide a training program* for each employee who might be exposed to fall hazards.

**Inspections and Tests**

**07F .0603—Employer Responsibilities—(c)** *A competent person shall visually inspect* the tower base for damage, deterioration, structural deficiencies and functionality of safety features and anchorages before employees are allowed to climb the tower at heights above six feet. Additionally, the employer shall ensure that the tower is *visually inspected* for these items, as it is ascended, to the elevation point where work is being performed.

**07F .0604—Hazard Identification and Assessment—(b)** The employer *shall perform and document the hazard assessments* required by this Rule:

- (1) *Initially and daily for each site prior to permitting employees to climb the structure;*
- (2) *When safety and health information or change in workplace conditions indicates that a new or increased hazard may be present.*

**07F .0605—Fall Protection—(b) Pre-Climb Planning and Inspection.** In addition to the criteria for pre-climb planning and inspection included in *Paragraph (g) [Ladder Safety System]* of this Rule, the employer shall ensure that the following items occur prior to employees climbing the tower at heights above six (6) feet:

- (2) All climbing facilities *shall be visually inspected daily at the tower base by a competent person* for rust, corrosion, deterioration, or other hazards. Additionally, the employer shall ensure that the climbing *facilities are visually inspected* for these items, as it is ascended, to the elevation point where work is being performed. If any such hazard is identified during this inspection, employees shall not use the climbing facility until such hazards are abated.
- (3) *A competent person shall ensure that all fall protection equipment is inspected prior to each use for wear, damage, defect or other deterioration by employees who have been trained* in accordance with *13 NCAC 07F .0609 [Training]*. Defective equipment shall be identified as defective and immediately removed from service.

**07F .0605—Fall Protection—(g) Ladder Safety Systems.** The employer shall ensure that, in addition to the applicable criteria in 29 CFR 1926, Subpart X, ladder safety systems and related support systems for fixed ladders that are utilized by employees as a means of 100% fall protection conform to the following criteria:

- (1) Prior to climbing the structure, the employer shall ensure that the employee(s) *have tested* the ladder safety system for proper operation and that all components utilized with the ladder safety system are compatible.

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(4) Inspections.**

- (A) Gin poles *shall have a documented inspection annually by a qualified person*;
- (B) *In addition to the annual inspection, the employer shall designate a competent person who shall visually inspect the gin pole and rigging prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired before use continues*;
- (C) *During each inspection, the qualified or competent person shall inspect the legs and bracing members for bends or distortion*;
- (D) *During each inspection, the qualified or competent person shall inspect the straightness tolerances for the overall assembly (including leg and bracing members)*;
- (E) *During each inspection, the qualified or competent person shall visually inspect the welds for quality, deformation, cracks, rust, or pitting or loss of cross sectional area*;
- (F) *During each inspection, the qualified or competent person shall inspect the members for excessive rust or pitting or loss of cross sectional area*;
- (G) *During each inspection, the qualified or competent person shall inspect the sling attachment points for distortion, wear, cracks, and rust*;
- (I) *During each inspection, the qualified or competent person shall inspect side plates on rooster heads for distortion or other damage*;
- (J) *During each inspection, the qualified or competent person shall inspect all attachment hardware, including rigging and parts such as cables, slings, and sling attachment points, shackles, hooks, and sockets for wear, distortion, cracks, and rust.*

**Recordkeeping**

**07F .0604—Hazard Identification and Assessment—(b)** The employer *shall perform and document the hazard assessments* required by this Rule:

- (1) *Initially and daily for each site prior to permitting employees to climb the structure*;
- (2) *When safety and health information or change in workplace conditions indicates that a new or increased hazard may be present.*

**07F .0605—Fall Protection—(i) Emergency and Rescue Procedures.**

- (3) **Third-Party to Perform Rescue Procedures.** An employer who designates a third-party rescue and emergency service to provide elevated (high angle) *rescue and emergency services* shall take the following measures:
  - (A) *Obtain verification* from the third-party rescue team or service that it is able to respond to a rescue summons in a timely manner;
  - (B) *Obtain verification* from the third-party rescue team or service that it is proficient with *rescue-related tasks* and equipment as they relate to rescuing climbers from elevated heights on communication structures.

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(4) Inspections.**

- (A) Gin poles *shall have a documented inspection annually by a qualified person.*

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(2) Gin Pole Use.**

(A) *A user's gin pole load chart shall be provided for each pole.*

**07F .0608—Recordkeeping**—In order to fulfill responsibilities under the provisions of the rules in this Section, the employer shall, upon request, provide the Deputy Commissioner of Labor for Occupational Safety and Health or his designee *access to the following records:*

- (1) **Training Records.** All *material* related to the *employer's training and education program*, pursuant to 13 NCAC 07F .0609 [Training].
- (2) **Medical Records and Non-Ionizing Radiation Exposure Records.** All *medical records* (in accordance to 29 CFR 1910.1020(d)(1)(i)) [Access to Employee Exposure and Medical Records] and *material* related to each analysis using *exposure or medical records* (in accordance with 29 CFR 1910.1020(d)(1)(iii) [Access to Employee Exposure and Medical Records]).
- (3) **Equipment Inspections and Testing Records.** All *material* related to the *modification, repair, test, calibration or maintenance service* of all equipment.

**07F .0609—Training—(c) Written Work Procedures.**

- (1) The employer's *written work procedures shall be provided to employees* as part of their training.

**07F .0609—Training—(f) Hoist Operator Training.** The employer *shall maintain documentation that the hoist operator has practical training* on the hoist he is operating. Training of hoist operators shall meet the requirements of 29 CFR 1910.179 [Overhead and Gantry Cranes] and 29 CFR 1926, Subpart N [Helicopters, Hoists, Elevators, and Conveyors].

**07F .0609—Training—(i) Training Records.**

- (1) The employer *shall certify that each employee has been trained by preparing a certification record.* [Reference Section 07F .0609—(i) Training Records for specific requirements.]
- (2) *A copy of the training lesson plan for each topic of instruction shall be maintained* by the employer.
- (3) The *certification record* shall be prepared at the completion of the training required by this Rule and *shall be maintained for the duration of the employee's employment.*
- (4) The *most current certification record shall be kept available for review* by the Deputy Commissioner of Labor for Occupational Safety and Health or his designee, upon request.
- (5) An employer may accept *training records or certificates* for previous training if the employer *verifies that all training and knowledge is current and applicable to the new employee's job duties.*

**Certification**

**07F .0605—Fall Protection—(j) First Aid/CPR Training and Supplies.** In addition to the requirements of 29 CFR 1910.151 and 29 CFR 1926.50 [Medical Services and First Aid], the employer *shall ensure that at least two employees on site are trained and hold current certifications in basic first aid and cardiopulmonary resuscitation (CPR)* issued by the American Red Cross or any other organization whose standards are equivalent to the American Red Cross; provided, however, where there are only two employees on site, then an employer may comply with the requirements of this Paragraph if *one employee is trained and holds current certifications in basic first aid and CPR and one employee has been designated* by the employer as a probationary employee and has been employed for less than six months.

**07F .0607—Hoists and Gin Poles—(a) Hoists.** Hoists used during the construction, alteration, repair, maintenance, or demolition of communication towers shall meet the following requirements:

- (3) Employers *shall maintain at the work site the operating manual developed by the manufacturer for the specific make and model hoist being used, as well as documentation for any inspection, testing, and operator training certification* required by the rules in this Section.



**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

- (2) **Gin Pole Use. (C)** Modifications or repairs of a gin pole shall be made with like or similar materials to meet or exceed the original specifications. Modifications or repairs *shall be recertified by a licensed professional engineer.*

**07F .0609—Training—(i) Training Records.**

- (1) The employer *shall certify that each employee has been trained by preparing a certification record. [Reference Section 07F .0609—(i) Training Records for specific requirements.]*

**Training and Communications**

**07F .0605—Fall Protection—(i) Emergency and Rescue Procedures.**

- (3) **Third-Party to Perform Rescue Procedures.** An employer who designates a third-party rescue and emergency service to provide elevated (high angle) rescue and emergency services shall take the following measures:

- (E) *Inform the selected rescue team or service, prior to the first day on which employee(s) perform work at heights over six feet on the tower, of the site and location of the tower(s) to be climbed; the hazard(s) identified on the site; the number of employees that will climb the tower(s); the height(s) at which employee(s) will be working; the name(s) and telephone number(s) for any employer contact(s); and, any other information that is requested by the rescue team or service.*

**07F .0605—Fall Protection—(h) Fall Protection Plan.** This Paragraph applies when employees are working on a structure where no adequate tie-off anchorage point(s) exist, the fall protection systems described in *Paragraph (c) [Fall Protection Systems]* of this Rule are not feasible or create a greater hazard, and the work cannot be completed utilizing an alternative means of access to the work area such as an aerial lift or elevated work platform. If an employer demonstrates the foregoing conditions are present, then in addition to the criteria in *29 CFR 1926.502(k) [Fall Protection Systems Criteria and Practices]*, the employer shall conform to the following provisions:

- (1) The employer shall ensure that each employee under the *fall protection plan has been trained as a qualified climber.*
- (2) The *fall protection plan shall be made available and communicated to exposed employee(s) prior to the employee(s) beginning work, and such communication shall be documented.*

**07F .0605—Fall Protection—(i) Emergency and Rescue Procedures.**

- (2) **Employer to Perform Rescue Procedures.** An employer whose employees have been designated to provide elevated (high angle) rescue and emergency services shall take the following measures:

- (A) Ensure at least *two trained and designated rescue employees* are on site when employees are working at heights over six feet on the tower, provided however, where there are only two employees on site, then an employer may comply with the requirements of this Part if one employee *is a trained and designated rescue employee and one employee has been employed for less than nine months and has received documented orientation* from the employer outlining steps to take in an emergency.
- (C) *Train designated rescue employees so they are proficient in the use and maintenance of PPE and high angle rescue equipment needed to conduct elevated rescues.*
- (D) *Train designated rescue employees to perform assigned rescue duties to ensure that they become competent to perform such duties, including conducting simulated rescue operations at least once every 12 months.*

**07F .0605—Fall Protection—(j) First Aid/CPR Training and Supplies.** In addition to the requirements of *29 CFR 1910.151 and 29 CFR 1926.50 [Medical Services and First Aid]*, the employer shall ensure that at least two employees on site are trained and hold current *certifications in basic first aid and cardiopulmonary resuscitation (CPR)* issued by the American Red Cross or any other organization whose standards are equivalent to the American Red Cross; provided, however, where there are only two employees on site, then an employer may comply with the requirements of this Paragraph if one employee *is trained and holds current certifications in basic first aid and CPR* and one employee *has been designated by the employer as a probationary employee and has been employed for less than six months.*

**07F .0606—Non-Ionizing Radiation—(b) Protection from Radiation Exposure.**

- (1) Employees shall not enter areas where RF exposure levels are above the general population/uncontrolled MPE's described in 47 CFR 1.1310 *unless they understand* the potential for exposure and can exercise control over the exposure.

**07F .0609—Training—(c) Written Work Procedures.**

- (1) The employer's *written work procedures shall be provided to employees* as part of their training.

**07F .0609—Training—(d) Hazardous Materials Training.** Employees required to handle or use flammable liquids, gases, or toxic materials *shall be instructed* in the safe handling and use of these materials and made aware of the specific requirements contained in 29 CFR 1926.55—*Gases, Vapors, Fumes, Dusts and Mists* and 29 CFR 1910.1200—*Hazard Communication*, as applicable.

**07F .0609—Training—(e) Fall Protection Training.**

- (1) The employer *shall provide a training program* for each employee who might be exposed to fall hazards.
- (2) The *program* shall enable each employee to recognize the hazards of falling and *shall train* each employee in the *procedures to be followed* in order to minimize these hazards.
- (3) The employer *shall ensure that each employee has been trained by or under the supervision of a qualified person* in specific areas. [Reference Section 07F .0609—*Fall Protection Training for specific requirements.*]

**07F .0609—Training—(f) Hoist Operator Training.** The employer *shall maintain documentation* that the hoist operator *has practical training* on the hoist he is operating. Training of hoist operators shall meet the requirements of 29 CFR 1910.179 [Overhead and Gantry Cranes] and 29 CFR 1926, Subpart N [Helicopters, Hoists, Elevators, and Conveyors].

**07F .0609—Training—(g) RF Training.**

- (1) All employees exposed in excess of the general population/uncontrolled MPE limits stated in 47 CFR 1.1310 *shall receive RF hazard awareness training by or under the supervision of a qualified person in specific areas.* [Reference Section 07F .0609—*RF Training for specific training requirements.*]
- (2) Employers shall ensure that each affected employee who works in an electromagnetic energy environment with potential RF exposure in excess of the general population/uncontrolled MPE limits stated in 47 CFR 1.1310 *has access to and understands the specific site information* related to the RF energy and RF fields present at each individual site.

**07F .0609—Training—(h) Retraining.** Unless stated otherwise in this Rule, when the *employer or qualified person* has reason to believe that any employee who has already been trained does not have the understanding and skill required to safely perform the work assigned, the employer *shall retrain each such employee.* [Reference Section 07F .0609—(h) *Retraining for specific requirements.*]

**Competent Person**

**07F .0603—Employer Responsibilities—(b)** The employer *shall ensure that at least two employees, including at least one competent person, are on site at all times* when employees are exposed to fall hazards above six feet, provided however, an employer shall not be required to have more than two employees on site at any given time.

**07F .0603—Employer Responsibilities—(c)** A *competent person shall visually inspect* the tower base for damage, deterioration, structural deficiencies and functionality of safety features and anchorages before employees are allowed to climb the tower at heights above six feet. Additionally, the employer shall ensure that the tower is *visually inspected* for these items, as it is ascended, to the elevation point where work is being performed.

**07F .0604—Hazard Identification and Assessment—(c)** The *hazard assessments* required by this Rule shall:

- (1) *Be performed by a competent person.*

**07F .0605—Fall Protection—(b) Pre-Climb Planning and Inspection.** *In addition to the criteria for pre-climb planning and inspection included in Paragraph (g) [Ladder Safety System] of this Rule, the employer shall ensure that the following items occur prior to employees climbing the tower at heights above six (6) feet:*

- (1) All climbing jobs *shall be planned by a competent person.*
- (3) A competent person shall ensure that all fall protection equipment is inspected prior to each use for wear, damage, defect or other deterioration by employees who have been trained in accordance with 13 NCAC 07F .0609 [Training]. Defective equipment shall be identified as defective and immediately removed from service.

**07F .0605—Fall Protection—(i) Emergency and Rescue Procedures.**

- (2) **Employer to Perform Rescue Procedures.** An employer whose employees have been designated to provide elevated (high angle) *rescue and emergency services shall take the following measures:*
  - (D) Train designated rescue employees to perform assigned rescue duties to ensure that *they become competent to perform such duties*, including conducting simulated rescue operations at least once every 12 months.

**07F .0606—Non-Ionizing Radiation—(c) Use of Controls.** Prior to commencing work on a communication tower, a *competent person shall assess* potential RF hazards of areas which may be accessed by employees in the course of their work, and *post temporary signage* to indicate areas where the RF hazard exceeds the general population/uncontrolled MPE limits for exposure set forth in 47 CFR 1.1310. *Temporary signage shall remain in place* while work is performed and the hazard exists.

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(4) Inspections.**

- (B) *In addition to the annual inspection, the employer shall designate a competent person who shall visually inspect the gin pole and rigging prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired before use continues.*
- (C) *During each inspection, the qualified or competent person shall inspect the legs and bracing members for bends or distortion.*
- (D) *During each inspection, the qualified or competent person shall inspect the straightness tolerances for the overall assembly (including leg and bracing members).*
- (E) *During each inspection, the qualified or competent person shall visually inspect the welds for quality, deformation, cracks, rust, or pitting or loss of cross sectional area.*
- (F) *During each inspection, the qualified or competent person shall inspect the members for excessive rust or pitting or loss of cross sectional area.*
- (G) *During each inspection, the qualified or competent person shall inspect the sling attachment points for distortion, wear, cracks, and rust.*
- (H) *During each inspection, the qualified or competent person shall ensure that proper bolts are utilized and all associated hardware is in good condition.*
- (I) *During each inspection, the qualified or competent person shall inspect side plates on rooster heads for distortion or other damage.*
- (J) *During each inspection, the qualified or competent person shall inspect all attachment hardware, including rigging and parts such as cables, slings, and sling attachment points, shackles, hooks, and sockets for wear, distortion, cracks, and rust.*
- (K) *During each inspection, the qualified or competent person shall ensure that all problems identified during the inspection are corrected before placing the gin pole into service.*

**Qualified Person**

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(4) Inspections.**

- (A) Gin poles *shall have a documented inspection annually by a qualified person.*

**07F .0609—Training—(a)** In order for employees to work at heights above six feet on a communication tower, *they must be approved for such work by a qualified person.*

**07F .0609—Training—(b) Competency of the Trainer.** *Training of employees in communication tower work shall be performed by or under the supervision of a qualified person.*

**07F .0609—Training—(c) Fall Protection Training.**

- (3) The employer *shall ensure that each employee has been trained by or under the supervision of a qualified person in specific areas.*

**07F .0609—Training—(g) RF Training.**

- (1) All employees exposed in excess of the general population/uncontrolled MPE limits stated in 47 CFR 1.1310 *shall receive RF hazard awareness training by or under the supervision of a qualified person in specific areas. [Reference Section 07F .0609—RF Training for specific training requirements.]*

### **Signs, Markings and Tags**

**07F .0606—Non-Ionizing Radiation—(c) Use of Controls.** Prior to commencing work on a communication tower, a *competent person shall assess potential RF hazards of areas which may be accessed by employees in the course of their work, and post temporary signage to indicate areas where the RF hazard exceeds the general population/uncontrolled MPE limits for exposure set forth in 47 CFR 1.1310. Temporary signage shall remain in place while work is performed and the hazard exists.*

**07F .0607—Hoists and Gin Poles—(b) Gin Poles.**

**(1) Rigging Equipment.**

- (C) Only alloy chains *marked by the manufacturer* with an 8, T, or an A, rated for lifting, shall be used;
- (D) Only quenched and tempered hooks and shackles shall be used. The *manufacturer's load rating shall be stamped* on the product.

## SECTION 3

### 29 CFR 1904 Subparts B–F—Recordkeeping

**Scope/Application:** *The purpose of this rule (Part 1904—Recordkeeping) is to require employers to record and report work-related fatalities, injuries and illnesses. All employers covered by the Occupational Safety and Health Act (OSH Act) are covered by these Part 1904 regulations. However, most employers do not have to keep OSHA injury and illness records unless OSHA or the Bureau of Labor Statistics (BLS) informs them in writing that they must keep records. For example, employers with 10 or fewer employees and business establishments in certain industry classifications are partially exempt from keeping OSHA injury and illness records.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—review
- Recordkeeping—reporting fatalities, hospitalizations, retention
- Certification—certify annual summary
- Training and Communications—inform employees
- Signs, Markings and Tags—posting log

#### Programs, Policies, and Procedures

**1904.32(a)**—*Basic requirement.* At the end of each calendar year, you must:

**1904.32(a)(1)**—*Review that year's OSHA 300 Log to verify that it contains accurate entries for all recordable injuries and illnesses that occurred during the year, and make any additions or corrections necessary to ensure its accuracy;*

**1904.32(a)(3)**—*After you have verified the accuracy of the log, create an annual summary of injuries and illnesses recorded on the Log.*

**1904.32(a)(4)**—*Certify the summary, and*

**1904.32(a)(5)**—*Post the summary.*

**1904.35(b)(1)(i)**—You must establish a *reasonable procedure* for employees to report work-related injuries and illnesses promptly and accurately. A *procedure is not reasonable* if it would deter or discourage a reasonable employee from accurately reporting a workplace injury or illness.

**1904.35(b)(1)(ii)**—You must *inform each employee of your procedure* for reporting work-related injuries and illnesses.

**1904.41(a)(1)**—*Annual electronic submission of part 1904 records by establishments with 250 or more employees.* If your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to **keep records**, then you *must electronically submit information* from the three **recordkeeping forms** that you keep under this part (**OSHA Form 300A Summary of Work-Related Injuries and Illnesses, OSHA Form 300 Log of Work-Related Injuries and Illnesses, and OSHA Form 301 Injury and Illness Incident Report**) to OSHA or OSHA's designee. *You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the forms.*

**1904.41(a)(2)**—*Annual electronic submission of OSHA Form 300A Summary of Work-Related Injuries and Illnesses by establishments with 20 or more employees but fewer than 250 employees in designated industries.* If your establishment had 20 or more employees but fewer than 250 employees at any time during the previous calendar year, and your establishment is classified in an industry listed in appendix A to subpart E of this part, then you must *electronically submit information from OSHA Form 300A Summary of Work-Related Injuries and Illnesses to OSHA or OSHA's designee. You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the form.*

#### Recordkeeping

**1904.1(a)(1)**—**Partial Exemption for Employers With 10 or Fewer Employees**—If your company had ten (10) or fewer employees at all times during the last calendar year, you do not need to keep OSHA injury and illness **records** unless OSHA or the BLS *informs you in writing that you must keep records under § 1904.41 [Annual OSHA Injury and Illness Survey of Ten or More Employers] or § 1904.42 [Requests From the Bureau of Labor Statistics for Data].* However, as

required by § 1904.39 [Reporting Fatalities and Multiple Hospitalization Incidents to OSHA], all employers covered by the OSH Act *must report to OSHA any workplace incident that results in a fatality or the hospitalization of three or more employees.*

**1904.1(a)(2)**—Partial Exemption For Employers With 10 or Fewer Employees. If your company had more than ten (10) employees at any time during the last calendar year, *you must keep OSHA injury and illness records* unless your establishment is classified as a partially exempt industry under § 1904.2 [Partial Exemption for Establishments in Certain Industries].

**1904.2(a)(1)**—Partial exemption for establishments in certain industries. Basic requirement. If your business establishment is classified in a specific industry group listed in appendix A to this subpart, you do not need to keep *OSHA injury and illness records* unless the government asks you to keep the *records* under 1904.41 or 1904.42. However, all employers *must report to OSHA any workplace incident that results in an employee’s fatality, inpatient hospitalization, amputation, or loss of an eye (Reference 1904.39).*

**1904.2(a)(2)**—Partial Exemption for Establishments in Certain Industries. If one or more of your company’s establishments are classified in a non-exempt industry, *you must keep OSHA injury and illness records* for all of such establishments unless your company is partially exempted because of size under § 1904.1 [Partial Exemption for Employers With 10 or Fewer Employees].

**1904.4(a)**—Recording Criteria—Basic requirement. Each employer required by this Part to keep *records* of fatalities, injuries, and illnesses *must record each fatality, injury and illness.* [Reference 1904.4(a) for specific requirements.]

**1904.7(b)(1)**—General *Recording* Criteria—How do I decide if a case meets one or more of the general recording criteria? A work-related injury or illness *must be recorded* if it *results* in one or more criteria. [Reference 1904.7(b)(1) for more specific requirements.]

**1904.8(a)**—*Recording* Criteria for Needlestick and Sharps Injuries—Basic requirement. *You must record all work-related needlestick injuries and cuts from sharp objects that are contaminated with another person’s blood or other potentially infectious material (as defined by 29 CFR 1910.1030 [Bloodborne Pathogens]). You must enter the case on the OSHA 300 Log as an injury.* To protect the employee’s privacy, you may not enter the employee’s name on the OSHA 300 Log (Refer to the requirements for privacy cases in paragraphs 1904.29(b)(6)—Forms through 1904.29(b)(9)).

**1904.10(a)**—*Recording Criteria for Cases* Involving Occupational Hearing Loss. Basic requirement. If an employee’s hearing test (audiogram) reveals that the employee has experienced a work-related Standard Threshold Shift (STS) in hearing in one or both ears, and the employee’s total hearing level is 25 decibels (dB) or more above audiometric zero (averaged at 2000, 3000, and 4000 Hz) in the same ear(s) as the STS, *you must record the case on the OSHA 300 Log.*

**1904.11(a)**—*Recording Criteria for Work-Related Tuberculosis Cases.* Basic requirement. If any of your employees has been occupationally exposed to anyone with a known *case* of active tuberculosis (TB), and that employee subsequently develops a tuberculosis infection, as evidenced by a positive skin test or diagnosis by a *physician or other licensed health care professional*, *you must record the case on the OSHA 300 Log* by checking the “respiratory condition” column.

**1904.30(a)**—Multiple Business Establishments. Basic requirement. *You must keep a separate OSHA 300 Log for each establishment that is expected to be in operation for one year or longer.*

**1904.31(a)**—Covered Employees. Basic requirement. *You must record on the OSHA 300 Log the recordable injuries and illnesses* of all employees on your payroll, whether they are labor, executive, hourly, salary, part-time, seasonal, or migrant workers. *You also must record the recordable injuries and illnesses* that occur to employees who are not on your payroll if you supervise these employees on a day-to-day basis. If your business is organized as a sole proprietorship or partnership, the owner or partners are not considered employees for *recordkeeping* purposes.

**1904.33(a)**—Retention and Updating—Basic requirement. *You must save the OSHA 300 Log, the privacy case list (if one exists), the annual summary, and the OSHA 301 Incident Report forms for five (5) years* following the end of the calendar year that these *records* cover.

**1904.34**—Change in Business Ownership. If your business changes ownership, *you are responsible for recording and reporting work-related injuries and illnesses* only for that period of the year during which you owned the establishment. You must transfer the *Part 1904 records* to the new owner. The new owner *must save all records* of the establishment kept by the prior owner, as required by § 1904.33 [Retention and Updating] of this Part, but need not update or correct the *records* of the prior owner.

**1904.41(a)(1)**—*Annual electronic submission of part 1904 records by establishments with 250 or more employees.* If your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to keep **records**, then you must *electronically submit information from the three recordkeeping forms that you keep under this part (OSHA Form 300A Summary of Work-Related Injuries and Illnesses, OSHA Form 300 Log of Work-Related Injuries and Illnesses, and OSHA Form 301 Injury and Illness Incident Report)* to OSHA or OSHA's designee. *You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the forms.*

**1904.41(a)(2)**—*Annual electronic submission of OSHA Form 300A Summary of Work-Related Injuries and Illnesses by establishments with 20 or more employees but fewer than 250 employees in designated industries.* If your establishment had 20 or more employees but fewer than 250 employees at any time during the previous calendar year, and your establishment is classified in an industry listed in **appendix A** to subpart E of this part, then you must *electronically submit information from OSHA Form 300A Summary of Work-Related Injuries and Illnesses* to OSHA or OSHA's designee. *You must submit the information once a year, no later than the date listed in paragraph (c) of this section of the year after the calendar year covered by the form.*

## **Certification**

**1904.32(a)**—*Basic requirement.* At the end of each calendar year, you must:

**1904.32(a)(4)**—*Certify the summary.*

**1904.32(b)(1)**—*Annual Summary*—How extensively do I have to review the *OSHA 300 Log* entries at the end of the year? *You must review the entries as extensively as necessary to verify that all recordable injuries and illnesses that occurred during the year are entered and the that log and its entries are accurate.*

**1904.32(b)(3)**—*Annual Summary*—How do I *certify* the *annual summary*? A company executive *must certify* that he or she has examined the *OSHA 300 Log* and that he or she reasonably believes, based on his or her knowledge of the process by which the information was *recorded*, that the *annual Summary* is correct and complete.

## **Training and Communications**

**1904.2(a)(1)**—Partial exemption for establishments in certain industries. Basic requirement. If your business establishment is classified in a specific industry group listed in appendix A to this subpart, you do not need to keep *OSHA injury and illness records* unless the government asks you to keep the **records** under 1904.41—*Electronic Submission of Injury and Illness Records to OSHA* or 1904.42—*Requests From the Bureau of Labor Statistics for Data*. However, all employers *must report* to OSHA any workplace incident that **results** in an employee's fatality, inpatient hospitalization, amputation, or loss of an eye (*Reference 1904.39*).

**1904.35(a)(1)**—You must *inform each employee of how he or she is to report* a work-related injury or illness to you.

**1904.35(a)(2)**—You must *provide employees with the information* described in *paragraph (b)(1)(iii)* of this section.

**1904.35(b)(1)(ii)**—You must *inform each employee of your procedure* for reporting work-related injuries and illnesses.

**1904.39(a)(1)**—*Reporting fatalities, hospitalizations, amputations, and losses of an eye* as a result of work-related incidents to OSHA. Basic requirement. *Within eight (8) hours after the death* of any employee as a result of a work-related incident, *you must report* the fatality to the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

**1904.39(a)(2)**—*Reporting fatalities, hospitalizations, amputations, and losses of an eye* as a result of work-related incidents to OSHA. Basic requirement. *Within twenty-four (24) hours after the in-patient hospitalization of one or more employees or an employee's amputation or an employee's loss of an eye, as a result of a work-related incident, you must report the in-patient hospitalization, amputation, or loss of an eye to OSHA.*

**1904.39(a)(3)**—*Reporting fatalities, hospitalizations, amputations, and losses of an eye as a result of work-related incidents* to OSHA. Basic requirement. *You must report the fatality, inpatient hospitalization, amputation, or loss of an eye* using one of the following methods. [*Reference 1904.39(a)(3) for specific methods.*]

**1904.39(b)(5)**—*Reporting Fatalities and Multiple Hospitalization Incidents to OSHA.* *Do I have to report a fatality caused by a heart attack at work? Yes, your local OSHA Area Office director will decide whether to investigate the incident, depending on the circumstances of the heart attack.*

**1904.39(b)(7)**—*What if I don't learn about an incident right away?* If you do not learn of a reportable incident at the time it occurs and the incident would otherwise be reportable under *paragraphs (a) [Basic Requirement] and (b) [Implementation]* of this section, *you must make the report within eight (8) hours of the time the incident is reported to you or to any of your agent(s) or employee(s).*

**1904.40(a)**—Basic requirement. When an authorized government representative *requests the records* you keep under Part 1904, *you must provide accurate records or copies* thereof, *within four (4) business hours* of the request.

**1904.42(a)**—Requests From the **Bureau of Labor Statistics for Data**. Basic requirement. If you receive a **Survey of Occupational Injuries and Illnesses Form** from the **Bureau of Labor Statistics (BLS)**, or a BLS designee, *you must promptly complete the form and return it* following the instructions contained on the **survey form**.

### Signs, Markings and Tags

**1904.32(a)**—Basic requirement. *At the end of each calendar year*, you must:

**1904.32(a)(5)**—*Post the summary.*

**1904.32(b)(5)**—**Annual Summary**—How do I *post* the **annual summary**? *You must post a copy of the annual summary in each establishment in a conspicuous place* or places where notices to employees are customarily **posted**. You must ensure that the **posted annual summary** is not altered, defaced or covered by other **material**.

**1904.32(b)(6)**—**Annual Summary**—When do I have to *post* the **annual summary**? *You must post the summary no later than February 1 of the year following the year covered by the records and keep the posting in place until April 30.*



## SECTION 4

### 29 CFR 1910 Subpart D—Walking - Working Surfaces

#### 1910.22—GENERAL REQUIREMENTS

*Scope/Application:* This section provides general requirements for walking and working surfaces including housekeeping, floor loading, and access and egress.

##### STANDARD HIGHLIGHTS

- Inspections and Tests—regular inspections
- Qualified Person—supervises repairs

##### Inspections and Tests

**1910.22(d)**—*Inspection, maintenance, and repair.* The employer must ensure:

**1910.22(d)(1)**—Walking-working surfaces *are inspected, regularly* and as necessary, and maintained in a safe condition.

##### Qualified Person

**1910.22(d)(3)**—When any correction or repair involves the structural integrity of the walking-working surface, a *qualified person performs or supervises* the correction or repair.

#### 1910.23—LADDERS

*Scope/Application:* This section provides general requirements for ladders including portable and fixed ladders, mobile ladder stands and platforms.

##### STANDARD HIGHLIGHTS

- Inspections and Tests—Initially each shift, frequently
- Signs, Markings and Tags—tags

##### Inspections and Tests

**1910.23(b)(9)**—Ladders *are inspected before initial use in each work shift, and more frequently* as necessary, to identify any visible defects that could cause employee injury.

##### Signs, Markings and Tags

**1910.23(b)(10)**—Any ladder with structural or other defects *is immediately tagged* "Dangerous: Do Not Use" or with similar language in accordance with § 1910.145—*Specifications for Accident Prevention Signs and Tags* and removed from service until repaired in accordance with § 1910.22(d)—*Inspection, Maintenance, and Repair, or replaced.*

#### 1910.24—STEP BOLTS AND MANHOLE STEPS

*Scope/Application:* This section provides requirements for step bolts and manhole steps.

##### STANDARD HIGHLIGHTS

##### Inspections and Tests

- Inspections and Tests—Initially each shift

**1910.24(a)(8)**—Each step bolt *is inspected at the start of the workshift* and maintained in accordance with 1910.22—*General requirements.*

**1910.24(b)(3)**—The employer must ensure that each manhole step *is inspected at the start of the work shift* and maintained in accordance with 1910.22—*General Requirements.*

#### 1910.27—SCAFFOLDS AND ROPE DESCENT SYSTEMS

*Scope/Application:* This section provides requirements for Scaffolds used in general industry and rope descent systems. It states that the requirements found in 1926, Subpart L—Scaffolds as being applicable to general industry.

## STANDARD HIGHLIGHTS

### Inspections and Tests

- Inspections and Tests—annually
- Recordkeeping—certification, instructions
- Certifications—anchorage certification
- Training and Communications—initially
- Qualified Person—inspections
- Other—References 1926, Subpart L

### Inspections and Tests

**1910.27(b)(1)(i)**—Before any rope descent system is used, the *building owner must inform the employer, in writing* that the building owner has identified, *tested, certified, and maintained* each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an *annual inspection by a qualified person and certification of each anchorage by a qualified person*, as necessary, and at least every 10 years.

**1910.27(b)(2)(iv)**—The rope descent system *is inspected at the start of each workshift* that it is to be used. The employer must ensure damaged or defective equipment is *removed from service* immediately and replaced.

### Recordkeeping

**1910.27(b)(1)(i)**—Before any rope descent system is used, the *building owner must inform the employer, in writing* that the building owner has identified, *tested, certified, and maintained* each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an *annual inspection by a qualified person and certification of each anchorage by a qualified person*, as necessary, and at least every 10 years.

**1910.27(b)(1)(ii)**—The employer must ensure that no employee uses any anchorage before the employer *has obtained written information from the building owner* that each anchorage meets the requirements of *paragraph (b)(1)(i)* of this section. The employer must *keep the information for the duration* of the job.

**1910.27(b)(2)(ii)**—The rope descent system *is used in accordance with instructions, warnings, and design* limitations set by the manufacturer or *under the direction of a qualified person*.

### Certifications

**1910.27(b)(1)(i)**—Before any rope descent system is used, the *building owner must inform the employer, in writing* that the building owner has identified, *tested, certified, and maintained* each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an *annual inspection by a qualified person and certification of each anchorage by a qualified person*, as necessary, and at least every 10 years.

### Training and Communications

**1910.27(b)(2)(iii)**—Each employee who uses the rope descent system *is trained in accordance with 1910.30—Training Requirements*.

### Qualified Person

**1910.27(b)(1)(i)**—Before any rope descent system is used, the *building owner must inform the employer, in writing* that the building owner has identified, *tested, certified, and maintained* each anchorage so it is capable of supporting at least 5,000 pounds (268 kg), in any direction, for each employee attached. The information must be based on an *annual inspection by a qualified person and certification of each anchorage by a qualified person*, as necessary, and at least every 10 years.

**1910.27(b)(2)(ii)**—The rope descent system *is used in accordance with instructions, warnings, and design* limitations set by the manufacturer or *under the direction of a qualified person*.

### Other

**1910.27(a)**—Scaffolds. *Scaffolds used in general industry must meet the requirements in 29 CFR part 1926, subpart L (Scaffolds)*.

## 1910.28—DUTY TO HAVE FALL PROTECTION AND FALLING OBJECT PROTECTION

**Scope/Application:** *This section requires employers to provide protection for each employee exposed to fall and falling object hazards. Unless stated otherwise, the employer must ensure that all fall protection and falling object protection required by this section meet the criteria in 1910.29—Fall Protection Systems and Falling Object Protection – Criteria and Practices, except that personal fall protection systems required by this section meet the criteria of 1910.140—Personal Fall Protection Systems.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—fall protection plan
- Inspections and Tests—inspection exemptions
- Recordkeeping—fall protection plan
- Training and Communications—initially
- Qualified Person—authorized employee
- Signs, Markings and Tags—markings, signs
- Other—1926.502(k), 1926.503(a) and (c) requirements

### Programs, Policies and Procedures

**1910.28(b)(1)(ii)**—When the employer can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems on residential roofs, the employer *must develop and implement a fall protection plan* that meets the requirements of 29 CFR 1926.502(k)—*Fall Protection Plan and training that meets the requirements of 29CFR 1926.503(a)—Training Program and (c)—Retraining.*

### Inspections and Tests

**1910.28(a)(2)**—This section does not apply:

**1910.28(a)(2)(ii)**—When employers *are inspecting, investigating, or assessing workplace conditions or work to be performed prior to the start of work or after all work has been completed.* This exemption does not apply when fall protection systems or equipment meeting the requirements of § 1910.29—*Fall Protection Systems and Falling Object Protection have been installed and are available for workers to use for pre-work and post-work inspections, investigations, or assessments.*

### Recordkeeping

**1910.28(b)(1)(ii)**—When the employer can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems on residential roofs, the employer *must develop and implement a fall protection plan* that meets the requirements of 29 CFR 1926.502(k)—*Fall Protection Plan and training that meets the requirements of 29CFR 1926.503(a)—Training Program and (c)—Retraining.*

### Training and Communications

**1910.28(b)(1)(iii)**—When the employer *can demonstrate that the use of fall protection systems is not feasible* on the working side of a platform used at a loading rack, loading dock, or teeming platform, the work may be done without a fall protection system, provided:

**1910.28(b)(1)(iii)(C)**—The *authorized employees are trained* in accordance with § 1910.30—*Training Requirements.*

**1910.28(b)(4)(ii)**—A guardrail system or handrails *are not required* when:

**1910.28(b)(4)(ii)(C)**—Those employees *have been trained* in accordance with § 1910.30—*Training Requirements.*

**1910.28(b)(8)**—Repair pits, service pits, and assembly pits less than 10 feet in depth. The use of a fall protection system *is not required for a repair pit, service pit, or assembly pit* that is less than 10 feet (3 m) deep, provided the employer:

**1910.28(b)(8)(i)**—Limits access within 6 feet (1.8 m) of the edge of the pit to *authorized employees trained* in accordance with § 1910.30—*Training Requirements.*

**1910.28(b)(10)(ii)**—When an employee engaged in outdoor advertising climbs a fixed ladder *before November 19, 2018 that is not equipped* with a cage, well, personal fall arrest system, or a ladder safety system the employer must ensure the employee:

**1910.28(b)(10)(ii)(A)**—*Receives training and demonstrates the physical capability* to perform the necessary climbs in accordance with § 1910.29(h)—*Outdoor Advertising.*

**1910.28(b)(14)(ii)**—When the employer *can demonstrate the use of a guardrail or travel restraint system is not feasible*, the work may be done without those systems provided:

**1910.28(b)(14)(ii)(C)**—The *authorized employees are trained* in accordance with § 1910.30—*Training Requirements*.

### Qualified Person

**1910.28(b)(1)(iii)**—When the employer *can demonstrate that the use of fall protection systems is not feasible* on the working side of a platform used at a loading rack, loading dock, or teeming platform, the work may be done without a fall protection system, provided:

**1910.28(b)(1)(iii)(B)**—Access to the platform *is limited to authorized employees*; and,

**1910.28(b)(1)(iii)(C)**—The *authorized employees are trained* in accordance with § 1910.30—*Training Requirements*.

**1910.28(b)(8)**—Repair pits, service pits, and assembly pits less than 10 feet in depth. The use of a fall protection system *is not required for a repair pit, service pit, or assembly pit* that is less than 10 feet (3 m) deep, provided the employer:

**1910.28(b)(8)(i)**—Limits access within 6 feet (1.8 m) of the edge of the pit to *authorized employees trained* in accordance with § 1910.30—*Training Requirements*.

**1910.28(b)(14)(ii)**—When the employer can demonstrate the use of a guardrail or travel restraint system *is not feasible*, the work may be done without those systems provided:

**1910.28(b)(14)(ii)(C)**—The *authorized employees are trained* in accordance with § 1910.30—*Training Requirements*.

### Signs, Markings and Tags

**1910.28(b)(8)**—Repair pits, service pits, and assembly pits less than 10 feet in depth. The *use of a fall protection system is not required for a repair pit, service pit, or assembly pit* that is less than 10 feet (3 m) deep, provided the employer:

**1910.28(b)(8)(ii)**—*Applies floor markings at least 6 feet (1.8 m) from the edge of the pit in colors that contrast with the surrounding area; or places a warning line at least 6 feet (1.8 m) from the edge of the pit as well as stanchions that are capable of resisting, without tipping over, a force of at least 16 pounds (71 N) applied horizontally against the stanchion at a height of 30 inches (76 cm); or places a combination of floor markings and warning lines at least 6 feet (1.8 m) from the edge of the pit. When two or more pits in a common area are not more than 15 feet (4.5m) apart, the employer may comply by placing contrasting floor markings at least 6 feet (1.8 m) from the pit edge around the entire area of the pits; and*

**1910.28(b)(8)(iii)**—*Posts readily visible caution signs* that meet the requirements of § 1910.145—*Specifications for Accident Prevention Signs and Tags* and state "Caution-Open Pit."

### Other

**1910.28(b)(1)(ii)**—When the employer *can demonstrate that it is not feasible or creates a greater hazard to use guardrail, safety net, or personal fall protection systems* on residential roofs, the employer *must develop and implement a full protection plan* that meets the requirements of 29 CFR 1926.502(k)—*Fall Protection Plan and training* that meets the requirements of 29 CFR 1926.503(a)—*Training Program and (c)—Retraining*.

## 1910.29—FALL PROTECTION SYSTEMS AND FALLING OBJECT PROTECTION CRITERIA AND PRACTICES

**Scope/Application:** *This section requires employers to provide protection for each employee exposed to fall and falling object hazards.*

### STANDARD HIGHLIGHTS

- Policies and Procedures—training or apprenticeship program
- Inspections and Tests—toprail and midrail inspections
- Recordkeeping—training or apprenticeship program
- Training and Communications—initially
- Other—Subpart I, Personal Protective Equipment, 1910.140—Personal Fall Protection Systems

## Programs, Policies and Procedures

**1910.29(h)**—Outdoor advertising. This *paragraph (h)* applies only to employers *engaged in outdoor advertising operations* (see § 1910.28(b)(10)). Employers must ensure that each employee who climbs a fixed ladder without fall protection:

**1910.29(h)(2)**—*Has successfully completed a **training or apprenticeship program** that includes hands-on training on the safe climbing of ladders and is retrained as necessary to maintain the necessary skills.*

## Inspections and Tests

**1910.29(b)(15)**—Manila or synthetic rope used for top rails or midrails *are inspected as necessary to ensure that the rope continues to meet the strength requirements in paragraphs (b)(3) and (5) of this section.*

## Recordkeeping

**1910.29(h)**—Outdoor advertising. This *paragraph (h)* applies only to employers *engaged in outdoor advertising operations* (see § 1910.28(b)(10)). Employers must ensure that each employee who climbs a fixed ladder without fall protection:

**1910.29(h)(2)**—*Has successfully completed a **training or apprenticeship program** that includes hands-on training on the safe climbing of ladders and is retrained as necessary to maintain the necessary skills.*

## Training and Communications

**1910.29(h)**—Outdoor advertising. This *paragraph (h)* applies only to employers *engaged in outdoor advertising operations* (see § 1910.28(b)(10)). Employers must ensure that each employee who climbs a fixed ladder without fall protection:

**1910.29(h)(2)**—*Has successfully completed a **training or apprenticeship program** that includes hands-on training on the safe climbing of ladders and is retrained as necessary to maintain the necessary skills;*

**1910.29(h)(3)**—*Has the skill to climb ladders safely, as demonstrated through formal classroom training or on-the-job training, and performance observation.*

## Other

**1910.29(a)(1)**—Ensure each fall protection system and falling object protection, other than personal fall protection systems, that this part requires meets the requirements in this section. The employer *must ensure each personal fall protection system meets the requirements in subpart I—Personal Protective Equipment of this part.*

**1910.29(j)**—Personal fall protection systems. Body belts, harnesses, and other components used in personal fall arrest systems, work positioning systems, and travel restraint systems *must meet the requirements of § 1910.140—Personal Fall Protection Systems.*

## 1910.30—TRAINING REQUIREMENTS

**Scope/Application:** *This section establishes training criteria for all personal fall protection systems.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—procedures, tie-off techniques
- Inspections and Tests—training
- Training and Communications—initially, retraining
- Qualified Person—training

## Programs, Policies and Procedures

**1910.30(a)(3)**—The employer *must train each employee* in at least the following topics:

**1910.30(a)(3)(ii)**—*The procedures to be followed to minimize those hazards;*

**1910.30(a)(3)(iii)**—*The correct procedures for installing, inspecting, operating, maintaining, and disassembling the personal fall protection systems that the employee uses; and*

**1910.30(a)(3)(iv)**—*The correct use of personal fall protection systems and equipment specified in paragraph (a)(1) of this section, including, but not limited to, proper hook-up, anchoring, and tie-off techniques, and methods of equipment inspection and storage, as specified by the manufacturer.*

## Inspections and Tests

**1910.30(a)(3)**—The employer *must train each employee* in at least the following topics:

**1910.30(a)(3)(iii)**—The *correct procedures for installing, inspecting, operating, maintaining, and disassembling* the personal fall protection systems that the employee uses.

**1910.30(b)(1)**—The employer *must train each employee on or before May 17, 2017 in the proper care, inspection, storage, and use* of equipment covered by this subpart before an employee uses the equipment.

## Training and Communications

**1910.30(a)(1)**—Before any employee is exposed to a fall hazard, the employer *must provide training for each employee who uses personal fall protection systems or who is required to be trained* as specified elsewhere in this subpart. Employers *must ensure employees are trained* in the requirements of this paragraph *on or before May 17, 2017*.

**1910.30(a)(2)**—The employer *must ensure that each employee is trained by a qualified person*.

**1910.30(a)(3)**—The employer *must train each employee* in at least the following topics:

**1910.30(a)(3)(ii)**—The procedures to be followed to minimize those hazards;

**1910.30(a)(3)(iii)**—The *correct procedures for installing, inspecting, operating, maintaining, and disassembling* the personal fall protection systems that the employee uses; and

**1910.30(a)(3)(iv)**—The *correct use of personal fall protection systems and equipment* specified in paragraph (a)(1) of this section, including, but not limited to, *proper hook-up, anchoring, and tie-off techniques, and methods of equipment inspection and storage*, as specified by the manufacturer.

**1910.30(b)(1)**—The employer *must train each employee on or before May 17, 2017 in the proper care, inspection, storage, and use* of equipment covered by this subpart before an employee uses the equipment.

**1910.30(b)(2)**—The employer *must train each employee who uses a dockboard* to properly place and secure it to prevent unintentional movement.

**1910.30(b)(3)**—The employer *must train each employee who uses a rope descent system* in proper rigging and use of the equipment in accordance with § 1910.27—*Scaffolds and Rope Descent Systems*.

**1910.30(b)(4)**—The employer *must train each employee* who uses a designated area in the proper set-up and use of the area.

**1910.30(c)**—*Retraining. The employer must retrain an employee when the employer has reason to believe the employee does not have the understanding and skill* required by paragraphs (a) and (b) of this section. Situations requiring *retraining include*, but are not limited to, the following. (*Reference paragraph (c) for specific training requirements*).

**1910.30(d)**—*Training must be understandable. The employer must provide information and training* to each employee in a manner that the employee understands.

## Qualified Person

**1910.30(a)(2)**—*The employer must ensure that each employee is trained by a qualified person.*

## 29 CFR 1910 Subpart E—Means of Egress

### 1910.38—EMERGENCY ACTION PLAN

**Scope/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. The following standards require an emergency action plan:*

1910.66(e)(9)—Powered Platforms for Building Maintenance  
1910.119(n)—Process Safety Management  
1910.160(c)(1)—Fixed Extinguishing Systems, General  
1910.272(d)—Grain Handling  
1910.1047(h)(1)(iii)—Ethylene Oxide  
1910.1050(d)(1)(iii)—Methylenedianiline  
1910.1051(j)—1,3-Butadiene

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency action plan
- Recordkeeping—plan
- Training and Communications—initial training, refresher
- Other—1910.157 Portable Fire Extinguishers

#### Programs, Policies and Procedures

**1910.38(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. [Reference paragraph (c) for the Minimum Elements of an Emergency Action Plan.]*

#### Recordkeeping

**1910.38(b)**—*Written and oral emergency action plans. A emergency action 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. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]*

#### Training and Communications

**1910.38(e)**—*Training. An employer must designate and train employees to assist in a safe and orderly evacuation of other employees.*

**1910.38(f)**—*Review of emergency action plan. An employer must review the emergency action plan with each employee covered by the plan.*

**1910.38(f)(1)**—*When the plan is developed or the employee is assigned initially to a job;*

**1910.38(f)(2)**—*When the employee's responsibilities under the plan change; and*

**1910.38(f)(3)**—*When the plan is changed.*

#### Other

**Note:** *The 1910.157—Portable Fire Extinguishers standards below apply when employees will be using fire extinguishers to extinguish fires as part of the employer's emergency action plan.*

**1910.157(g)(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 fire fighting.*

**1910.157(g)(2)**—*The employer shall provide the education required in paragraph (g)(1) [Training and Education] of this section upon initial employment and at least annually thereafter.*

**1910.157(g)(3)**—*Portable Fire Extinguishers. 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.*

**1910.157(g)(4)**—The employer shall provide the training required in paragraph 1910.157(g)(3) [Portable Fire Extinguishers], upon initial assignment to the designated group of employees and at least annually thereafter.

## **1910.39—FIRE PREVENTION PLAN**

**Scope/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. The following standards require a fire prevention plan:

1910.1047(h)(1)(iii)—Ethylene Oxide  
1910.1050(d)(1)(iii)—Methylenedianiline  
1910.1051(j)—1,3-Butadiene

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—fire prevention plan
- Recordkeeping—plan
- Training and Communications—initial training, refresher
- Other—1910.157 Portable Fire Extinguishers

### **Programs, Policies and Procedures**

**1910.39(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. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]

### **Recordkeeping**

**1910.39(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. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]

**1910.39(c)(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.

**1910.39(c)(2)**—Procedures to control accumulations of flammable and combustible waste materials.

**1910.39(c)(3)**—Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials

### **Training and Communications**

**1910.39(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.

### **Other**

**Note:** The 1910.157—Portable Fire Extinguishers standards below apply when employees will be using fire extinguishers to extinguish fires as part of the employer's emergency action plan.

**1910.157(g)(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 fire fighting.

**1910.157(g)(2)**—The employer shall provide the education required in paragraph (g)(1) [Training and Education] of this section upon initial employment and at least annually thereafter.

**1910.157(g)(3)**—Portable Fire Extinguishers. 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.

**1910.157(g)(4)**—The employer shall provide the training required in paragraph 1910.157(g)(3) [Portable Fire Extinguishers], upon initial assignment to the designated group of employees and at least annually thereafter.



## 29 CFR Subpart F—Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms

### 1910.66—POWERED PLATFORMS FOR BUILDING MAINTENANCE

**Scope/Application:** *This section covers powered platform installations permanently dedicated to interior or exterior building maintenance of a specific structure or group of structures.*

**Exceptions:** *This section does not apply to suspended scaffolds (swinging scaffolds) used to service buildings on a temporary basis and covered under subpart D [Walking and Working Surfaces] of this part, nor to suspended scaffolds used for construction work and covered under subpart L of 29 CFR part 1926. Building maintenance includes, but is not limited to, such tasks as window cleaning, caulking, metal polishing and reglazing.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency action plan, work procedures
- Inspections and Tests—initial and periodic inspections and tests, competent person
- Recordkeeping—certification
- Certification—records
- Training and Communications—initial training, competent person
- Competent Person—inspections

#### Programs, Policies and Procedures

**1910.66(e)(9)**—*Emergency planning. A **written emergency action plan** shall be developed and implemented for each kind of working platform operation. This **plan** shall explain the **emergency procedures** which are to be followed in the event of a power failure, equipment failure or other emergencies which may be encountered. The **plan** shall also explain that employees inform themselves about the building emergency escape routes, procedures and alarm systems before operating a platform. Upon initial assignment and whenever the **plan** is changed the employer shall review with each employee those parts of the **plan** which the employee must know to protect himself or herself in the event of an emergency.*

**1910.66(i)(1)(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**.*

#### Inspections and Tests

**1910.66(g)(1)**—*Installations and alterations. All completed building maintenance equipment installations shall be inspected and tested in the field before being placed in initial service to determine that all parts of the installation conform to applicable requirements of this standard, and that all safety and operating equipment is functioning as required. A similar inspection and test shall be made following any major alteration to an existing installation. No hoist in an installation shall be subjected to a load in excess of 125 percent of its rated load.*

**1910.66(g)(2)(i)**—*Related building supporting structures shall undergo periodic inspection by a competent person at intervals not exceeding 12 months.*

**1910.66(g)(2)(ii)**—*All parts of the equipment including control systems shall be inspected, and, where necessary, tested by a competent person at intervals specified by the manufacturer/supplier, but not to exceed 12 months, to determine that they are in safe operating condition. Parts subject to wear, such as wire ropes, bearings, gears, and governors shall be inspected and/or tested to determine that they have not worn to such an extent as to affect the safe operation of the installation.*

**1910.66(g)(2)(iv)**—*Working platforms and their components shall be inspected by the employer for visible defects before every use and after each occurrence which could affect the platform's structural integrity.*

**1910.66(g)(3)(i)**—*A maintenance inspection and, where necessary, a test shall be made of each platform installation every 30 days, or where the work cycle is less than 30 days such inspection and/or test shall be made prior to each work cycle. This inspection and test shall follow procedures recommended by the manufacturer, and shall be made by a competent person.*

**1910.66(g)(3)(ii)**—The building owner shall keep a **certification record** of each inspection and test performed under paragraph (g)(3)(i) [Maintenance Inspections and Tests] of this section. The **certification record** shall include the date of the inspection and test, the **signature** of the person who performed the inspection and/or test, and an identifier for the platform installation which was inspected. The **certification record** shall be kept readily **available** for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

**1910.66(g)(5)(v)**—The building owner shall keep a **certification record** of each monthly inspection of a suspension wire rope as required in paragraph (g)(5)(iii) [Suspension Wire Rope Maintenance, Inspection and Replacement] of this section. The **record** shall include the date of the inspection, the **signature** of the person who performed the inspection, and a number, or other identifier, of the wire rope which was inspected. This **record of inspection** shall be made **available** for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

**1910.66(g)(4)(i)**—Governors and secondary brakes shall be inspected and tested at intervals specified by the manufacturer/supplier but not to exceed every 12 months.

**1910.66(g)(4)(iv)**—If any hoisting machine or initiating device for the secondary brake system is removed from the equipment for testing, all reinstalled and directly related components shall be re-inspected prior to returning the equipment installation to service.

**1910.66(g)(4)(v)**—Inspection of governors and secondary brakes shall be performed by a competent person.

**1910.66(g)(4)(vi)**—The secondary brake governor and actuation device shall be tested before each day’s use. Where testing is not feasible, a visual inspection of the brake shall be made instead to ensure that it is free to operate.

**1910.66(g)(6)**—*Hoist inspection.* Before lowering personnel below the top elevation of the building, the hoist shall be tested each day in the lifting direction with the intended load to make certain it has sufficient capacity to raise the personnel back to the boarding level.

### **Recordkeeping**

**1910.66(e)(9)**—*Emergency planning.* A **written emergency action plan** shall be developed and implemented for each kind of working platform operation. This **plan** shall explain the **emergency procedures** which are to be followed in the event of a power failure, equipment failure or other emergencies which may be encountered. The **plan** shall also explain that employees inform themselves about the building emergency escape routes, **procedures** and alarm systems before operating a platform. Upon *initial assignment and whenever the plan is changed* the employer shall review with each employee those parts of the **plan** which the employee must know to protect himself or herself in the event of an emergency.

**1910.66(g)(2)(iii)**—The building owner shall keep a **certification record** of each inspection and test required under paragraphs (g)(2)(i) and (ii) [Periodic Inspections and Tests] of this section. The **certification record** shall include the date of the inspection, the **signature** of the person who performed the inspection, and the number, or other identifier, of the building support structure and equipment which was inspected. This **certification record** shall be kept readily **available** for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

**1910.66(g)(3)(ii)**—The building owner shall keep a **certification record** of each inspection and test performed under paragraph (g)(3)(i) [Maintenance Inspections and Tests] of this section. The **certification record** shall include the date of the inspection and test, the **signature** of the person who performed the inspection and/or test, and an identifier for the platform installation which was inspected. The **certification record** shall be kept readily **available** for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

**1910.66(g)(5)(v)**—The building owner shall keep a **certification record** of each monthly **inspection** of a suspension wire rope as required in paragraph (g)(5)(iii) [Suspension Wire Rope Maintenance, Inspection and Replacement] of this section. The **record** shall include the date of the inspection, the **signature** of the person who performed the inspection, and a number, or other identifier, of the wire rope which was inspected. This **record of inspection** shall be made **available** for review by the Assistant Secretary of Labor or the Assistant Secretary’s representative and by the employer.

**1910.66(i)(1)(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.

**1910.66(i)(1)(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) [Training] 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.

### **Certification**

**1910.66(g)(2)(iii)**—The building owner shall keep a **certification record** of each inspection and test required under paragraphs (g)(2)(i) and (ii) [Periodic Inspections and Tests] of this section. The **certification record** shall include the date of the inspection, the **signature** of the person who performed the inspection, and the number, or other identifier, of the building support structure and equipment which was inspected. This **certification record** shall be kept readily **available** for review by the Assistant Secretary of Labor or the Assistant Secretary's representative and by the employer.

**1910.66(g)(3)(ii)**—The building owner shall keep a **certification record** of each inspection and test performed under paragraph (g)(3)(i) [Maintenance Inspections and Tests] of this section. The **certification record** shall include the date of the inspection and test, the **signature** of the person who performed the inspection and/or test, and an identifier for the platform installation which was inspected. The **certification record** shall be kept readily **available** for review by the Assistant Secretary of Labor or the Assistant Secretary's representative and by the employer.

**1910.66(g)(5)(v)**—The building owner shall keep a **certification record** of each monthly inspection of a suspension wire rope as required in paragraph (g)(5)(iii) [Suspension Wire Rope Maintenance, Inspection and Replacement] of this section. The **record** shall include the date of the inspection, the **signature** of the person who performed the inspection, and a number, or other identifier, of the wire rope which was inspected. This **record of inspection** shall be made **available** for review by the Assistant Secretary of Labor or the Assistant Secretary's representative and by the employer.

**1910.66(i)(1)(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) [Training] 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.

### **Training and Communications**

**1910.66(i)(1)(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.

**1910.66(i)(1)(ii)**—All employees who operate working platforms shall be trained.

**1910.66(i)(1)(iii)**—Training of employees in the operation and inspection of working platforms shall be done by a competent person.

**1910.66(i)(1)(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) [Training] 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.

### **Competent Person**

**1910.66(g)(2)(i)**—Related building supporting structures shall undergo *periodic inspection* by a competent person at intervals not exceeding 12 months.

**1910.66(g)(2)(ii)**—All parts of the equipment including control systems shall be inspected, and, where necessary, tested by a competent person at intervals specified by the manufacturer/supplier, but not to exceed 12 months, to determine that they are in safe operating condition. Parts subject to wear, such as wire ropes, bearings, gears, and governors shall be inspected and/or tested to determine that they have not worn to such an extent as to affect the safe operation of the installation.

**1910.66(g)(3)(i)**—A maintenance inspection and, where necessary, a test shall be made of each platform installation every 30 days, or where the work cycle is less than 30 days such inspection and/or test shall be made prior to each work cycle. This inspection and test shall follow procedures recommended by the manufacturer, and shall be made by a competent person.

**1910.66(g)(4)(v)**—*Inspection of governors and secondary brakes shall be performed by a competent person.*

**1910.66(i)(1)(iii)**—*Training of employees in the operation and inspection of working platforms shall be done by a competent person.*

## **1910.67—VEHICLE-MOUNTED ELEVATING AND ROTATING WORK PLATFORMS**

**Scope/Application:** *Covers vehicle-mounted aerial devices used to elevate personnel to jobsites above ground.*

**Exceptions:** *This standard does not apply to firefighting equipment or to the vehicles upon which aerial devices are mounted.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—daily tests, inspections
- Training and Communications—aerial lift

### **Inspections and Tests**

**1910.67(c)(2)(i)**—Lift controls *shall be tested each day prior to use* to determine that such controls are in safe working condition.

**1910.67(c)(2)(xii)**—*Before moving an aerial lift for travel, the boom(s) shall be inspected* to see that it is properly cradled and outriggers are in stowed position, except as provided in *paragraph (c)(2)(viii) [Extensible and Articulating Boom Platforms]* of this section.

**1910.67(c)(3)**—Electrical tests. *Electrical tests shall be made in conformance with the requirements of ANSI A92.2—1969, Section 5 [Aerial Lift Standard].* However, equivalent DC voltage tests may be used in lieu of the AC voltage test specified in A92.2—1969. DC voltage tests which are approved by the equipment manufacturer or equivalent entity shall be considered an equivalent test for the purpose of *this paragraph (c)(3) [Electrical Tests]*.

### **Training and Communications**

**1910.67(c)(2)(ii)**—*Only trained persons shall operate* an aerial lift.

## **1910.68—MANLIFTS**

**Scope/Application:** *This section applies to the construction, maintenance, inspection, and operation of manlifts in relation to accident hazards. Manlifts covered by this section consist of platforms or brackets and accompanying hand-holds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—periodic and weekly inspections
- Recordkeeping—certification record
- Certification—inspection records
- Training and Communications—trained personnel
- Competent Person—inspections
- Qualified Person—authorized person

### **Inspections and Tests**

**1910.68(b)(1)**—Application. This section applies to the *construction, maintenance, inspection, and operation* of manlifts in relation to accident hazards. Manlifts covered by this section consist of platforms or brackets and accompanying handholds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only. It is not intended that this section cover moving stairways, elevators with enclosed platforms (“Paternoster” elevators), gravity lifts, nor conveyors used only for conveying material. This section *applies to manlifts used to carry only personnel trained and authorized by the employer in their use.*

**1910.68(e)(1)**—Frequency. All manlifts *shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly.* Manlifts found to be unsafe shall not be operated until properly repaired.

**1910.68(e)(3)—Inspection record.** *A certification record shall be kept of each inspection which includes the date of the inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the manlift which was inspected. This record of inspection shall be made available to the Assistant Secretary of Labor or a duly authorized representative.*

### **Recordkeeping**

**1910.68(e)(3)—Inspection record.** *A certification record shall be kept of each inspection which includes the date of the inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the manlift which was inspected. This record of inspection shall be made available to the Assistant Secretary of Labor or a duly authorized representative.*

### **Certification**

**1910.68(e)(3)—Inspection record.** *A certification record shall be kept of each inspection which includes the date of the inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the manlift which was inspected. This record of inspection shall be made available to the Assistant Secretary of Labor or a duly authorized representative.*

### **Training and Communications**

**1910.68(b)(1)—Application.** This section applies to the *construction, maintenance, inspection, and operation* of manlifts in relation to accident hazards. Manlifts covered by this section consist of platforms or brackets and accompanying handholds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only. It is not intended that this section cover moving stairways, elevators with enclosed platforms (“Paternoster” elevators), gravity lifts, nor conveyors used only for conveying material. This section applies to manlifts used to carry *only personnel trained and authorized by the employer in their use.*

### **Competent Person**

**1910.68(e)(1)—Frequency.** All manlifts *shall be inspected by a competent designated person at intervals of not more than 30 days. Limit switches shall be checked weekly.* Manlifts found to be unsafe shall not be operated until properly repaired.

### **Qualified Person**

**1910.68(b)(1)—Application.** This section applies to the *construction, maintenance, inspection, and operation* of manlifts in relation to accident hazards. Manlifts covered by this section consist of platforms or brackets and accompanying handholds mounted on, or attached to an endless belt, operating vertically in one direction only and being supported by, and driven through pulleys, at the top and bottom. These manlifts are intended for conveyance of persons only. It is not intended that this section cover moving stairways, elevators with enclosed platforms (“Paternoster” elevators), gravity lifts, nor conveyors used only for conveying material. This section applies to manlifts used to carry *only personnel trained and authorized by the employer in their use.*

## 29 CFR Subpart G—Occupational Health and Environmental Controls

### 1910.94—VENTILATION

**Scope/Application:** *This section covers ventilation requirement for abrasive blasting, grinding, polishing, and buffing operations, and spray finishing operations.*

**Exception:** *This standard does not apply to steam blasting, or steam cleaning, or hydraulic cleaning methods where work is done without the aid of abrasives; or to spraying of the exteriors of buildings, fixed tanks, and similar structures, or to small portable spraying apparatus not used repeatedly in the same location.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—respirator program
- Inspections and Tests—regular inspections

#### Programs, Policies and Procedures

**1910.94(a)(5)(iv)**—For employees who use respirators required by this section, the employer *must implement a respiratory protection program in accordance with 29 CFR 1910.134 [Respiratory Protection]*.

#### Inspections and Tests

**1910.94(a)(3)(i)(e)**—Slit abrasive-resistant baffles shall be installed in multiple sets at all small access openings where dust might escape, and *shall be inspected regularly and replaced when needed.*

### 1910.95—OCCUPATIONAL NOISE EXPOSURE

**Scope/Application:** *Protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table G-16 when measured on the A scale of a standard sound level meter at slow response.*

**Exception:** *This standard (paragraphs (c)–(n)) does not apply to employers engaged in oil and gas well drilling and servicing operations.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—hearing conservation program, monitoring program, training program, audiometric testing program, work controls
- Inspections and Tests—audiometric testing
- Recordkeeping—retention requirements, records
- Certification—audiologist, otolaryngologist, physician, technician
- Training and Communications—program, initial and annual training
- Exposure Monitoring—program
- Medical Surveillance—baseline and annual audiograms
- Qualified Person—audiologist, technician
- Signs, Markings and Tags—post the standard

#### Programs, Policies and Procedures

**1910.95(b)(1)**—When employees are subjected to sound exceeding those listed in Table G-16, feasible *administrative or engineering controls shall be utilized*. If such controls fail to reduce sound levels within the levels of Table G-16, *personal protective equipment shall be provided* and used to reduce sound levels within the levels of the table.

**1910.95(c)(1)—Hearing Conservation Program**—The employer *shall administer a continuing, effective hearing conservation program, as described in paragraphs (c) through (o) of this section [Implementing a Hearing Conservation Program including noise monitoring, training, audiometric testing, standard threshold shift, hearing protection, and recordkeeping]*, whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the *hearing conservation program*, employee noise exposures shall be computed in accordance with *appendix A*

*[Noise Exposure Computation] and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment. [Reference paragraph (c)(1) for specific information.]*

**1910.95(d)(1)**—When information indicates that any employee’s exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, the employer *shall develop and implement a **monitoring program***.

**1910.95(g)(1)**—The employer *shall establish and maintain an **audiometric testing program** as provided in this paragraph* by making audiometric testing available to all employees whose exposures equal or exceed an 8-hour time-weighted average of 85 decibels. *[Reference paragraph (g) for specific information and standard threshold shift information.]*

**1910.95(j)(1)**—The employer *shall evaluate hearing protector attenuation* for the specific noise environments in which the protector will be used. The employer shall use one of the evaluation methods described in *appendix B: Methods for Estimating the Adequacy of Hearing Protection Attenuation*.

**1910.95(k)(1)**—The employer *shall train each employee* who is exposed to noise at or above an 8-hour time weighted average of 85 decibels in accordance with the requirements of this section. The employer *shall institute a **training program** and ensure employee participation in the **program***. *[Reference paragraph (k)(3) for specific information.]*

### **Inspections and Tests**

**1910.95(g)(3)**—*Audiometric tests shall be performed by a **licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified** by the Council of Accreditation in Occupational Hearing Conservation, or who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be **certified**. A **technician** who performs audiometric tests must be responsible to an **audiologist, otolaryngologist or physician**.*

**1910.95(h)(5)(i)**—The functional operation of the *audiometer shall be checked before each day’s use* by testing a person with known, stable hearing thresholds, and by listening to the audiometer’s output to make sure that the output is free from distorted or unwanted sounds. Deviations of 10 decibels or greater require an acoustic calibration.

**1910.95(h)(5)(ii)**—*Audiometer calibration shall be checked acoustically at least annually* in accordance with *appendix E [Acoustic Calibration of Audiometers]*. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this check. Deviations of 15 decibels or greater require an exhaustive calibration.

**1910.95(h)(5)(iii)**—An exhaustive *calibration shall be performed at least every two years* in accordance with sections 4.1.2; 4.1.3.; 4.1.4.3; 4.2; 4.4.1; 4.4.2; 4.4.3; and 4.5 of the American National Standard Specification for Audiometers, S3.6-1969. Test frequencies below 500 Hz and above 6000 Hz may be omitted from this calibration.

### **Recordkeeping**

**1910.95(l)(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.

**1910.95(m)(1)**—*Exposure measurements. The employer shall maintain an accurate **record** of all employee **exposure measurements** required by paragraph (d) [Monitoring] of this section. [Reference paragraph (m) for specific **record and record retention** information.]*

**1910.95(m)(2)(i)**—The employer shall ***retain*** all employee ***audiometric test records*** obtained pursuant to paragraph (g) *[Audiometric Testing Program]* of this section. *[Reference paragraph (m) for specific record and record retention information.]*

**1910.95(m)(3)**—***Record retention.** The employer shall **retain records** required in this paragraph (m) [Recordkeeping] for at least the following periods:*

**1910.95(m)(3)(i)**—*Noise exposure measurement records shall be **retained** for two years.*

**1910.95(m)(3)(ii)**—*Audiometric test records shall be **retained** for the duration of the affected employee’s employment.*

## Certification

**1910.95(g)(3)**—*Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation, or who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be certified. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.*

## Training and Communications

**1910.95(k)(1)**—The employer shall train each employee who is exposed to noise at or above an 8-hour time weighted average of 85 decibels in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program. [Reference paragraph (k)(3) for specific information.]

**1910.95(k)(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.

## Exposure Monitoring

**1910.95(d)(1)**—When information indicates that any employee's exposure may equal or exceed an 8-hour time-weighted average of 85 decibels, the employer shall develop and implement a monitoring program.

## Medical Surveillance

**1910.95(g)(5)(i)**—Within 6 months of an employee's first exposure at or above the action level, the employer shall establish a valid baseline audiogram against which subsequent audiograms can be compared.

**1910.95(g)(6)**—Annual audiogram. At least annually after obtaining the baseline audiogram, the employer shall obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.

**1910.95(g)(7)(iii)**—The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. The employer shall provide to the person performing this evaluation information. [Reference paragraph (g)(7)(iii) for specific information.]

## Qualified Person

**1910.95(g)(3)**—*Audiometric tests shall be performed by a licensed or certified audiologist, otolaryngologist, or other physician, or by a technician who is certified by the Council of Accreditation in Occupational Hearing Conservation, or who has satisfactorily demonstrated competence in administering audiometric examinations, obtaining valid audiograms, and properly using, maintaining and checking calibration and proper functioning of the audiometers being used. A technician who operates microprocessor audiometers does not need to be certified. A technician who performs audiometric tests must be responsible to an audiologist, otolaryngologist or physician.*

## Signs, Markings and Tags

**1910.95(l)(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.

## 1910.97—NONIONIZING RADIATION

**Scope/Application:** This section applies to all radiations originating from radio stations, radar equipment, and other possible sources of electromagnetic radiation such as used for communication, radio navigation, and industrial and scientific purposes, This section does not apply to the deliberate exposure of patients by, or under the direction of, practitioners of the healing arts.

## STANDARD HIGHLIGHTS

- Signs, Markings, and Tags—warning symbols



## Signs, Markings, and Tags

**1910.97(a)(3)(i)**—The *warning symbol for radio frequency radiation hazards* shall consist of a red isosceles triangle above an inverted black isosceles triangle, separated and outlined by an aluminum color border. The words “Warning—Radio-Frequency Radiation Hazard” shall appear in the upper triangle. See figure G-II.

**1910.97(a)(3)(ii)**—*American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment, Z53.1-1953* which is incorporated by reference as specified in Sec. 1910.6, shall be used for color specification. *All lettering and the border shall be of aluminum color.*

**1910.97(a)(3)(iii)**—The inclusion and choice of *warning information or precautionary instructions* is at the discretion of the user. If such information is included it shall *appear in the lower triangle of the warning symbol.*

## 29 CFR Subpart H—Hazardous Materials

### 1910.103—HYDROGEN

**Scope/Application:** This section covers gaseous hydrogen systems in which the hydrogen is delivered, stored and discharged in the gaseous form to consumer's piping. The system includes stationary or movable containers, pressure regulators, safety relief devices, manifolds, interconnecting piping and controls. The system terminates at the point where hydrogen at service pressure first enters the consumer's distribution piping.

**Exception:** It does not apply to gaseous hydrogen systems having a total hydrogen content of less than 400 cubic feet, or to liquefied hydrogen portable containers of less than 150 liters (39.63 gallons) capacity; nor to hydrogen manufacturing plants or other establishments operated by the hydrogen supplier or his agent for the purpose of storing hydrogen and refilling portable containers, trailers, mobile supply trucks, or tank cars.

#### STANDARD HIGHLIGHTS

- Inspections and Tests—testing after installation, annual inspections and tests

#### Inspections and Tests

**1910.103(b)(1)(vi)**—Testing. After installations, all piping, tubing, and fittings shall be tested and proved hydrogen gas tight at maximum operating pressure.

**1910.103(c)(1)(vii)(a)**—After installation, all field-erected piping shall be tested and proved hydrogen gas-tight at operating pressure and temperature.

**1910.103(c)(1)(vii)(b)**—Containers if out of service in excess of 1 year shall be inspected and tested as outlined in (a) [Scope] of this subdivision. The safety relief devices shall be checked to determine if they are operable and properly set.

### 1910.104—OXYGEN

**Scope/Application:** This section applies to the installation of bulk oxygen systems on industrial and institutional consumer premises.

**Exception:** This section does not apply to oxygen manufacturing plants or other establishments operated by the oxygen supplier or his agent for the purpose of storing oxygen and refilling portable containers, trailers, mobile supply trucks, or tank cars, nor to systems having capacities less than those stated in paragraph (b)(1) of this section.

#### STANDARD HIGHLIGHTS

- Inspections and Tests—tests

#### Inspections and Tests

**1910.104(b)(8)(v)**—Testing. After installation all field erected piping shall be tested and proved gas tight at maximum operating pressure. Any medium used for testing shall be oil free and nonflammable.

### 1910.106—FLAMMABLE LIQUIDS

**Scope/Application:** This section applies to the use and storage of flammable liquids.

**Exception:** Does not apply to storage of containers in bulk plants, service stations, refineries, chemical plants and distilleries; Class I or Class II liquids in fuel tanks of a motor vehicle, aircraft, boat, or portable or stationary engine; flammable paints, oils, varnishes, and similar mixtures used for painting or maintenance when not kept in excess of 30 days; or beverages when package in individual containers not exceeding 1 gallon in size; and does not apply to chemical plants, refineries or distilleries except those portions of the plants that involve chemical reactions such as oxidation, reduction, halogenation, hydrogenation, alkylation, polymerization, and other chemical processes. Does not apply to bulk transportation of flammable liquids, storage, handling, and use of fuel oil tanks and containers connects with oil burning equipment; storage of flammable liquids on farms; liquids without flashpoints that may be flammable under some conditions; mists, sprays, or foams except flammable aerosols; or installations made in accordance with standards that are incorporated by reference.

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—established procedures
- Inspections and Tests—initial and periodic inspections, testing
- Certification—flow tests
- Training and Communications—inform, posted instructions
- Qualified Person—certify flow tests
- Signs, Markings and Tags—posted instructions

### Programs, Policies and Procedures

**1910.106(e)(8)**—Repairs to equipment. Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge*. The *individual in responsible charge shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures* will be followed for the work specified.

**1910.106(e)(9)(i)**—General. Maintenance and *operating practices shall be in accordance with established procedures* which will tend to control leakage and prevent the accidental escape of flammable liquids. Spills shall be cleaned up promptly.

**1910.106(h)(7)(ii)(b)**—Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge who shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures* will be followed for the work specified.

### Inspections and Tests

**1910.106(b)(2)(v)(i)**—The flow capacity of tank venting devices 12 inches and smaller in nominal pipe size *shall be determined by actual test of each type and size of vent. These flow tests may be conducted by the manufacturer if certified by a qualified impartial observer*, or may be conducted by an outside agency. The flow capacity of tank venting devices larger than 12 inches nominal pipe size, including manhole covers with long bolts or equivalent, may be calculated provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the word “calculated” appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

**1910.106(b)(5)(vi)(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.

**1910.106(c)(7)**—*Testing. All piping before being covered, enclosed, or placed in use shall be hydrostatically tested to 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 5 pounds per square inch gage at the highest point of the system. This test shall be maintained for a sufficient time to complete visual inspection* of all joints and connections, but for at least 10 minutes.

**1910.106(e)(5)(v)**—Maintenance. All plant fire protection facilities shall be adequately *maintained and periodically inspected and tested* to make sure they are always in satisfactory operating condition, and they will serve their purpose in time of emergency.

**1910.106(e)(8)**—Repairs to equipment. Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge*. The *individual in responsible charge shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures* will be followed for the work specified.

**1910.106(f)(4)(vii)**—Hoses and couplings. All pressure hoses and couplings *shall be inspected at intervals appropriate to the service. The hose and couplings shall be tested* with the hose extended and using the “in-service maximum operating pressures.” Any hose showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings shall be withdrawn from service and repaired or discarded.

**1910.106(h)(6)(iv)**—Maintenance. All plant fire protection facilities *shall be adequately maintained and periodically inspected and tested* to make sure they are always in satisfactory operating condition and that they will serve their purpose in time of emergency.

**1910.106(h)(7)(ii)(b)**—Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge who shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures* will be followed for the work specified.

### **Certification**

**1910.106(b)(2)(v)(i)**—The flow capacity of tank venting devices 12 inches and smaller in nominal pipe size *shall be determined by actual test of each type and size of vent. These flow tests may be conducted by the manufacturer if certified by a qualified impartial observer*, or may be conducted by an outside agency. The flow capacity of tank venting devices larger than 12 inches nominal pipe size, including manhole covers with long bolts or equivalent, may be calculated provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the word “calculated” appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

### **Training and Communications**

**1910.106(b)(5)(vi)(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:

**1910.106(b)(5)(vi)(v)(2)**—That *detailed printed instructions of what to do in flood emergencies are properly posted.*

**1910.106(b)(5)(vi)(v)(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.

### **Qualified Person**

**1910.106(b)(2)(v)(i)**—The flow capacity of tank venting devices 12 inches and smaller in nominal pipe size *shall be determined by actual test of each type and size of vent. These flow tests may be conducted by the manufacturer if certified by a qualified impartial observer*, or may be conducted by an outside agency. The flow capacity of tank venting devices larger than 12 inches nominal pipe size, including manhole covers with long bolts or equivalent, may be calculated provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the word “calculated” appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

**1910.106(e)(8)**—Repairs to equipment. Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge*. The *individual in responsible charge shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures will be followed* for the work specified.

**1910.106(h)(7)(ii)(b)**—Hot work, such as welding or cutting operations, use of spark-producing power tools, and chipping operations shall be permitted only under supervision of an *individual in responsible charge who shall make an inspection* of the area to be sure that it is safe for the work to be done and that *safe procedures will be followed* for the work specified.

### **Signs, Markings and Tags**

**1910.106(b)(5)(vi)(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:

- **1910.106(b)(5)(vi)(v)(2)**—That *detailed printed instructions of what to do in flood emergencies are properly posted.*

### **1910.107—SPRAY FINISHING USING FLAMMABLE AND COMBUSTIBLE MATERIALS**

**Scope/Application:** *This section applies to flammable and combustible liquids used in spray finishing operations.*

**Exception:** *This standard does not apply to outdoor spray application of buildings, tanks, or other similar structures, nor to small portable spraying apparatus not used repeatedly in the same location.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—regular intervals inspections, inspect filter rolls

### Inspections and Tests

**1910.107(b)(5)(i)**—The spraying operations except electrostatic spraying operations shall be so *designed*, installed and maintained that the average air velocity over the open face of the booth (or booth cross section during spraying operations) shall be not less than 100 linear feet per minute. Electrostatic spraying operations may be conducted with an air velocity over the open face of the booth of not less than 60 linear feet per minute, or more, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges or audible alarm or pressure activated devices shall be installed to indicate or insure that the required air velocity is maintained. Filter rolls *shall be inspected* to insure proper replacement of filter media.

**1910.107(e)(6)(iii)**—All pressure hose and couplings *shall be inspected at regular intervals appropriate to this service. The hose and couplings shall be tested* with the hose extended, and using the “in-service maximum operating pressures.” Any hose showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings, shall be withdrawn from service and repaired or discarded.

## 1910.109—EXPLOSIVES AND BLASTING AGENTS

**Scope/Application:** *This section applies to the use, transport, manufacture and storage of explosives and blasting agents.*

**Exception:** *This standard does not apply to in-process storage and intraplant transportation during manufacture of small arms ammunition, small arms primers, and smokeless propellants. It does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor to the use of explosives in the form prescribed by the official U.S. Pharmacopeia.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—maintenance program, regular schedule
- Inspections and Tests—daily visual inspections
- Training and Communications—instructions, training
- Qualified Person—authorized
- Signs, Markings and Tags—signs

### Programs, Policies and Procedures

**1910.109(d)(3)(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.

**1910.109(h)(3)(v)(b)**—A *daily visual inspection* shall be made of mixing, conveying, and electrical equipment to establish that such equipment is in good operating condition. A **program of systematic maintenance** *shall be conducted on regular schedule.*

**1910.109(h)(4)(ii)(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.

### Inspections and Tests

**1910.109(d)(2)(iv)**—A motor vehicle used for transporting explosives *shall be given an inspection* to determine that it is in proper condition for safe transportation of explosives. [*Reference paragraph (d)(2) for specific inspection items.*]

**1910.109(h)(3)(v)(b)**—A *daily visual inspection* shall be made of mixing, conveying, and electrical equipment to establish that such equipment is in good operating condition. A **program of systematic maintenance** *shall be conducted on regular schedule.*

## Training and Communications

**1910.109(d)(3)(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.

**1910.109(g)(3)(iii)(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.

**1910.109(h)(4)(ii)(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.

## Qualified Person

**1910.109(d)(3)(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.

## Signs, Markings and Tags

**1910.109(c)(2)(iii)**—Property upon which Class I magazines are located and property where Class II magazines are located outside of buildings shall be **posted with signs** reading "Explosives-Keep Off."

**1910.109(e)(1)(vii)(b)**—The **posting of signs** warning against the use of mobile radio transmitters on all roads within 350 feet of the blasting operations.

**1910.109(i)(4)(ii)(c)**—The ammonium nitrate storage bins or piles *shall be clearly identified by signs* reading "Ammonium Nitrate" with letters at least 2 inches high.

**1910.109(d)(2)(ii)**—Every vehicle used for transporting explosives and oxidizing materials listed in *paragraph (d)(2)(ii)(a)* of this section **shall be marked** as follows: [*Reference (d)(2)(ii) for specific information.*]

**1910.109(d)(2)(ii)(a)**—Exterior **markings or placards** required on applicable vehicles shall be as follows for the various classes of commodities. [*Reference (d)(2)(ii)(a) for specific information.*]

**1910.109(d)(2)(ii)(c)**—Such **markings or placards shall be displayed** at the front, rear, and on each side of the motor vehicle or trailer, or other cargo carrying body while it contains explosives or other dangerous articles of such type and in such quantity as specified in *paragraph (d)(1)(ii)(a)* of this subdivision. The **front marking or placard** may be displayed on the front of either the truck, truck body, truck tractor or the trailer.

**1910.109(d)(2)(ii)(d)**—Any motor vehicle, trailer, or other cargo-carrying body containing more than one kind of explosive as well as an oxidizing material *requiring a placard* under the provisions of *paragraph (d)(2)(ii)(a)*, the aggregate gross weight of which totals 1,000 pounds or more, **shall be marked or placarded** "Dangerous" as well as "Explosive A" or "Explosive B" as appropriate. If explosives Class A and explosives Class B are loaded on the same vehicle, the "Explosives B" *marking* need not be displayed.

**1910.109(d)(2)(ii)(e)**—In any combination of two or more vehicles containing explosives or other dangerous articles each vehicle **shall be marked or placarded** as to its contents and in accordance with *paragraphs (d)(2)(ii)(a) and (c)* of this subdivision.

**1910.109(f)(2)**—"Packing and **marking**." No person shall deliver any explosive to any carrier unless such explosive conforms in all respects, *including marking and packing*, to the **U.S. Department of Transportation Regulations for the Transportation of Explosives**.

**1910.109(f)(3)**—"Marking cars." Every railway car containing explosives which has reached its designation, or is stopped in transit so as no longer to be in interstate commerce, **shall have attached** to both sides and ends of the car,

*cards* with the words "Explosives-Handle Carefully-Keep Fire Away" in red letters at least 1 1/2 inches high on a white background.

## 1910.110—STORAGE AND HANDLING OF LIQUEFIED PETROLEUM GASES

**Scope/Application:** *This section applies to the storage and handling of liquefied petroleum gases.*

**Exception:** *This standard does not apply to containers stored at charging plants or at plants devoted primarily to the storage and distribution of LP-Gas or other petroleum products; or to marine and pipeline terminals, natural gas processing plants, refineries, or tank farms other than those at industrial sites; LP-Gas refrigerated storage systems; LP-Gas when used with oxygen; Low-pressure (not in excess of one-half pound per square inch or 14 inches water column) LP-Gas piping systems, and the installation and operation of residential and commercial appliances, retroactivity; or to existing plants, appliances, equipment, buildings, structures, and installations for the storage, handling or use of LP-Gas, stocks of equipment and appliances on hand in such locations as manufacturers' storage, distribution warehouses, and dealers' storage and showrooms, which were in compliance with the current provisions of the National Fire Protection Association Standard for the Storage and Handling of Liquefied Petroleum Gases NFPA No. 58, at the time of manufacture or installation may be continued in use.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—initial testing
- Training and Communications—initial training

### Inspections and Tests

**1910.110(b)(8)(ix)**—All piping, tubing, or hose *shall be tested after assembly* and proved free from leaks at not less than normal operating pressures. *After installation, piping and tubing of all domestic and commercial systems shall be tested* and proved free of leaks using a manometer or equivalent device that will indicate a drop in pressure. Test shall not be made with a flame.

**1910.110(h)(9)(vii)**—All piping *shall be tested after assembly* and proved free from leaks at not less than normal operating pressures.

### Training and Communications

**1910.110(b)(16)**—*Instructions.* Personnel performing installation, removal, operation, and maintenance work *shall be properly trained* in such function.

**1910.110(d)(12)(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

**Scope/Application:** *This section applies to the storage and handling of anhydrous ammonia.*

**Exception:** *This standard does not apply to ammonia manufacturing plants, refrigeration plants where ammonia used and solely as a refrigerant.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic inspections and tests
- Recordkeeping—documents
- Certification—records, signed
- Qualified Person—registered professional engineer
- Signs, Markings and Tags—markings, labels

### Inspections and Tests

**1910.111(b)(1)(iii)**—It is a type which no nationally recognized testing laboratory does, or will undertake to, accept, *certify, list, label,* or determine to be safe; and such equipment *is inspected or tested* by any Federal, State, municipal, or other local authority responsible for enforcing occupational safety provisions of a Federal, State, municipal or other **local law, code, or regulation** pertaining to the storage, handling, transport, and use of anhydrous ammonia, and found to be in compliance with either the provisions of the *American National Standard for the Storage and Handling of An-*

*hydrous Ammonia, K61.1, or the Fertilizer Institute Standards for the Storage and Handling of Agricultural Anhydrous Ammonia, M-1, in effect at the time of installation.*

**1910.111(b)(1)(v)**—For the purposes of this *paragraph (b)(1) [Approval of Equipment and Systems]*, the word “listed” means that equipment is of a kind mentioned in a list which is published by a ***nationally recognized laboratory*** which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or *has been tested* and found safe for use in a specified manner. “***Labeled***” means there is ***attached*** to it a ***label, symbol, or other identifying mark*** of a nationally recognized testing laboratory which, *makes periodic inspections* of the production of such equipment, and whose ***labeling*** indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. “***Certified***” means it has been tested and found by a nationally recognized testing laboratory to meet ***nationally recognized standards*** or to be safe for use in a specified manner, or is of a kind whose production is *periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification.*

### **Recordkeeping**

**1910.111(b)(1)(iv)**—It is a ***custom-designed and custom-built unit***, which no ***nationally recognized testing laboratory***, or Federal, State, municipal or local authority responsible for the enforcement of a ***Federal, State, municipal, or local law, code or regulation*** pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, ***certify, list, label*** or *determine to be safe, and the employer has on file a document attesting to its safe condition* following the conduct of *appropriate tests*. The ***document*** shall be signed by a ***registered professional engineer*** or other person having special training or experience sufficient to permit him to form an opinion as to safety of the unit involved. The ***document*** shall set forth the test bases, ***test data*** and results, and also the ***qualifications of the certifying person.***

**1910.111(b)(1)(v)**—For the purposes of this *paragraph (b)(1) [Approval of Equipment and Systems]*, the word “listed” means that equipment is of a kind mentioned in a list which is published by a ***nationally recognized laboratory*** which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or *has been tested* and found safe for use in a specified manner. “***Labeled***” means there is ***attached*** to it a ***label, symbol, or other identifying mark*** of a nationally recognized testing laboratory which, *makes periodic inspections* of the production of such equipment, and whose ***labeling*** indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. “***Certified***” means it has been tested and found by a nationally recognized testing laboratory to meet ***nationally recognized standards*** or to be safe for use in a specified manner, or is of a kind whose production is *periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification.*

### **Certification**

**1910.111(b)(1)(iv)**—It is a ***custom-designed and custom-built unit***, which no ***nationally recognized testing laboratory***, or Federal, State, municipal or local authority responsible for the enforcement of a ***Federal, State, municipal, or local law, code or regulation*** pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, ***certify, list, label*** or *determine to be safe, and the employer has on file a document attesting to its safe condition* following the conduct of *appropriate tests*. The ***document*** shall be signed by a ***registered professional engineer*** or other person having special training or experience sufficient to permit him to form an opinion as to safety of the unit involved. The ***document*** shall set forth the test bases, ***test data*** and results, and also the ***qualifications of the certifying person.***

**1910.111(b)(1)(v)**—For the purposes of this *paragraph (b)(1) [Approval of Equipment and Systems]*, the word “listed” means that equipment is of a kind mentioned in a list which is published by a ***nationally recognized laboratory*** which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or *has been tested* and found safe for use in a specified manner. “***Labeled***” means there is ***attached*** to it a ***label, symbol, or other identifying mark*** of a nationally recognized testing laboratory which, *makes periodic inspections* of the production of such equipment, and whose ***labeling*** indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner. “***Certified***” means it has been tested and found by a nationally recognized testing laboratory to meet ***nationally recognized standards*** or to be safe for use in a specified manner, or is of a kind whose production is *periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification.*

### **Qualified Person**

**1910.111(b)(1)(iv)**—It is a custom-designed and custom-built unit, which no nationally recognized testing laboratory, or Federal, State, municipal or local authority responsible for the enforcement of a Federal, State, municipal, or local law, code or regulation pertaining to the storage, transportation and use of anhydrous ammonia is willing to undertake to accept, ***certify, list, label*** or *determine to be safe, and the employer has on file a document attesting to its safe condition* following



the conduct of appropriate tests. The *document shall be signed by a registered professional engineer or other person having special training or experience* sufficient to permit him to form an opinion as to safety of the unit involved. The *document* shall set forth the **test bases, test data and results**, and also the *qualifications of the certifying person*.

### Signs, Markings and Tags

**1910.111(b)(1)(v)**—For the purposes of this *paragraph (b)(1) [Approval of Equipment and Systems]*, the word “listed” means that equipment is of a kind mentioned in a list which is published by a **nationally recognized laboratory** which makes periodic inspection of the production of such equipment, and states such equipment meets nationally recognized standards or *has been tested* and found safe for use in a specified manner. “**Labeled**” means there is **attached** to it a **label, symbol, or other identifying mark** of a nationally recognized testing laboratory which, *makes periodic inspections* of the production of such equipment, and whose **labeling indicates** compliance with nationally recognized standards or tests to determine safe use in a specified manner. “**Certified**” means it has been tested and found by a nationally recognized testing laboratory to meet **nationally recognized standards** or to be safe for use in a specified manner, or is of a kind whose production is *periodically inspected by a nationally recognized testing laboratory, and it bears a label, tag, or other record of certification*.

## 1910.119—PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS

**Scope/Application:** *This standard applies to a process which involves a chemical at or above the specified threshold quantities listed in Appendix A of 1910.119; a process which involves a flammable liquid or gas (as defined in 1910.1200(c) of this part) on site in one location, in a quantity of 10,000 pounds (4535.9 kg) or more except for: Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical covered by this standard; Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without benefit of chilling or refrigeration.*

**Exception:** *This standard does not apply to retail facilities, oil or gas well drilling or servicing operations, or normally unoccupied remote facilities.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—action plan, process safety information, hazard analysis, schedule, operating procedures, safe work practices, permits, audits
- Inspections and Tests—initial inspections and tests
- Recordkeeping—requirements
- Certification—annual
- Training and Communications—initial and refresher training
- Exposure Monitoring—engineering controls
- Qualified Person—qualified operators

### Programs, Policies and Procedures

**1910.119(c)(1)**—Employers shall *develop a written plan of action* regarding the implementation of the employee participation required by this paragraph. *[Reference paragraph (c)(1) for specific plan information.]*

**1910.119(d)**—Process safety information. In accordance with the schedule set forth in *paragraph (e)(1) [Process Hazard Analysis]* of this section, the employer shall complete a compilation of **written process safety information** before conducting any process hazard analysis required by the standard. The compilation of **written process safety information** is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This **process safety information** shall include information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process. *[Reference paragraph (d) for specific process safety information.]*

**1910.119(e)(1)**—The employer shall perform an initial process hazard analysis (*hazard evaluation*) on processes covered by this standard. The *process hazard analysis* shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and **document** the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. *[Reference paragraph (e) for specific process hazard analysis information.]*

**1910.119(e)(5)**—The employer *shall establish a system* to promptly address the team’s findings and recommendations; assure that the recommendations are resolved in a timely manner and that the *resolution is **documented; document what actions are to be taken; complete actions as soon as possible; develop a **written schedule** of when these actions are to be completed; communicate the actions*** to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

**1910.119(e)(6)**—*At least every five (5) years after the completion of the initial process hazard analysis, the **process hazard analysis** shall be **updated and revalidated** by a team meeting the requirements in paragraph (e)(4) [Process Hazard Analysis] of this section, to assure that the process hazard analysis is consistent with the current process.*

**1910.119(f)(1)**—The employer *shall develop and implement **written operating procedures*** that provide *clear instructions* for safely conducting activities involved in each covered process consistent with the process safety information and shall address certain elements. *[Reference paragraph (f)(1) for the specific procedure elements.]*

**1910.119(f)(1)(iii)(C)**—*Control measures* to be taken if physical contact or airborne exposure occurs.

**1910.119(f)(3)**—The *operating procedures shall be reviewed* as often as necessary to assure that they reflect current *operating practice*, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. The employer *shall **certify** annually* that these *operating procedures are current and accurate*.

**1910.119(f)(4)**—The employer *shall develop and implement **safe work practices*** to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These *safe work practices* shall apply to employees and contractor employees.

**1910.119(j)(2)**—***Written procedures.** The employer shall establish and implement **written procedures*** to maintain the on-going integrity of process equipment.

**1910.119(k)(1)**—The employer *shall issue a **hot work permit*** for hot work operations conducted on or near a covered process. *[Reference paragraph (k) for specific permit information.]*

**1910.119(l)(1)**—The employer *shall establish and implement **written procedures** to manage changes* (except for “replacements in kind”) to process chemicals, technology, equipment, *and procedures*; and, changes to facilities that affect a covered process. *[Reference paragraph (l) for specific record information.]*

**1910.119(m)(2)**—*An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident. [Reference paragraph (m) for specific information.]*

**1910.119(m)(3)**—*An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.*

**1910.119(m)(4)**—*A **report** shall be **prepared*** at the conclusion of the investigation.

**1910.119(m)(5)**—The employer *shall establish a system to promptly address and resolve the **incident report findings and recommendations.** Resolutions and corrective actions shall be **documented.***

**1910.119(m)(6)**—The ***report** shall be reviewed* with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.

**1910.119(n)**—*Emergency planning and response. The employer shall establish and implement an **emergency action plan*** for the entire plant in accordance with the provisions of 29 CFR 1910.38 *[Emergency Action Plan]*. In addition, the ***emergency action plan** shall include procedures* for handling small releases. Employers covered under this standard *may also be subject to the hazardous waste and emergency response provisions contained in 29 CFR 1910.120 (a), (p) and (q) [Hazardous Waste Operations and Emergency Response].*

**1910.119(o)(1)**—Employers *shall **certify** that they have evaluated compliance* with the provisions of this section *at least every three years to verify that the procedures and practices developed* under the standard are adequate and are being followed. *[Reference paragraph (o) for specific audit information.]*

**1910.119(o)(3)**—*A **report** of the findings of the **audit** shall be developed.*

**1910.119(o)(4)**—The employer *shall promptly determine and **document** an appropriate **response** to each of the findings of the **compliance audit, and document*** that deficiencies have been corrected.

## Inspections and Tests

**1910.119(j)(4)(i)**—*Inspections and tests shall be performed on process equipment. [Reference paragraph (j) for specific record information.]*

**1910.119(j)(4)(iii)**—*The frequency of inspections and tests of process equipment shall be consistent with applicable **manufacturers' recommendations** and good engineering practices, and more frequently if determined to be necessary by prior operating experience.*

**1910.119(j)(4)(iv)**—*The employer shall **document** each **inspection** and **test** that has been performed on process equipment. The **documentation** shall identify the date of the *inspection or test*, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the *inspection or test* performed, and the **results** of the *inspection or test*.*

**1910.119(j)(6)(ii)**—*Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the **manufacturer's instructions**.*

## Recordkeeping

**1910.119(c)(1)**—*Employers shall **develop a written plan of action** regarding the implementation of the employee participation required by this paragraph. [Reference paragraph (c)(1) for specific plan information.]*

**1910.119(d)**—*Process safety information. In accordance with the schedule set forth in *paragraph (e)(1) [Process Hazard Analysis]* of this section, the employer shall complete a compilation of **written process safety information** before conducting any process hazard analysis required by the standard. The compilation of **written process safety information** is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This process safety information shall *include information* pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process. [Reference paragraph (d) for specific process safety information.]*

**1910.119(e)(1)**—*The employer shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and **document the priority order** for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. [Reference paragraph (e) for specific process hazard analysis information.]*

**1910.119(e)(5)**—*The employer shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the **resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions** to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.*

**1910.119(e)(7)**—*Employers shall retain process hazards analyses and updates or revalidations for each process covered by this section, as well as the **documented resolution of recommendations** described in *paragraph (e)(5) [Process Hazard Analysis]* of this section for the life of the process. [Reference the specific paragraph for record information.]*

**1910.119(f)(1)**—*The employer shall develop and implement **written operating procedures** that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address certain elements. [Reference paragraph (f)(1) for the specific procedure elements.]*

**1910.119(f)(3)**—*The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. The employer shall **certify annually** that these **operating procedures** are current and accurate.*

**1910.119(g)(1)(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.*

**1910.119(g)(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.**

**910.119(j)(2)**—*Written procedures.* The employer shall establish and implement **written procedures** to **maintain** the on-going integrity of process equipment.

**910.119(k)(1)**—The employer shall issue a **hot work permit** for hot work operations conducted on or near a covered process. [Reference paragraph (k) for specific permit information.]

**910.119(l)(1)**—The employer shall establish and implement **written procedures** to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process. [Reference paragraph (l) for specific record information.]

**910.119(m)(4)**—A **report** shall be **prepared** at the conclusion of the investigation.

**910.119(m)(5)**—The employer shall establish a system to promptly address and resolve the **incident report findings** and **recommendations**. **Resolutions and corrective actions** shall be **documented**.

**910.119(m)(7)**—**Incident investigation reports** shall be **retained** for five years.

**910.119(o)(3)**—A **report of the findings of the audit** shall be developed.

**910.119(o)(4)**—The employer shall promptly determine and **document** an appropriate **response** to each of the findings of the **compliance audit**, and **document** that deficiencies have been corrected.

**910.119(o)(5)**—Employers shall retain the two (2) most recent **compliance audit reports**.

### **Certification**

**910.119(f)(3)**—The **operating procedures** shall be reviewed as often as necessary to assure that they reflect current **operating practice**, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. The employer shall **certify** annually that these **operating procedures** are current and accurate.

**910.119(g)(1)(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**.

**910.119(o)(1)**—Employers shall **certify** that they have **evaluated compliance** with the provisions of this section at least every three years to verify that the **procedures and practices** developed under the standard are adequate and are being followed.

### **Training and Communications**

**910.119(g)(1)(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) [Operating Procedures]* 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. [Reference paragraph (g) for specific information.]

**910.119(g)(1)(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**.

**910.119(g)(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**.

**910.119(j)(3)**—*Training for process maintenance activities.* The employer shall train each employee involved in **maintaining** the on-going 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.

### **Exposure Monitoring**

**910.119(f)(1)(iii)(B)**—*Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment.*

**910.119(f)(1)(iii)(C)**—*Control measures* to be taken if physical contact or airborne exposure occurs.

## Qualified Person

**1910.119(f)(1)(i)(D)**—Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown *responsibility to qualified operators* to ensure that emergency shutdown is executed in a safe and timely manner.

*Scope/Application: This section applies to contractors working on site.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—initial and periodic evaluations, safe work practices
- Recordkeeping—injury and illness log
- Training and Communications—training, instruction, inform

## Programs, Policies and Procedures

**1910.119(f)(1)(iii)(B)**—*Precautions necessary to prevent exposure*, including *engineering controls*, *administrative controls*, and personal protective equipment.

**1910.119(f)(1)(iii)(C)**—*Control measures* to be taken if physical contact or airborne exposure occurs.

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

**1910.119(h)(2)(iv)**—The employer *shall develop and implement safe work practices consistent with paragraph (f)(4) [Operating Procedures]* of this section, to control the entrance, presence and exit of contract employers and contract employees in covered process areas.

**1910.119(h)(2)(v)**—The employer *shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) [Contract Employer Responsibilities]* of this section.

## Recordkeeping

**1910.119(h)(2)(vi)**—The employer *shall maintain a contract employee injury and illness log* related to the contractor’s work in process areas.

**1910.119(h)(3)(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. *[Reference paragraph (h) for specific record information.]*

## Training and Communications

**1910.119(h)(2)(ii)**—The employer *shall inform contract employers* of the known potential fire, explosion, or toxic release hazards related to the contractor’s work and the process.

**1910.119(h)(2)(iii)**—The employer *shall explain to contract employers the applicable provisions of the emergency action plan required by paragraph (n) [Emergency Planning and Response]* of this section.

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

**1910.119(h)(3)(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*.

**1910.119(h)(3)(iii)**—The contract employer *shall document that each contract employee has received and understood the training* required in 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. *[Reference paragraph (h) for specific information.]*

## 1910.120—HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

**Scope/Application:** *This standard applies to clean-up operations required by a governmental body, whether Federal, state local or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained); corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended; voluntary clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites; operations involving hazardous waste that are conducted at treatment, storage, disposal (TSD) facilities regulated by 40 CFR Parts 264 and 265 pursuant to RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations; and emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—safety and health program, evaluations, medical surveillance program, emergency response plan, new technology program, PPE program, work controls
- Inspections and Tests—inspections
- Recordkeeping—retention requirements
- Certification—documented
- Training and Communications—initial and annual training, briefings, fit testing
- Exposure Monitoring—initial and periodic monitoring
- Medical Surveillance—initial, annual, and emergency examinations
- Qualified Person—training qualifications

### Programs, Policies and Procedures

**1910.120(b)(1)(i)**—Employers shall develop and implement a **written safety and health program** for their employees involved in hazardous waste operations. The **program** shall be designed to identify, evaluate, and control safety and health hazards, and provide for emergency response for hazardous waste operations. [Reference paragraph (b)(1)(ii) for the safety and health program elements.]

**Note:** *Safety and health programs developed and implemented to meet other federal, state, or local regulations are considered acceptable in meeting this requirement if they cover or are modified to cover the topics required in this paragraph. An additional or separate **safety and health program** is not required by this paragraph.*

**1910.120(c)(2)**—*Preliminary evaluation.* A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a *qualified person* in order to aid in the selection of appropriate employee protection methods prior to site entry. *Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed by a qualified person* in order to further identify existing site hazards and to further aid in the selection of the appropriate *engineering controls and personal protective equipment* for the tasks to be performed.

**1910.120(e)(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) [Initial Training]) 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.**

**1910.120(f)(1)**—General. Employees engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) [Scope] of this section and not covered by (a)(2)(iii) [Application] exceptions and employers of employees specified in paragraph (g)(9) [Medical Surveillance and Consultation] shall institute a **medical surveillance program** in accordance with this paragraph [Reference paragraph (f)(1) for covered personnel.]

**1910.120(g)**—Engineering controls, work practices, and personal protective equipment for employee protection. *Engineering controls, work practices and personal protective equipment, or a combination of these shall be implemented* in accordance with this paragraph to protect employees from exposure to hazardous substances [regulated in Subpart G—Occupational Health and Environmental Control and Subpart Z—Toxic and Hazardous Substances] and safety and health hazards.

**1910.120(g)(5)—Personal protective equipment (PPE) program.** *A personal protective equipment program, which is part of the employer's safety and health program required in paragraph (b) [Safety and Health Program] of this section or required in paragraph (p)(1) [Safety and Health Program] of this section and which is also a part of the site-specific safety and health plan shall be established. The PPE program shall address the elements listed below. [Reference paragraph (g) for the specific elements.] When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the plan, they need not be rewritten into the plan as long as they adequately address the procedure or element.*

**1910.120(j)(7)—Sampling of drum and container contents.** *Sampling of containers and drums shall be done in accordance with a sampling procedure which is part of the site safety and health plan developed for and available to employees and others at the specific worksite.*

**1910.120(l)(1)(i)—An emergency response plan shall be developed and implemented by all employers within the scope of paragraphs (a)(1)(i) through (ii) [Scope] of this section to handle anticipated emergencies prior to the commencement of hazardous waste operations. The plan shall be in writing and available for inspection and copying by employees, their representatives, OSHA personnel and other governmental agencies with relevant responsibilities.**

**1910.120(l)(3)(v)—The site emergency response plan shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.**

**1910.120(o)(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. [Reference paragraph (o) for specific information.]**

**1910.120(o)(2)—New technologies, equipment or control measures available to the industry, such as the use of foams, absorbents, absorbents, neutralizers, or other means to suppress the level of air contaminants while excavating the site or for spill control, shall be evaluated by employers or their representatives. Such an evaluation shall be done to determine the effectiveness of the new methods, materials, or equipment before implementing their use on a large scale for enhancing employee protection. Information and data from manufacturers or suppliers may be used as part of the employer's evaluation effort. Such evaluations shall be made available to OSHA upon request.**

## **Inspections and Tests**

**1910.120(b)(4)(iv)—Effectiveness of site safety and health plan.** *Inspections shall be conducted by the site safety and health supervisor or, in the absence of that individual, another individual who is knowledgeable in occupational safety and health, acting on behalf of the employer as necessary to determine the effectiveness of the site safety and health plan. Any deficiencies in the effectiveness of the site safety and health plan shall be corrected by the employer.*

## **Recordkeeping**

**1910.120(e)(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) [Training] of this section shall be certified by their instructor or the head instructor and trained supervisor as having 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) [Equivalent Training] of this section shall be prohibited from engaging in hazardous waste operations.*

**1910.120(e)(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) [Training] 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.*

**1910.120(f)(8)(i)—An accurate record of the medical surveillance required by paragraph (f) of this section shall be retained. This record shall be retained for the period specified and meet the criteria of 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]. [Reference paragraph (f) for specific record information.]**

**1910.120(l)(1)(i)**—An **emergency response plan** shall be developed and implemented by all employers within the scope of paragraphs (a)(1)(i) through (ii) [Scope] of this section to handle anticipated emergencies prior to the commencement of hazardous waste operations. The **plan** shall be in **writing and available for inspection and copying** by employees, their representatives, OSHA personnel and other governmental agencies with relevant responsibilities.

### **Certification**

**1910.120(e)(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) [Training] of this section shall be **certified** by their instructor or the head instructor and trained supervisor as having 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) [Equivalent Training] of this section shall be prohibited from engaging in hazardous waste operations.

**1910.120(e)(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) [Training] 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.

### **Training and Communications**

**1910.120(b)(4)(iii)**—**Pre-entry briefing.** The **site specific safety and health plan** shall provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the **site safety and health plan** and that this **plan** is being followed. The **information and data** obtained from site characterization and analysis work required in paragraph (c) [Site Characterization and Analysis] of this section shall be used to prepare and update the **site safety and health plan**.

**1910.120(e)(1)(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. [Reference paragraph (e)(2) for training elements to be covered.]

**1910.120(e)(3)(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.

**1910.120(e)(3)(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.

**1910.120(e)(3)(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.

**1910.120(e)(3)(iv)**—Workers with 24 hours of training who are covered by paragraphs (e)(3)(ii) and (e)(3)(iii) [Initial Training] 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) [Initial Training].

**1910.120(e)(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) [Initial Training]) 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.

**1910.120(e)(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.

**1910.120(e)(7)**—*Emergency response.* Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances *shall be trained* in how to respond to such expected emergencies.

**1910.120(e)(8)**—*Refresher training.* Employees specified in paragraph (e)(1) [Training] of this section, and managers and supervisors specified in paragraph (e)(4) [Management and Supervisor Training] of this section, shall receive eight hours of refresher training annually on the items specified in paragraph (e)(2) [Elements to Be Covered] and/or (e)(4) [Management and Supervisor Training] of this section, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

**1910.120(g)(5)(vi)**—*PPE training and proper fitting.*

**1910.120(l)(3)(iv)**—The **emergency response plan** shall be rehearsed regularly as part of the overall **training program** for site operations.

### Exposure Monitoring

**1910.120(h)(1)(i)**—*Monitoring shall be performed* in accordance with this paragraph where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances. [Reference paragraph for the specific elements.]

**1910.120(h)(3)**—*Periodic monitoring.* Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen.

**1910.120(j)(7)**—*Sampling of drum and container contents.* Sampling of containers and drums shall be done in accordance with a *sampling procedure* which is part of the **site safety and health plan** developed for and **available** to employees and others at the specific worksite.

### Medical Surveillance

**1910.120(f)(1)**—General. Employees engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) [Scope] of this section and not covered by (a)(2)(iii) [Application] exceptions and employers of employees specified in paragraph (q)(9) [Medical Surveillance and Consultation] shall institute a medical surveillance program in accordance with this paragraph [Reference paragraph (f)(1) for covered personnel.]

**1910.120(f)(3)**—*Frequency of medical examinations and consultations.* Medical examinations and consultations shall be made **available** by the employer to each employee covered under paragraph (f)(2) [Medical Surveillance] of this section on the following schedules:

**1910.120(f)(3)(i)(A)**—*Prior to assignment.*

**1910.120(f)(3)(i)(B)**—*At least once every twelve months* for each employee covered unless the attending **physician** believes a longer interval (not greater than biennially) is appropriate.

**1910.120(f)(3)(i)(C)**—*At termination of employment or reassignment* to an area where the employee would not be covered if the employee has not had an examination within the last six months.

**1910.120(f)(3)(i)(D)**—*As soon as possible upon notification by an employee that the employee has developed signs or symptoms* indicating possible overexposure to hazardous substances or health hazards, or that the

employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation.

**1910.120(f)(3)(i)(E)**—At more frequent times, if the examining **physician** determines that an increased frequency of examination is medically necessary.

**1910.120(f)(3)(ii)**—For employees covered under *paragraph (f)(2)(iii) [Medical Surveillance]* and for all employees including of employers covered by *paragraph (a)(1)(iv) [Scope]* who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the **published exposure levels** without the necessary personal protective equipment being used:

**1910.120(f)(3)(ii)(A)**—As soon as possible following the emergency incident or development of signs or symptoms.

**1910.120(f)(3)(ii)(B)**—At additional times, if the examining **physician** determines that follow-up examinations or consultations are medically necessary.

**1910.120(f)(6)**—**Information provided to the physician.** The employer shall provide one **copy** of this **standard** and its **appendices** to the attending **physician** and in additional **information** for each employee. [Reference paragraph (f)(6) for specific information.]

### Qualified Person

**1910.120(c)(2)**—**Preliminary evaluation.** A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a **qualified person** in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed by a **qualified person** in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.

**1910.120(e)(3)(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.

**1910.120(e)(3)(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.

**1910.120(e)(3)(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.

**1910.120(e)(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.

**Scope/Application:** 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 (1910.120(p)). See the "Notes and Exceptions" to paragraph (a)(2)(iii) of this section for employers not covered.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—safety and health program, hazard communication program, medical surveillance program, decontamination program, new technology program, material handling program, training program, emergency response plan
- Recordkeeping—program
- Certification—employee's competency

- Training and Communications—program, initial and annual training
- Medical Surveillance—program
- Qualified Person—training qualifications

## Programs, Policies and Procedures

**1910.120(p)(1)—Safety and health program.** The employer shall develop and implement a **written safety and health program** for employees involved in hazardous waste operations that shall be **available** for inspection by employees, their representatives and OSHA personnel. The **program** shall be designed to identify, evaluate and control safety and health hazards in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of *paragraph (p)(8) [Emergency Response Plan]* of this section and to *address as appropriate site analysis, engineering controls, maximum exposure limits, hazardous waste handling procedures and uses of new technologies.* [Reference *paragraph (p)* for specific information.]

**1910.120(p)(2)—Hazard communication program.** The employer shall implement a **hazard communication program** meeting the requirements of 29 CFR 1910.1200 [Hazard Communication] as part of the **employer's safety and program.**

*Note: The exemption for hazardous waste provided in Sec. 1910.1200 [Hazard Communication] is applicable to this section.*

**1910.120(p)(3)—Medical surveillance program.** The employer shall develop and implement a **medical surveillance program** meeting the requirements of *paragraph (f) [Medical Surveillance]* of this section. [Reference the standard for specific requirements.]

**1910.120(p)(4)—Decontamination program.** The employer shall develop and implement a **decontamination procedure** meeting the requirements of *paragraph (k) [Decontamination]* of this section. [Reference the standard for specific requirements.]

**1910.120(p)(5)—New technology program.** The employer shall develop and implement procedures meeting the requirements of *paragraph (o) [New Technology Programs]* of this section for introducing new and innovative equipment into the workplace. [Reference *paragraph (p)(5)* for specific requirements.]

**1910.120(p)(6)—Material handling program.** Where employees will be handling drums or containers, the employer shall develop and implement procedures meeting the requirements of *paragraphs (j)(1)(ii) through (viii) and (xi)* of this section, as well as *(j)(3) and (j)(8) [Handling Drums and Containers]* of this section prior to starting such work.

**1910.120(p)(7)(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. [Reference *paragraph (p)(7)* for specific training information.]

**1910.120(p)(8)(i)—Emergency response plan.** An **emergency response plan** shall be developed and implemented by all employers. Such **plans** need not duplicate any of the subjects fully addressed in the employer's contingency planning required by permits, such as those issued by the U.S. Environmental Protection Agency, provided that the **contingency plan** is made part of the **emergency response plan.** The **emergency response plan** shall be a **written portion** of the employer's **safety and health program** required in *paragraph (p)(1) [Safety and Health Program]* of this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of *paragraph (p)(8) [Emergency Response]* if they provide an **emergency action plan** complying with 29 CFR 1910.38 [Emergency Action Plan]. [Reference *paragraph (p)(8)(ii)* for specific program elements.]

**1910.120(p)(8)(iv)(D)—**The **site emergency response plan** shall be reviewed periodically and, as necessary, be amended to keep it current with new or changing site conditions or information.

**1910.120(p)(8)(iv)(F)—**Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities and proceed with the appropriate steps to implement the **site emergency response plan.**

## Recordkeeping

**1910.120(p)(1)**—*Safety and health program.* The employer shall develop and implement a **written safety and health program** for employees involved in hazardous waste operations that shall be *available* for inspection by employees, their representatives and OSHA personnel. The **program** shall be designed to identify, evaluate and control safety and health hazards in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of *paragraph (p)(8) [Emergency Response Plan]* of this section and to address as *appropriate site analysis, engineering controls, maximum exposure limits, hazardous waste handling procedures and uses of new technologies.* [Reference *paragraph (p)* for specific information.]

**1910.120(p)(7)(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.*

**1910.120(p)(8)(i)**—*Emergency response plan.* An **emergency response plan** shall be developed and implemented by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by *permits*, such as those issued by the *U.S. Environmental Protection Agency*, provided that the **contingency plan** is made part of the **emergency response plan**. The **emergency response plan** shall be a **written portion** of the employer's **safety and health program** required in *paragraph (p)(1) [Safety and Health Program]* of this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of *paragraph (p)(8) [Emergency Response]* if they provide an **emergency action plan** complying with 29 CFR 1910.38 [Emergency Action Plan]. [Reference *paragraph (p)(8)(ii)* for specific program elements.]

**1910.120(p)(8)(iii)(C)**—The employer shall **certify** that each covered employee has attended and successfully completed the training required in *paragraph (p)(8)(iii) [Training]* of this section, or shall **certify** the employee's competency for **certification of training** shall be **recorded and maintained** by the employer.

## Certification

**1910.120(p)(7)(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.*

**1910.120(p)(8)(iii)(C)**—The employer shall **certify** that each covered employee has attended and successfully completed the training required in *paragraph (p)(8)(iii) [Training]* of this section, or shall **certify** the employee's competency for **certification of training** shall be **recorded and maintained** by the employer.

## Training and Communications

**1910.120(p)(7)(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. [Reference *paragraph (p)(7)* for specific training information.]*

**1910.120(p)(7)(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.*

**1910.120(p)(7)(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.**

**1910.120(p)(8)(iv)(C)**—The *emergency response plan shall be rehearsed regularly* as part of the overall **training program** for site operations.

### Medical Surveillance

**1910.120(p)(3)**—*Medical surveillance program. The employer shall develop and implement a **medical surveillance program** meeting the requirements of paragraph (f) [Medical Surveillance] of this section. [Reference the standard for specific requirements.]*

### Qualified Person

**1910.120(p)(7)(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.**

**1910.120(p)(8)(iii)(C)**—The employer shall **certify** that each covered employee has attended and successfully completed the training required in paragraph (p)(8)(iii) [Training] of this section, or shall **certify** the employee's competency for **certification** of training shall be **recorded** and **maintained** by the employer.

**Scope/Application:** *Emergency response program to hazardous substance releases. This paragraph (1910.120(q)) covers employers whose employees are engaged in emergency response no matter where it occurs except that it does not cover employees engaged in operations specified in paragraphs (a)(1)(i) through (a)(1)(iv) of this section. Those emergency response organizations who have developed and implemented programs equivalent to this paragraph for handling releases of hazardous substances pursuant to section 303 of the Superfund Amendments and Reauthorization Act of 1986 (Emergency Planning and Community Right-to-Know Act of 1986, 42 U.S.C. 11003) shall be deemed to have met the requirements of this paragraph.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency response plan
- Recordkeeping—competency records
- Certification—training
- Training and Communications—initial and annual training, initial briefings, certify
- Medical Surveillance—baseline examination
- Qualified Person—training qualifications

### Programs, Policies and Procedures

**1910.120(q)(1)**—*Emergency response plan. An **emergency response plan** shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The **plan shall be in writing and available for inspection and copying** by employees, their representatives and OSHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an **emergency action plan** in accordance with 29 CFR 1910.38 [Emergency Action Plan].*

### Recordkeeping

**1910.120(q)(1)**—*Emergency response plan. An **emergency response plan** shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The **plan shall be in writing and available for inspection and copying** by employees, their representatives and OSHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an **emergency action plan** in accordance with 29 CFR 1910.38 [Emergency Action Plan].*

**1910.120(q)(6)(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 specific areas in addition to those listed for the awareness level and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 in regards to 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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(8)(ii)**—*A statement shall be made of 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.*

## **Certification**

**1910.120(q)(6)(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 specific areas in addition to those listed for the awareness level and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 in regards to 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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas* and the employer *shall so certify*. [Reference paragraph (q) for specific training information.]

## Training and Communications

**1910.120(q)(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.

**1910.120(q)(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.* [Reference paragraph (q) for specific training information.]

**1910.120(q)(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:*

**1910.120(q)(6)(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. They would take no further action beyond notifying the authorities of the release.

**1910.120(q)(6)(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 specific areas in addition to those listed for the awareness level and the employer *shall so certify.* [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas and the employer *shall so certify.* [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 in regards to 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 specific areas and the employer *shall so certify.* [Reference paragraph (q) for specific training information.]

**1910.120(q)(6)(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 specific areas* and the employer *shall so certify.* [Reference paragraph (q) for specific training information.]

**1910.120(q)(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.

**1910.120(q)(8)(i)**—Those employees who are trained in accordance with *paragraph (q)(6) [Training]* of this section *shall receive annual refresher training* of sufficient content and duration to *maintain* their competencies, or *shall demonstrate competency in those areas at least yearly.*

### **Medical Surveillance**

**1910.120(q)(9)(i)**—Members of an *organized and designated HAZMAT team and hazardous materials specialist shall receive a baseline physical examination* and be provided with medical surveillance as required in *paragraph (f) [Medical Surveillance]* of this section. [*Reference paragraph (q)(9) of the standard for specific requirements.*]

### **Qualified Person**

**1910.120(q)(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.

## **1910.124—GENERAL REQUIREMENTS FOR DIPPING AND COATING OPERATIONS**

**Scope/Application:** *This rule applies when you use a dip tank containing a liquid other than water. It applies when you use the liquid in the tank or its vapor to: clean an object; coat an object; alter the surface of an object; or change the character of an object. This rule also applies to the draining or drying of an object you have dipped or coated.*

**Exceptions:** *This standard does not cover dip-tank operations involving molten material (a molten metal, alloy, or salt, for example).*

### **STANDARD HIGHLIGHTS**

Inspections and Tests—initial, quarterly and periodic inspections

### **Inspections and Tests**

**1910.124(j)(1)**—*Inspect* the hoods and ductwork of the ventilation system for corrosion or damage:

**1910.124(j)(1)(i)**—*At least quarterly* during operation.

**1910.124(j)(1)(ii)**—*Prior to operation* after a prolonged shutdown.

**1910.124(j)(2)**—Ensure that the airflow is adequate:

**1910.124(j)(2)(i)**—*At least quarterly* during operation.

**1910.124(j)(2)(ii)**—*Prior to operation* after a prolonged shutdown.

**1910.124(j)(3)**—*Periodically inspect* all dipping and coating equipment, including covers, drains, overflow piping, and electrical and fire-extinguishing systems, and promptly correct any deficiencies.



## 29 CFR Subpart I—Personal Protective Equipment

### 1910.132—GENERAL REQUIREMENTS

**Scope/Application:** *Protective equipment, including personal protective equipment for eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used, and maintained in a sanitary and reliable condition wherever it is necessary by reason of hazards of processes or environment, chemical hazards, radiological hazards, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—hazard assessment
- Inspections and Tests—initial hazard assessment
- Recordkeeping—hazard assessment
- Certification—written certification
- Training and Communications—initial and refresher training, communicate selection

#### Programs, Policies and Procedures

**1910.132(d)(1)**—The employer *shall assess the workplace* to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present.

#### Inspections and Tests

**1910.132(d)(1)**—The employer *shall assess the workplace* to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present.

#### Recordkeeping

**1910.132(d)(2)**—The employer *shall verify that the required workplace hazard assessment has been performed through a written certification* that identifies the workplace evaluated; the person *certifying* that the evaluation has been performed; the date(s) of the *hazard assessment*; and, which identifies the *document* as a *certification of hazard assessment*.

#### Certification

**1910.132(d)(2)**—The employer *shall verify that the required workplace hazard assessment has been performed through a written certification* that identifies the workplace evaluated; the person *certifying* that the evaluation has been performed; the date(s) of the *hazard assessment*; and, which identifies the *document* as a *certification of hazard assessment*.

#### Training and Communications

**1910.132(d)(1)**—The employer *shall assess the workplace* to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall:

**1910.132(d)(1)(ii)**—*Communicate selection* decisions to each affected employee.

**1910.132(f)(1)**—The employer *shall provide training* to each employee who is required by this section to use PPE. *[Reference paragraph (f) for training elements.]*

**1910.132(f)(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) [Training]* of this section, the employer *shall retrain* each such employee.

### 1910.134—RESPIRATORY PROTECTION

**Scope/Application:** *In the control of those occupational diseases caused by breathing air contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, sprays, or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—respirator program, annual review, fit tests
- Inspections and Tests—inspections before use and monthly, evaluations
- Recordkeeping—retention requirements, records
- Certification—respirator inspections
- Training and Communications—initial and annual training, Appendix D
- Medical Surveillance—initial evaluation, recommendations, questionnaires
- Qualified Person—designated program administrator
- Signs, Markings and Tags—tags, labels, color-coding

### Programs, Policies and Procedures

**1910.134(c)**—*Respiratory protection program.* This paragraph requires the employer to *develop and implement a written respiratory protection program* with required *worksite-specific procedures* and elements for required respirator use. The program *must be administered by a suitably trained program administrator.* In addition, certain *program elements* may be required for voluntary use to prevent potential hazards associated with the use of the respirator. [Reference paragraph (c)(1) for specific program elements.]

**1910.134(c)(1)**—In any workplace where respirators are necessary to protect the health of the employee or whenever respirators are required by the employer, the employer *shall establish and implement a written respiratory protection program with worksite-specific procedures.* The **program** shall be updated as necessary to reflect those changes in workplace conditions that affect respirator use.

**1910.134(c)(3)**—The employer *shall designate a program administrator who is qualified* by appropriate training or experience that is commensurate with the complexity of the **program** to administer or oversee the **respiratory protection program** and *conduct the required evaluations of program effectiveness.*

**1910.134(d)(3)(iii)(B)(2)**—If there is no ESLI [end-of-service-life indicator] appropriate for conditions in the employer’s workplace, the employer *implements a change schedule* for canisters and cartridges that is based on objective **information or data** that will ensure that canisters and cartridges are changed before the end of their service life. The employer *shall describe in the respiratory program the information and data* relied upon and the basis for the **canister and cartridge change schedule** and the basis for reliance on the **data**.

**1910.134(f)**—*Fit testing.* This paragraph requires that, *before an employee may be required to use* any respirator with a negative or positive pressure tight-fitting facepiece, the employee *must be fit tested* with the same make, model, style, and size of respirator that will be used. This paragraph specifies the kinds of fit tests allowed, *the procedures* for conducting them, and how the **results** of the fit tests must be used.

**1910.134(f)(2)**—The employer *shall ensure that an employee using a tight-fitting facepiece respirator is fit tested prior to initial use* of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and *at least annually thereafter.*

**1910.134(f)(3)**—The employer *shall conduct an additional fit test whenever* the employee reports, or the employer, **PLHCP [physician or other licensed health care professional]**, supervisor, or program administrator *makes visual observations of,* changes in the employee’s physical condition that could affect respirator fit. Such conditions include, but are not limited to, facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.

### Inspections and Tests

**1910.134(h)(3)(i)** The employer *shall ensure that respirators are inspected as follows:*

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

**1910.134(h)(3)(i)(B)**—*All respirators maintained for use in emergency situations shall be inspected at least monthly and in accordance with the manufacturer’s recommendations, and shall be checked for proper function before and after each use; and*

**1910.134(h)(3)(i)(C)**—*Emergency escape-only respirators shall be inspected before being carried into the workplace for use.*

**1910.134(h)(3)(iii)**—In addition to the requirements of paragraphs (h)(3)(i) and (ii) [Inspection] of this section, self-contained breathing apparatus *shall be inspected monthly.* Air and oxygen cylinders shall be *maintained* in a fully charged state and shall

be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

**1910.134(l)(1)**—The employer *shall conduct evaluations of the workplace as necessary* to ensure that the provisions of the current **written program** are being effectively implemented and that it continues to be effective.

### Recordkeeping

**1910.134(c)**—**Respiratory protection program.** This paragraph requires the employer to *develop and implement a written respiratory protection program* with required *worksite-specific procedures* and elements for required respirator use. The **program must be administered by a suitably trained program administrator.** In addition, certain **program elements** may be *required for voluntary use to prevent potential hazards* associated with the use of the respirator. [Reference paragraph (c)(1) for specific program elements.]

**1910.134(e)(6)(i)**—*Obtain a written recommendation* regarding the employee's ability to use the respirator from the **PLHCP.** [Reference paragraph (e)(6)(i) for specific information.]

**1910.134(h)(3)(iv)(B)**—*Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.*

**1910.134(m)**—**Recordkeeping.** This section requires the employer to *establish and retain written information regarding medical evaluations, fit testing, and the respirator program.* This information will facilitate employee involvement in the **respirator program**, assist the employer in auditing the adequacy of the **program**, and provide a **record** for **compliance determinations** by OSHA. [Reference paragraph (m) for specific record and record retention information.]

**1910.134(m)(1)**—**Medical evaluation. Records of medical evaluations** required by this section *must be retained and made available in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

**1910.134(m)(2)(i)**—The employer *shall establish a record of the qualitative and quantitative fit tests* administered to an employee.

**1910.134(m)(2)(ii)**—*Fit test records shall be retained for respirator users until the next fit test* is administered.

**1910.134(m)(3)**—A **written copy of the current respirator program** shall be retained by the employer.

### Certification

**1910.134(h)(3)(iv)**—For respirators **maintained** for emergency use, the employer *shall*:

**1910.134(h)(3)(iv)(A)**—*Certify the respirator by documenting the date the inspection* was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.

**1910.134(h)(3)(iv)(B)**—*Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.*

### Training and Communications

**1910.134(c)**—**Respiratory protection program.** This paragraph requires the employer to *develop and implement a written respiratory protection program* with required *worksite-specific procedures* and elements for required respirator use. The **program must be administered by a suitably trained program administrator.** In addition, certain **program elements** may be *required for voluntary use to prevent potential hazards* associated with the use of the respirator.

**1910.134(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 [Information for Employees Using Respirators When Not Required Under Standard] of this section* to employees who wear respirators when not required by this section or by the employer to do so. [Reference paragraph (k)(1) for specific training information.]

**1910.134(k)(5)**—Retraining shall be administered annually, and when the following situations occur:

**1910.134(k)(5)(i)**—Changes in the workplace or the type of respirator render previous training obsolete.

**1910.134(k)(5)(ii)**—Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the requisite understanding or skill.

**1910.134(k)(5)(iii)**—Any other situation arises in which retraining appears necessary to ensure safe respirator use.

**1910.134(k)(6)**—The basic advisory information on respirators, as presented in **Appendix D—Information for Employees Using Respirators When Not Required Under Standard 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.

### Medical Surveillance

**1910.134(e)(1)**—General. The employer shall provide a medical evaluation to determine the employee's ability to use a respirator, before the employee is fit tested or required to use the respirator in the workplace. The employer may discontinue an employee's medical evaluations when the employee is no longer required to use a respirator.

**1910.134(e)(3)(i)**—The employer shall ensure that a follow-up medical examination is provided for an employee who gives a positive response to any **question** among **questions 1 through 8** in Section 2, Part A of **Appendix C [OSHA Respirator Medical Evaluation Questionnaire]** or whose initial medical examination demonstrates the need for a follow-up medical examination.

**1910.134(e)(5)(i)**—**Information** must be provided to the **PLHCP** before the **PLHCP** makes a recommendation concerning an employee's ability to use a respirator. [Reference paragraph (e)(5)(i) for information to be provide to the physician.]

**1910.134(e)(6)(i)**—Obtain a **written recommendation** regarding the employee's ability to use the respirator from the **PLHCP**. [Reference paragraph (e)(6)(i) for specific information.]

### Qualified Person

**1910.134(c)(3)**—The employer shall designate a program administrator who is qualified by appropriate training or experience that is commensurate with the complexity of the **program** to administer or oversee the **respiratory protection program** and conduct the required evaluations of **program** effectiveness.

### Signs, Markings and Tags

**1910.134(h)(3)(iv)(B)**—Provide this information on a **tag or label** that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in **inspection reports** stored as **paper or electronic files**. This **information** shall be **maintained** until replaced following a subsequent **certification**.

**1910.134(i)(5)(iv)**—Have a **tag** containing the most recent change date and the **signature** of the person authorized by the employer to perform the change. The **tag** shall be **maintained** at the compressor.

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

## 1910.137—ELECTRICAL PROTECTIVE DEVICES

**Scope/Application:** This rule covers specific requirements for design and use of electrical protective devices.

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic tests, inspections before use and after incident
- Recordkeeping—certification
- Certification—equipment tests
- Signs, Markings and Tags—markings

### Inspections and Tests

**1910.137(a)(2)(i)(C)**—Gloves shall also be capable of withstanding the a-c proof-test voltage specified in Table I-2 after a 16-hour water soak.

**1910.137(b)(2)(ii)**—Insulating equipment *shall be inspected for damage before each day's use and immediately following any incident* that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection.

**1910.137(b)(2)(viii)**—Electrical protective equipment *shall be subjected to periodic electrical tests*. Test voltages and the *maximum intervals between tests shall be in accordance with Table I-5 and Table I-6*.

**1910.137(b)(2)(xi)**—Repaired insulating equipment *shall be retested before it may be used* by employees.

### **Recordkeeping**

**1910.137(b)(2)(xii)**—The employer *shall certify that equipment has been tested in accordance with the requirements of paragraphs (b)(2)(viii), (b)(2)(ix), and (b)(2)(xi) [In-Service Care and Use]* of this section. The **certification** shall identify the equipment that passed the test and the date it was tested.

### **Certification**

**1910.137(b)(2)(xii)**—The employer *shall certify that equipment has been tested in accordance with the requirements of paragraphs (b)(2)(viii), (b)(2)(ix), and (b)(2)(xi) [In-Service Care and Use]* of this section. The **certification** shall identify the equipment that *passed the test and the date it was tested*.

### **Signs, Markings and Tags**

**1910.137(a)(1)(ii)**—Each item *shall be clearly marked*. [Reference paragraph (a)(1)(ii) for specific information.]

## **1910.140—PERSONAL FALL PROTECTION SYSTEMS**

**Scope/Application:** *This section establishes performance, care, and use criteria for all personal fall protection systems. The employer must ensure that each personal fall protection system used to comply with this part must meet the requirements of this section.*

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—procedures
- Inspections and Tests—inspections, tests
- Recordkeeping—design
- Competent Person—inspections
- Qualified Person—inspections

### **Programs, Policies and Procedures**

**1910.140(e)(1)(iii)**—Positioning systems, including window cleaners' positioning systems, *that meet the test methods and procedures in appendix D—Test Methods and Procedures for Personal Fall Protection Systems Non-Mandatory Guidelines* of this subpart are considered to be in compliance with *paragraphs (e)(1)(i) and (ii)*.

**1910.140(e)(2)(xi)**—Except as provided in *paragraph (e)(2)(xii)* of this section, the employee travels from one window to another by returning inside the window opening and *repeating the belt terminal attachment procedure* at each window in accordance with *paragraph (e)(2)(x)* of this section.

### **Inspections and Tests**

**1910.140(c)(6)**—*A competent person or qualified person must inspect each knot in a lanyard or vertical lifeline to ensure that it meets the requirements of paragraphs (c)(4) and (5) of this section before any employee uses the lanyard or lifeline.*

**1910.140(c)(8)**—D-rings, snaphooks, and carabiners *must be proof tested* to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or incurring permanent deformation. The gate strength of snaphooks and carabiners, *must be proof tested to 3,600 lbs. (16 kN)* in all directions.

**1910.140(c)(17)**—A personal fall protection system or its components subjected to impact loading *must be removed from service immediately and not used again until a competent person inspects the system or components* and determines that it is not damaged and safe for use for employee personal fall protection.

**1910.140(c)(18)**—Personal fall protection systems *must be inspected before initial use during each workshift* for mildew, wear, damage, and other deterioration, and defective components must be removed from service.

**1910.140(d)(2)(ii)**—Personal fall arrest systems are rigged in such a manner that the employee cannot free fall more than 6 feet (1.8 m) or contact a lower level. A free fall may be more than 6 feet (1.8 m) *provided the employer can demonstrate the manufacturer designed the system to allow a free fall of more than 6 feet and tested the system* to ensure a maximum arresting force of 1,800 pounds (8 kN) is not exceeded.

**1910.140(e)(1)(ii)**—Window cleaners' positioning systems. All *window cleaners' positioning systems must:*

**1910.140(e)(1)(ii)(A)**—*Be capable of withstanding without failure a drop test consisting of a 6-foot (1.8-m) drop of a 250-pound (113-kg) weight.*

**1910.140(e)(1)(iii)**—Positioning systems, including window cleaners' positioning systems, that meet the test methods and procedures in appendix D—Test Methods and Procedures for Personal Fall Protection Systems Non-Mandatory Guidelines of this subpart are considered to be in compliance with paragraphs (e)(1)(i) and (ii).

**1910.140(e)(1)(iv)**—Lineman's body belt and pole strap systems. Lineman's body belt and pole strap systems *must meet the following tests:*

**1910.140(e)(1)(iv)(A)**—*A dielectric test of 819.7 volts, AC, per centimeter (25,000 volts per foot) for 3 minutes without visible deterioration;*

**1910.140(e)(1)(iv)(B)**—*A leakage test of 98.4 volts, AC, per centimeter (3,000 volts per foot) with a leakage current of no more than 1 mA; and*

**1910.140(e)(1)(iv)(C)**—*A flammability test in accordance with Table I-7 of this section.*

### **Recordkeeping**

**1910.140(c)(11)**—The employer *must ensure that each horizontal lifeline:*

**1910.140(c)(11)(i)**—*Is **designed**, installed, and used under the supervision of a qualified person.*

**1910.140(c)(13)**—Anchorages, except window cleaners' belt anchors covered by *paragraph (e)* of this section, must be:

**1910.140(c)(13)(ii)**—***Designed**, installed, and used, under the supervision of qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two.*

### **Competent Person**

**1910.140(c)(6)**—*A competent person or qualified person must inspect each knot in a lanyard or vertical lifeline to ensure that it meets the requirements of paragraphs (c)(4) and (5) of this section before any employee uses the lanyard or lifeline.*

**1910.140(c)(17)**—A personal fall protection system or its components subjected to impact loading *must be removed from service immediately and not used again until a competent person inspects the system or components* and determines that it is not damaged and safe for use for employee personal fall protection.

### **Qualified Person**

**1910.140(c)(6)**—*A competent person or qualified person must inspect each knot in a lanyard or vertical lifeline to ensure that it meets the requirements of paragraphs (c)(4) and (5) of this section before any employee uses the lanyard or lifeline.*

**1910.140(c)(11)**—The employer *must ensure that each horizontal lifeline:*

**1910.140(c)(11)(i)**—*Is **designed**, installed, and used under the supervision of a qualified person.*

**1910.140(c)(13)**—Anchorages, except window cleaners' belt anchors covered by *paragraph (e)* of this section, must be:

**1910.140(c)(13)(ii)**—***Designed**, installed, and used, under the supervision of qualified person, as part of a complete personal fall protection system that maintains a safety factor of at least two.*

## 29 CFR Subpart J—General Environmental Controls

### 1910.141—SANITATION

**Scope/Application:** *This rule applies to permanent places of employment.*

**Exception:** *This standard does not apply to mobile crews or to normally unattended work locations so long as employees working at these locations have transportation immediately available to nearby toilet facilities.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—extermination program

#### Programs, Policies and Procedures

**1910.141(a)(5)**—Vermin control. Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin. A *continuing and effective extermination program shall be instituted* where their presence is detected.

### 1910.145—SPECIFICATIONS FOR ACCIDENT PREVENTION SIGNS AND TAGS

**Scope/Application:** *This rule provides specifications for color identification for signs, tags, equipment and containers.*

#### STANDARD HIGHLIGHTS

- Training and Communications—initial instruction, employees informed
- Signs, Markings and Tags—tags

#### Training and Communications

**1910.145(c)(1)(ii)**—All employees *shall be instructed* that **danger signs** indicate immediate danger and that special precautions are necessary.

**1910.145(c)(2)(ii)**—All employees *shall be instructed* that **caution signs** indicate a possible hazard against which proper precaution should be taken.

**1910.145(f)(4)(v)**—All employees *shall be informed* as to the *meaning of the various tags* used throughout the workplace and what special precautions are necessary.

#### Signs, Markings and Tags

**1910.145(c)(1)(ii)**—All employees *shall be instructed* that **danger signs** indicate immediate danger and that special precautions are necessary.

**1910.145(c)(2)(ii)**—All employees *shall be instructed* that **caution signs** indicate a possible hazard against which proper precaution should be taken.

**1910.145(f)(4)(v)**—All employees *shall be informed* as to the *meaning of the various tags* used throughout the workplace and what special precautions are necessary.

### 1910.146—PERMIT-REQUIRED CONFINED SPACES

**Scope/Application:** *This section contains requirements for practices and procedures to protect employees in general industry from the hazards of entry into permit-required confined spaces.*

**Exception:** *This standard does not apply to agriculture, to construction, or to shipyard employment.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—permit space program, procedures, annual review, permit system
- Inspections and Tests—exposure testing
- Recordkeeping—retain permits one year, maintain safety data sheets
- Certification—documentation
- Training and Communications—initial and annual training, inform contractors
- Exposure Monitoring—pre-entry and continuous testing
- Qualified Person—designated persons for entrants, attendants, and entry supervisors

## Programs, Policies and Procedures

**1910.146(c)(4)**—If the employer decides that its employees will enter permit spaces, the employer *shall develop and implement a **written permit space program*** that complies with this section. The **written program** shall be **available** for inspection by employees and their authorized representatives. [Reference paragraphs (c)–(d) for the permit space program elements.]

**1910.146(d)(3)**—Develop and implement the means, procedures, and practices necessary for safe permit space entry operations.

**1910.146(d)(14)**—Review the **permit space program**, using the canceled **permits retained** under paragraph (e)(6) of this section within 1 year after each entry and revise the **program** as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

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

**1910.146(e)(6)**—The employer shall **retain each canceled entry permit** for at least 1 year to facilitate the review of the **permit-required confined space program** required by paragraph (d)(14) [Permit Space Program] of this section. Any problems encountered during an entry operation shall be noted on the **pertinent permit** so that **appropriate revisions to the permit space program** can be made.

**1910.146(k)(1)**—An employer who designates rescue and emergency services, pursuant to paragraph (d)(9) [Permit Space Program] of this section, shall:

**1910.146(k)(1)(i)**—Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.

**1910.146(k)(1)(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.

## Inspections and Tests

**1910.146(c)(5)(i)(C)**—The employer *develops **monitoring and inspection data*** that supports the demonstrations required by paragraphs (c)(5)(i)(A) and (c)(5)(i)(B) of this section.

**1910.146(c)(7)(ii)**—If it is necessary to enter the permit space to eliminate hazards, such entry shall be performed under paragraphs (d) [Permit-required Confined Space Program] through (k) [Rescue and Emergency Services] of this section. *If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated.*

**1910.146(d)(5)**—Evaluate permit space conditions as follows when entry operations are conducted:

**1910.146(d)(5)(i)**—Test conditions in the permit space to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), *pre-entry testing shall be performed to the extent feasible before entry is authorized and, if entry is authorized, entry conditions shall be continuously monitored in the areas where authorized entrants are working.*

## Recordkeeping

**1910.146(c)(4)**—If the employer decides that its employees will enter permit spaces, the employer *shall develop and implement a **written permit space program*** that complies with this section. The **written program** shall be **available** for inspection by employees and their authorized representatives. [Reference paragraphs (c)–(d) for the permit space program elements.]

**1910.146(c)(7)(iii)**—The employer shall **document the basis for determining that all hazards in a permit space have been eliminated, through a certification** that contains the date, the location of the space, and the **signature of the person** making the determination. The **certification** shall be made **available** to each employee entering the space or to that employee's authorized representative.



**1910.146(d)(14)**—Review the **permit space program**, using the canceled **permits retained** under paragraph (e)(6) of this section within 1 year after each entry and revise the **program** as necessary, to ensure that employees participating in entry operations are protected from permit space hazards.

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

**1910.146(e)(6)**—The employer shall **retain each canceled entry permit** for at least 1 year to facilitate the review of the **permit-required confined space program** required by paragraph (d)(14) [Permit Space Program] of this section. Any problems encountered during an entry operation shall be noted on the pertinent **permit** so that **appropriate revisions to the permit space program** can be made.

**1910.146(g)(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.

**1910.146(k)(2)(iii)**—Train affected employees in basic first-aid and cardiopulmonary resuscitation (CPR). The employer shall ensure that at least one member of the rescue team or service holding a current **certification in first aid and CPR** is available.

**1910.146(k)(4)**—If an injured entrant is exposed to a substance for which a [safety data sheet (SDS)] or other similar **written information** is required to be kept at the worksite, that **SDS or written information** shall be made **available** to the medical facility treating the exposed entrant.

### **Certification**

**1910.146(c)(7)(iii)**—The employer shall **document the basis for determining that all hazards in a permit space have been eliminated, through a certification** that contains the date, the location of the space, and the **signature of the person** making the determination. The **certification** shall be made **available** to each employee entering the space or to that employee's authorized representative.

**1910.146(g)(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.

### **Training and Communications**

**1910.146(c)(8)(i)**—Inform the contractor that the workplace contains permit spaces and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of this section.

**1910.146(d)(8)**—Designate the persons who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by paragraph (g) [Training] of this section. [Reference paragraph (g) for specific training elements.]

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

**1910.146(g)(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.

**1910.146(k)(2)(ii)**—Train affected employees to perform assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency as an authorized entrant, as provided by paragraphs (g) [Training] and (h) [Duties of Authorized Entrants] of this section.

**1910.146(k)(2)(iii)**—Train affected employees in basic first-aid and cardiopulmonary resuscitation (CPR). The employer shall ensure that at least one member of the rescue team or service holding a current **certification in first aid and CPR** is available.

**1910.146(k)(2)(iv)**—Ensure that affected employees practice making permit space rescues at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces. Representative permit spaces shall, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.

## Exposure Monitoring

**1910.146(d)(5)**—*Evaluate permit space conditions* as follows when entry operations are conducted:

**1910.146(d)(5)(i)**—*Test conditions in the permit space* to determine if acceptable entry conditions exist before entry is authorized to begin, except that, if isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), *pre-entry testing shall be performed* to the extent feasible before entry is authorized and, if entry is authorized, entry conditions *shall be continuously monitored* in the areas where authorized entrants are working.

## Qualified Person

**1910.146(d)(8)**—*Designate the persons* who are to have active roles (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and *provide each such employee with the training required by paragraph (g) [Training] of this section. [Reference paragraph (g) for specific training elements.]*

**1910.146(k)(2)(ii)**—*Train affected employees to perform* assigned rescue duties. The employer must ensure that such employees successfully complete the training required to establish proficiency *as an authorized entrant*, as provided by *paragraphs (g) [Training] and (h) [Duties of Authorized Entrants]* of this section.

## 1910.147—THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

**Scope/Application:** *This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy, could harm employees. This standard establishes minimum performance requirements for the control of such hazardous energy.*

**Exception:** *This standard does not apply to construction, agriculture, and maritime employment, installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering, or exposure to electrical hazards from work on, near or with conductors or equipment in electric utilization installations, or oil and gas drilling and servicing. It does not apply to the servicing and/or maintenance required during normal production operations. It does not apply to work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance or hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—energy control program, procedures, training, inspections
- Inspections and Tests—periodic and annual inspections
- Recordkeeping—certifications, documented procedures
- Certification—inspections
- Training and Communications—initial and refresher training, specific training for authorized, affected, and all other employees, inform contractors of procedures
- Qualified Person—authorized employee
- Signs, Markings and Tags—tags

## Programs, Policies and Procedures

**1910.147(c)(1)**—**Energy control program.** The employer *shall establish a program consisting of energy control procedures, employee training and periodic inspections* to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative. *[Reference paragraph (c)(4) for specific information.]*

**1910.147(c)(4)(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.

**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 locker-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.

## **Inspections and Tests**

**1910.147(c)(6)(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.

## **Recordkeeping**

**1910.147(c)(4)(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.

**1910.147(c)(6)(ii)**—The employer shall **certify** that the periodic **inspections** have been performed. The **certification** shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

## **Certification**

**1910.147(c)(6)(ii)**—The employer shall **certify** that the periodic **inspections** have been performed. The **certification** shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

## **Training and Communications**

**1910.147(c)(7)(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 the energy controls are acquired by employees. [Reference paragraph (c)(7)(i) for specific training elements.]

**1910.147(c)(7)(i)(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.

**1910.147(c)(7)(i)(B)**—Each affected employee shall be instructed in the purpose and use of the energy control procedure.

**1910.147(c)(7)(i)(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**.

**1910.147(c)(7)(iii)(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.

**1910.147(c)(7)(iii)(B)**—Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) [Periodic Inspection] of this section reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.

**1910.147(f)(2)(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.

## **Qualified Person**

**1910.147(c)(7)(i)(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.

## Signs, Markings and Tags

**1910.147(c)(5)(i)**—*Locks, tags, chains, wedges, key blocks*, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.

**1910.147(c)(7)(ii)(F)**—*Tags must be securely* attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.

## **29 CFR Subpart K—Medical and First Aid**

### **1910.151—MEDICAL SERVICES AND FIRST AID**

*Scope/Application: This rule provides requirements for providing medical services and first aid.*

#### **STANDARD HIGHLIGHTS**

- Training and Communications—first aid training

#### **Training and Communications**

**1910.151(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.

## 29 CFR Subpart L—Fire Protection

### 1910.156—FIRE BRIGADES

**Scope/Application:** *This section contains requirements for the organization, training, and personal protective equipment of fire brigades whenever they are established by an employer.*

**Exception:** *Does not apply to maritime, construction, and agriculture.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—procedures
- Inspections and Tests—annual inspections
- Recordkeeping—organizational statement
- Certification—physician’s certificate
- Training and Communications—initial, quarterly and annual training

#### Programs, Policies and Procedures

**1910.156(c)(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*.

#### Inspections and Tests

**1910.156(d)**—*Fire fighting equipment. The employer shall maintain and inspect, at least annually, fire fighting equipment to assure the safe operational condition of the equipment. Portable fire extinguishers and respirators shall be inspected at least monthly. Fire fighting equipment that is in damaged or unserviceable condition shall be removed from service and replaced.*

#### Recordkeeping

**1910.156(b)(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.*

**1910.156(c)(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*.

#### Certification

**1910.156(b)(2)**—Personnel. The employer *shall assure* that employees who are expected to do interior structural fire fighting are *physically capable of performing duties* which may be assigned to them during emergencies. The employer shall not permit employees with known heart disease, epilepsy, or emphysema, to participate in fire brigade emergency activities *unless a physician’s certificate of the employees’ fitness to participate in such activities is provided*.

#### Training and Communications

**1910.156(c)(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. *[Reference paragraph (c) for specific information.]*

**1910.156(c)(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 fire fighting shall be provided with an *education session or training at least quarterly*.

**1910.156(c)(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**

**Scope/Application:** *The requirements of this section apply to the placement, use, maintenance, and testing of portable fire extinguishers provided for the use of employees. Paragraph (d) [Selection and Distribution] of this section does not apply to extinguishers provided for employee use on the outside of workplace buildings or structures. Where extinguishers are provided but are not intended for employee use and the employer has an emergency action plan and a fire prevention plan that meet the requirements of 29 CFR 1910.38 [Emergency Action Plans] and 29 CFR 1910.39 [Fire Prevention Plans] respectively, then only the requirements of paragraphs (e) [Inspection, Maintenance and Testing] and (f) [Hydrostatic Testing] of this section apply.*

**Exception:** *The selection and distribution of extinguishers does not apply to extinguishers provided for employee use on the outside of buildings. When fire extinguishers are not provided for employee use, then only hydrostatic testing, inspections, and maintenance need to be complied with providing the employer has an emergency action and fire prevention plan implemented.*

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—educational program
- Inspections and Tests—monthly and annual inspections, hydrostatic tests
- Recordkeeping—certification records
- Certification—record
- Training and Communications—educational program, initial and annual training

### **Programs, Policies and Procedures**

**1910.157(g)(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 fire fighting.

### **Inspections and Tests**

**1910.157(e)(1)**—The employer *shall be responsible for the inspection, maintenance and testing* of all portable fire extinguishers in the workplace.

**1910.157(e)(2)**—Portable extinguishers or hose used in lieu thereof under paragraph (d)(3) *[Selection and Distribution] of this section shall be visually inspected monthly*.

**1910.157(e)(3)**—The employer *shall assure that portable fire extinguishers are subjected to an annual maintenance check*. Stored pressure extinguishers do not require an internal examination. The employer *shall record the annual maintenance date and retain this record for one year after the last entry or the life of the shell*, whichever is less. The **record** shall be **available** to the Assistant Secretary upon request.

**1910.157(e)(4)**—The employer shall assure that stored pressure dry chemical extinguishers that require a 12-year hydrostatic test are emptied and *subjected to applicable maintenance procedures every 6 years*. Dry chemical extinguishers having non-refillable disposable containers are exempt from this requirement. When recharging or hydrostatic testing is performed, the 6-year requirement begins from that date.

**1910.157(f)(2)**—The employer *shall assure that portable extinguishers are hydrostatically tested at the intervals listed in Table L-1* of this section.

**1910.157(f)(3)**—In addition to an *external visual examination*, the employer shall assure that an *internal examination of cylinders and shells to be tested is made prior to the hydrostatic tests*.

**1910.157(f)(4)**—The employer shall assure that *portable fire extinguishers are hydrostatically tested* whenever they show new evidence of corrosion or mechanical injury, except under the conditions listed in *paragraphs (f)(2)(i)-(v) [Hydrostatic Testing]* of this section.

**1910.157(f)(5)**—The employer shall assure that *hydrostatic tests are performed* on extinguisher hose assemblies which are equipped with a shut-off nozzle at the discharge end of the hose. The *test interval shall be the same as specified for the extinguisher* on which the hose is installed.

**1910.157(f)(6)**—The employer shall assure that carbon dioxide hose assemblies with a shut-off nozzle *are hydrostatically tested* at 1,250 psi (8,620 kPa).

**1910.157(f)(7)**—The employer shall assure that dry chemical and dry powder hose assemblies with a shut-off nozzle *are hydrostatically tested* at 300 psi (2,070 kPa).

**1910.157(f)(10)**—The employer shall assure that carbon dioxide extinguishers and nitrogen or carbon dioxide cylinders used with wheeled extinguishers *are tested every 5 years* at 5/3 of the service pressure as stamped into the cylinder. Nitrogen cylinders which comply with *49 CFR 173.34(e)(15) [Transportation]* may be *hydrostatically tested every 10 years*.

### **Recordkeeping**

**1910.157(e)(3)**—The employer shall assure that *portable fire extinguishers are subjected to an annual maintenance check*. Stored pressure extinguishers do not require an internal examination. The employer shall **record** the *annual maintenance date and retain this record for one year after the last entry or the life of the shell*, whichever is less. The **record** shall be available to the Assistant Secretary upon request.

**1910.157(f)(16)**—The employer shall **maintain** and provide upon request to the Assistant Secretary *evidence that the required hydrostatic testing of fire extinguishers has been performed* at the time intervals shown in *Table L-1*. Such evidence shall be in the form of a **certification record** which includes the date of the test, the **signature** of the person who performed the test and the serial number, or other identifier, of the fire extinguisher that was tested. Such **records** shall be kept until the extinguisher is hydrostatically retested at the time interval specified in *Table L-1* or until the extinguisher is taken out of service, whichever comes first.

### **Certification**

**1910.157(f)(16)**—The employer shall **maintain** and provide upon request to the Assistant Secretary *evidence that the required hydrostatic testing of fire extinguishers has been performed* at the time intervals shown in *Table L-1*. Such evidence shall be in the form of a **certification record** which includes the *date of the test*, the **signature** of the person who performed the test and the serial number, or other identifier, of the fire extinguisher that was tested. Such **records** shall be kept until the extinguisher is hydrostatically retested at the time interval specified in *Table L-1* or until the extinguisher is taken out of service, whichever comes first.

### **Training and Communications**

**1910.157(d)(3)**—The employer may use uniformly spaced standpipe systems or hose stations connected to a sprinkler system installed for emergency use by employees instead of Class A portable fire extinguishers, provided that such systems meet the respective requirements of *1910.158 [Standpipe and Hose Systems]* or *1910.159 [Automatic Sprinkler Systems]*, that they provide total coverage of the area to be protected, and that employees *are trained at least annually in their use*.

**1910.157(g)(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 fire fighting.

**1910.157(g)(2)**—The employer shall provide the education required in *paragraph (g)(1) [Training and Education]* of this section upon initial employment and at least annually thereafter.

**1910.157(g)(3)**—The employer shall provide employees who have been designated to use fire fighting equipment as part of an **emergency action plan** [*29 CFR 1910.38*] with training in the use of the appropriate equipment.

**1910.157(g)(4)**—The employer shall provide the training required in *paragraph (g)(3) [Training and Education]* of this section upon initial assignment to the designated group of employees and at least annually thereafter.



## 1910.158—STANDPIPE AND HOSE SYSTEMS

**Scope/Application:** *This section applies to all small hose, Class II, and Class III standpipe systems installed to meet the requirements of a particular OSHA standard.*

**Exception:** *This standard does not apply to Class I standpipe systems.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections annually and after use, initial tests
- Training and Communications—trained personnel

### Inspections and Tests

**1910.158(e)(1)(i)**—The employer *shall assure* that the piping of Class II and Class III systems installed after January 1, 1981, including yard piping, *is hydrostatically tested for a period of at least 2 hours* at not less than 200 psi (1380 kPa), or at least 50 psi (340 kPa) in excess of normal pressure when such pressure is greater than 150 psi (1030 kPa).

**1910.158(e)(1)(ii)**—The employer *shall assure* that hose on all standpipe systems installed after January 1, 1981, *is hydrostatically tested* with couplings in place, at a pressure of not less than 200 psi (1380 kPa), *before it is placed in service*. This pressure shall be maintained for at least 15 seconds and not more than one minute during which time the hose shall not leak nor shall any jacket thread break during the test.

**1910.158(e)(2)(iii)**—The employer *shall assure that hose systems are inspected at least annually and after each use* to assure that all of the equipment and hose are in place, available for use, and in serviceable condition.

**1910.158(e)(2)(v)**—The employer *shall assure* that hemp or linen hose on existing systems is unracked, *physically inspected for deterioration, and reracked using a different fold pattern at least annually*. The employer shall assure that defective hose is replaced in accordance with *paragraph (c)(3)(ii) [Hose]*.

**1910.158(e)(2)(vi)**—The employer *shall designate trained persons to conduct all inspections* required under this section.

### Training and Communications

**1910.158(e)(2)(vi)**—The employer *shall designate trained persons to conduct all inspections* required under this section.

## 1910.159—AUTOMATIC SPRINKLER SYSTEMS

**Scope/Application:** *The requirements of this section apply to all automatic sprinkler systems installed to meet a particular OSHA standard.*

**Exception:** *This standard does not apply to automatic sprinkler systems installed in workplaces, but are not required by OSHA.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tests annually and every two years
- Recordkeeping—central records

### Inspections and Tests

**1910.159(c)(2)**—Maintenance. The employer shall properly maintain an automatic sprinkler system installed to comply with this section. The employer *shall assure that a main drain flow test is performed on each system annually*. The inspector's test valve shall be opened *at least every two years* to assure that the sprinkler system operates properly.

### Recordkeeping

**1910.159(c)(11)**—*Hydraulically designed systems*. The employer *shall assure* that *hydraulically designed automatic* sprinkler systems or portions thereof *are identified* and that the location, number of sprinklers in the hydraulically *designed section*, and the basis of the *design* is indicated. *Central records may be used in lieu of signs* at sprinkler valves provided the *records are available for inspection and copying* by the Assistant Secretary.

## 1910.160—FIXED EXTINGUISHING SYSTEMS, GENERAL

**Scope/Application:** *This section applies to all fixed extinguishing systems installed to meet a particular OSHA standard except for automatic sprinkler systems which are covered by 1910.159.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—action plan
- Inspections and Tests—annual inspections
- Recordkeeping—records
- Training and Communications—initial and annual training
- Signs, Markings and Tags—signs posted, tags

### Programs, Policies and Procedures

**1910.160(c)(1)**—The employer shall provide an **emergency action plan** in accordance with 1910.38—*Emergency Action Plan* for each area within a workplace that is protected by a total flooding system which provides agent concentrations exceeding the maximum safe levels set forth in *paragraphs (b)(5) and (b)(6) of 1910.162 [Fixed Extinguishing Systems, Gaseous Agent]*.

### Inspections and Tests

**1910.160(b)(6)**—The employer *shall assure that fixed systems are inspected annually* by a person knowledgeable in the design and function of the system to assure that the system is maintained in good operating condition.

**1910.160(b)(9)**—The employer *shall assure that inspection and maintenance dates are recorded on the container, on a tag attached to the container, or in a central location. A record of the last semi-annual check shall be maintained until the container is checked again or for the life of the container, whichever is less.*

### Recordkeeping

**1910.160(b)(9)**—The employer *shall assure that inspection and maintenance dates are recorded on the container, on a tag attached to the container, or in a central location. A record of the last semi-annual check shall be maintained until the container is checked again or for the life of the container, whichever is less.*

### Training and Communications

**1910.160(b)(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.

### Signs, Markings and Tags

**1910.160(b)(5)**—The employer *shall post hazard warning or caution signs* at the entrance to, and inside of, areas protected by fixed extinguishing systems which use agents in concentrations known to be hazardous to employee safety and health.

**1910.160(b)(9)**—The employer *shall assure that inspection and maintenance dates are recorded on the container, on a tag attached to the container, or in a central location. A record of the last semi-annual check shall be maintained until the container is checked again or for the life of the container, whichever is less.*

## 1910.164—FIRE DETECTION SYSTEMS

**Scope/Application:** *This section applies to all automatic fire detection systems installed to meet the requirements of a particular OSHA standard.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—fire detection tests

### Inspections and Tests

**1910.164(c)(2)**—The employer *shall assure that fire detectors and fire detection systems are tested and adjusted as often as needed to maintain proper reliability and operating condition except that factory calibrated detectors need not be adjusted after installation.*

## 1910.165—EMPLOYEE ALARM SYSTEMS

**Scope/Application:** *This section applies to all emergency employee alarms installed to meet a particular OSHA standard. This section does not apply to those discharge or supervisory alarms required on various fixed extinguishing systems or to supervisory alarms on fire suppression, alarm or detection systems unless they are intended to be employee alarm systems.*

**Exception:** *This standard does not apply to those discharge or supervisory alarms required on various fixed extinguishing systems or to supervisory alarms on fire suppression, alarm or detection systems unless they are intended to be employee alarm systems.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—establish alarm system procedures
- Inspections and Tests—bi-monthly and annual tests
- Training and Communications—explain to employee
- Signs, Markings and Tags—posting telephone numbers

### Programs, Policies and Procedures

**1910.165(b)(5)**—The employer *shall establish procedures* for sounding emergency alarms in the workplace. For those employers with 10 or fewer employees in a particular workplace, direct voice communication is an *acceptable procedure* for sounding the alarm provided all employees can hear the alarm. Such workplaces need not have a back-up system.

### Inspections and Tests

**1910.165(d)(2)**—The employer *shall assure that a test* of the reliability and adequacy of non-supervised employee alarm systems *is made every two months*. A different actuation device shall be used in each test of a multi-actuation device system so that no individual device is used for two consecutive tests.

**1910.165(d)(4)**—The employer shall assure that employee alarm circuitry installed after January 1, 1981, which is capable of being supervised is supervised and that it will provide positive notification to assigned personnel whenever a deficiency exists in the system. The employer *shall assure that all supervised employee alarm systems are tested at least annually* for reliability and adequacy.

### Training and Communications

**1910.165(b)(4)**—The employer *shall explain* to each employee the preferred means of *reporting* emergencies, such as manual pull box alarms, public address systems, radio or telephones. The employer *shall post emergency telephone numbers* near telephones, or employee notice boards, and other conspicuous locations when telephones serve as a *means of reporting emergencies*. Where a communication system also serves as the *employee alarm system*, all emergency messages shall have priority over all non-emergency messages.

### Signs, Markings and Tags

**1910.165(b)(4)**—The employer *shall explain* to each employee the preferred means of *reporting* emergencies, such as manual pull box alarms, public address systems, radio or telephones. The employer *shall post emergency telephone numbers* near telephones, or employee notice boards, and other conspicuous locations when telephones serve as a *means of reporting emergencies*. Where a communication system also serves as the *employee alarm system*, all emergency messages shall have priority over all non-emergency messages.

## 29 CFR Subpart M—Compressed Gas and Compressed Air Equipment

### 1910.169—AIR RECEIVERS

**Scope/Application:** *This section applies to compressed air receivers, and other equipment used in providing and utilizing compressed air for performing operations such as cleaning, drilling, hoisting, and chipping.*

**Exception:** *This standard does not deal with the special problems created by using compressed air to convey materials nor the problems created when men work in compressed air as in tunnels and caissons. This standard is not intended to apply to compressed air machinery and equipment used on transportation vehicles such as steam railroad cars, electric railway cars, and automotive equipment.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—frequent tests and at regular intervals

#### Inspections and Tests

**1910.169(b)(3)(iv)**—All safety valves *shall be tested frequently and at regular intervals* to determine whether they are in good operating condition.

## 29 CFR Subpart N—Materials Handling and Storage

### 1910.176—HANDLING MATERIALS, GENERAL

*Scope/Application:* This section applies to areas where materials are handled.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posted signs

#### Signs, Markings and Tags

**1910.176(e)**—Clearance limits. *Clearance signs to warn of clearance limits shall be provided.*

### 1910.177—SERVICING MULTI-PIECE AND SINGLE PIECE RIM WHEELS

*Scope/Application:* This section applies to the servicing of multi-piece and single piece rim wheels used on large vehicles such as trucks, tractors, trailers, buses and off-road machines.

*Exception:* This standard does not apply to the servicing of rim wheels used on automobiles, or on pickup trucks and vans utilizing automobile tires or truck tires designated “LT”.

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—training program
- Inspections and Tests—visual inspections each day, reinspections
- Certification—manufacturer
- Training and Communications—program, evaluate abilities, initial training
- Qualified Person—certified
- Signs, Markings and Tags—marked and tagged

#### Programs, Policies and Procedures

**1910.177(c)(1)**—The employer shall provide a **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.

#### Inspections and Tests

**1910.177(d)(3)(iii)**—Restraining devices and barriers shall be visually inspected prior to each day’s use and after any separation of the rim wheel components or sudden release of contained air.

**1910.177(d)(3)(iv)**—Restraining devices or barriers removed from service shall not be returned to service until they are repaired and reinspected. Restraining devices or barriers requiring structural repair such as component replacement or rewelding shall not be returned to service until they are **certified** by either the manufacturer or a **Registered Professional Engineer** as meeting the strength requirements of paragraph (d)(3)(i) [Tire Servicing Equipment] of this section.

**1910.177(e)(2)**—Multi-piece wheel components and single piece wheels shall be inspected prior to assembly. Any wheel or wheel component which is bent out of shape, pitted from corrosion, broken, or cracked shall not be used and shall be **marked or tagged** unserviceable and removed from the service area. Damaged or leaky valves shall be replaced.

**1910.177(f)(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.

#### Certification

**1910.177(d)(3)(iv)**—Restraining devices or barriers removed from service shall not be returned to service until they are repaired and reinspected. Restraining devices or barriers requiring structural repair such as component replacement or rewelding shall not be returned to service until they are **certified** by either the **manufacturer or a Registered Professional Engineer** as meeting the strength requirements of paragraph (d)(3)(i) [Tire Servicing Equipment] of this section.

#### Training and Communications

**1910.177(c)(1)**—The employer shall provide a **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.

**1910.177(c)(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.

### Qualified Person

**1910.177(d)(3)(iv)**—Restraining devices or barriers removed from service *shall not be returned to service until they are repaired and reinspected*. Restraining devices or barriers requiring structural repair such as component replacement or rewelding *shall not be returned to service until they are certified by either the manufacturer or a Registered Professional Engineer* as meeting the strength requirements of *paragraph (d)(3)(i) [Tire Servicing Equipment]* of this section.

### Signs, Markings and Tags

**1910.177(e)(2)**—Multi-piece wheel components and single piece wheels *shall be inspected* prior to assembly. Any wheel or wheel component which is bent out of shape, pitted from corrosion, broken, or cracked shall not be used and *shall be marked or tagged unserviceable* and removed from the service area. Damaged or leaky valves shall be replaced.

## 1910.178—POWERED INDUSTRIAL TRUCKS

**Scope/Application:** *This section contains safety requirements relating to fire protection, design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines.*

**Exception:** *This section does not apply to compressed air or nonflammable compressed gas-operated industrial trucks, nor to farm vehicles, nor to vehicles intended primarily for earth moving or over-the-road hauling.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—training program
- Inspections and Tests—daily inspections and after each shift
- Recordkeeping—certifications
- Certification—driver certification
- Training and Communications—training initially and every three years, evaluations
- Competent Person—driver competency

### Programs, Policies and Procedures

**1910.178(l)(3)**—**Training program content.** Powered industrial truck operators *shall receive initial training in topics*, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace. [*Reference paragraph (l)(3)i for training topics.*]

**1910.178(l)(3)(i)(J)**—Any vehicle inspection and maintenance that the operator will be required to perform;

### Inspections and Tests

**1910.178(q)(7)**—Industrial trucks *shall be examined before being placed in service, and shall not be placed in service* if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made *at least daily*. Where industrial trucks are used on a round-the-clock basis, *they shall be examined after each shift*. Defects when found shall be immediately reported and corrected. [*Reference paragraph (q) for specific information.*]

### Recordkeeping

**1910.178(l)(6)**—**Certification.** The employer *shall certify that each operator has been trained and evaluated as required by this paragraph (l) [Operator Training]*. 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.

### Certification

**1910.178(l)(6)**—**Certification.** The employer *shall certify that each operator has been trained and evaluated as required by this paragraph (l) [Operator Training]*. 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.

### Training and Communications

**1910.178(l)(1)(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) [Operator Training].

**1910.178(l)(1)(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) [Operator Training], except as permitted by paragraph (l)(5) [Avoidance of Duplicative Training].

**1910.178(l)(3)**—**Training program content.** Powered industrial truck operators shall receive initial training in topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer's workplace. [Reference paragraph (l)(3)i for training topics.]

**1910.178(l)(3)(i)(J)**—Any vehicle inspection and maintenance that the operator will be required to perform;

**1910.178(l)(4)(i)**—**Refresher training,** including an evaluation of the effectiveness of that training, shall be conducted as required by paragraph (l)(4)(ii) [Refresher Training and Evaluation] to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely.

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

### Competent Person

**1910.178(l)(1)(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) [Operator Training].

## 1910.179—OVERHEAD AND GANTRY CRANES

**Scope/Application:** This section applies to overhead and gantry cranes, including semigantry, cantilever gantry, wall cranes, storage bridge cranes, and others having the same fundamental characteristics. These cranes are grouped because they all have trolleys and similar travel characteristics.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—preventive maintenance program
- Inspections and Tests—initial, periodic and frequent inspections, initial load tests
- Recordkeeping—records, certification records
- Certification—records
- Training and Communications—fire extinguishers
- Qualified Person—designated person
- Signs, Markings and Tags—labels, warning signs

### Programs, Policies and Procedures

**1910.179(l)(1)**—Preventive maintenance. A **preventive maintenance program** based on the crane manufacturer's recommendations shall be established.

### Inspections and Tests

**1910.179(j)(1)(i)**—**Initial inspection.** Prior to initial use all new and altered cranes shall be inspected to insure compliance with the provisions of this section.

**1910.179(j)(1)(ii)**—**Inspection procedure for cranes in regular service** is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as "frequent" and "periodic" with respective intervals between inspections as defined below:

**1910.179(j)(1)(ii)(a)**—**Frequent inspection**—Daily to monthly intervals.

**1910.179(j)(1)(ii)(b)**—**Periodic inspection**—1 to 12-month intervals.

**1910.179(j)(2)**—*Frequent inspection. The following items shall be inspected for defects at intervals as defined in paragraph (j)(1)(ii) [Inspection Classification] of this section or as specifically indicated, including observation during operation for any defects which might appear between regular inspections.*

**1910.179(j)(2)(i)**—All functional operating mechanisms for maladjustment interfering with proper operation. *Daily.*

**1910.179(j)(2)(ii)**—Deterioration or leakage in lines, tanks, valves, drain pumps, and other parts of air or hydraulic systems. *Daily.*

**1910.179(j)(2)(iii)**—Hooks with deformation or cracks. *Visual inspection daily; monthly inspection with a **certification record** which includes the date of inspection, the signature of the person who performed the inspection and the serial number, or other identifier, of the hook inspected. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook refer to paragraph (l)(3)(iii)(a) [Power Plants] of this section.*

**1910.179(j)(2)(iv)**—Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer's recommendations. *Visual inspection daily; monthly inspection with a **certification record** which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier of the chain which was inspected.*

**1910.179(j)(3)**—*Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined in paragraph (j)(1)(ii)(b) [Periodic Inspection] of this section, depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of paragraph (j)(2) [Frequent Inspection] of this section and in addition, the following items.*

**1910.179(j)(4)(i)**—A crane which has been *idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of paragraph (j)(2) [Frequent Inspection] of this section and paragraph (m)(2) [Other Ropes] of this section before placing in service.*

**1910.179(j)(4)(ii)**—A crane which has been *idle for a period of over 6 months shall be given a complete inspection conforming with requirements of paragraphs (j)(2) [Frequent Inspection] and (3) [Periodic Inspection] of this section and paragraph (m)(2) [Other Ropes] of this section before placing in service.*

**1910.179(j)(4)(iii)**—Standby cranes *shall be inspected at least semi-annually in accordance with requirements of paragraph (j)(2) [Frequent Inspection] of this section and paragraph (m)(2) [Other Ropes] of this section.*

**1910.179(k)(1)(i)**—*Prior to initial use all new and altered cranes shall be tested to insure compliance with this section.*

**1910.179(k)(2)**—*Rated load test. Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The **test reports** shall be placed on **file** where readily **available** to appointed personnel.*

**1910.179(m)(1)**—Running ropes. *A thorough inspection of all ropes shall be made at least once a month and a **certification record** which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes which were inspected shall be kept on **file** where readily **available** to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.*

**1910.179(m)(2)**—Other ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed *shall be given a thorough inspection before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A **certification record** shall be **available** for inspection which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the rope which was inspected.*

**1910.179(n)(4)(i)**—*At the beginning of each operator's shift, the upper limit switch of each hoist shall be tried out under no load. Extreme care shall be exercised; the block shall be "inched" into the limit or run in at slow speed. If the switch does not operate properly, the appointed person shall be immediately notified.*

## **Recordkeeping**

**1910.179(j)(2)(iii)**—Hooks with deformation or cracks. *Visual inspection daily; monthly inspection with a **certification record** which includes the date of inspection, the **signature of the person** who performed the inspection and the serial*



number, or other identifier, of the hook inspected. For hooks with cracks or having more than 15 percent in excess of normal throat opening or more than 10° twist from the plane of the unbent hook refer to *paragraph (l)(3)(iii)(a) [Power Plants]* of this section.

**1910.179(j)(2)(iv)**—Hoist chains, including end connections, for excessive wear, twist, distorted links interfering with proper function, or stretch beyond manufacturer’s recommendations. *Visual inspection daily; monthly inspection with a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier of the chain *which was inspected*.

**1910.179(k)(2)**—Rated load test. Test loads shall not be more than 125 percent of the rated load unless otherwise recommended by the manufacturer. The **test reports shall be placed on file where readily available** to appointed personnel.

**1910.179(m)(1)**—Running ropes. *A thorough inspection of all ropes shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes which were inspected *shall be kept on file* where readily **available** to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

**1910.179(m)(2)**—Other ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed *shall be given a thorough inspection* before it is used. This *inspection shall be for all types of deterioration and shall be performed by an appointed person* whose approval shall be required for further use of the rope. A **certification record shall be available for inspection** which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the rope which was inspected.

#### **Certification**

**1910.179(m)(1)**—Running ropes. *A thorough inspection of all ropes shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes which were inspected *shall be kept on file* where readily **available** to appointed personnel. Any deterioration, resulting in appreciable loss of original strength, shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

**1910.179(m)(2)**—Other ropes. All rope which has been idle for a period of a month or more due to shutdown or storage of a crane on which it is installed *shall be given a thorough inspection* before it is used. This inspection shall be for all types of deterioration and shall be performed by an appointed person whose approval shall be required for further use of the rope. A **certification record shall be available for inspection** which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the rope which was inspected.

#### **Training and Communications**

**1910.179(o)(3)**—*Fire extinguishers. The employer shall insure that operators are familiar with the operation and care of fire extinguishers provided.*

#### **Qualified Person**

**1910.179(b)(8)**—*Designated personnel—Only designated personnel shall be permitted to operate a crane covered by this section.*

#### **Signs, Markings and Tags**

**1910.179(l)(2)(i)(d)**—*Warning or “out of order” signs shall be placed on the crane, also on the floor beneath or on the hook where visible from the floor.*

**1910.179(l)(3)(iii)(d)**—*Pendant control stations shall be kept clean and function labels kept legible.*

### **1910.180—CRAWLER, LOCOMOTIVE AND TRUCK CRANES**

**Scope/Application:** *This section applies to crawler cranes, locomotive cranes, wheel mounted cranes of both truck and self-propelled wheel type, and any variations thereof which retain the same fundamental characteristics. This section includes only cranes of the above types, which are basically powered by internal combustion engines or electric motors and which utilize drums and ropes. Cranes designed for railway and automobile wreck clearances are excepted. The requirements of this section are applicable only to machines when used as lifting cranes.*

**Exception:** *This standard does not apply to cranes designed for railway and automobile wreck clearances.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—frequent, periodic and initial inspections, initial tests
- Recordkeeping—records
- Certification—records
- Training and Communications—instruct employees, made familiar
- Qualified Person—designated personnel
- Signs, Markings and Tags—posting rating chart

### Inspections and Tests

**1910.180(d)(1)**—*Initial inspection. Prior to initial use all new and altered cranes shall be inspected to insure compliance with provisions of this section.*

**1910.180(d)(2)**—*Regular inspection. Inspection procedure for cranes in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the crane and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as “frequent” and “periodic”, with respective intervals between inspections as defined below:*

**1910.180(d)(2)(i)**—*Frequent inspection: Daily to monthly intervals.*

**1910.180(d)(2)(ii)**—*Periodic inspection: 1- to 12- month intervals, or as specifically recommended by the manufacturer.*

**1910.180(d)(3)**—*Frequent inspection. Items such as the following shall be inspected for defects at intervals as defined in paragraph (d)(2)(i) [Frequent Inspection] of this section or as specifically indicated including observation during operation for any defects which might appear between regular inspections. Any deficiencies such as listed shall be carefully examined and determination made as to whether they constitute a safety hazard:*

**1910.180(d)(3)(i)**—*All control mechanisms for maladjustment interfering with proper operation: Daily.*

**1910.180(d)(3)(iv)**—*Deterioration or leakage in air or hydraulic systems: Daily.*

**1910.180(d)(4)**—*Periodic inspection. Complete inspections of the crane shall be performed at intervals as generally defined in paragraph (d)(2)(ii) [Periodic Inspection] of this section depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of paragraph (d)(3) [Frequent Inspection] of this section and additional items. [Reference paragraph (d)(4) for specific information.]*

**1910.180(d)(5)(i)**—*A crane which has been idle for a period of one month or more, but less than 6 months, shall be given an inspection conforming with requirements of paragraph (d)(3) [Frequent Inspection] of this section and paragraph (g)(2)(ii) [Other Ropes] of this section before placing in service.*

**1910.180(d)(5)(ii)**—*A crane which has been idle for a period of six months shall be given a complete inspection conforming with requirements of paragraphs (d)(3) [Frequent Inspection] and (4) [Periodic Inspection] of this section and paragraph (g)(2)(ii) [Other Ropes] of this section before placing in service.*

**1910.180(d)(5)(iii)**—*Standby cranes shall be inspected at least semiannually in accordance with requirements of paragraph (d)(3) [Frequent Inspection] of this section and paragraph (g)(2)(ii) [Other Ropes] of this section. Such cranes which are exposed to adverse environment should be inspected more frequently.*

**1910.180(d)(6)**—*Inspection records. Certification record* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the crane which was inspected shall be made monthly on critical items in use such as brakes, crane hooks, and ropes. This **certification record** shall be kept readily available.

**1910.180(e)(1)(i)**—*In addition to prototype tests and quality-control measures, each new production crane shall be tested by the manufacturer to the extent necessary to insure compliance with the operational requirements of this paragraph. [Reference paragraph (e)(1) for specific information.]*

**1910.180(g)(1)**—*Running ropes. A thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes shall be prepared and kept on file where readily available. *All inspections shall be performed by*

*an appointed or authorized person.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Recordkeeping**

**1910.180(d)(6)**—*Inspection records. Certification record* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the crane which *was inspected shall be made monthly on critical items* in use such as brakes, crane hooks, and ropes. This **certification record shall be kept readily available.**

**1910.180(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes *shall be prepared and kept on file* where readily **available.** All inspections shall be performed by an *appointed or authorized person.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Certification**

**1910.180(d)(6)**—*Inspection records. Certification record* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the crane which *was inspected shall be made monthly on critical items* in use such as brakes, crane hooks, and ropes. This **certification record shall be kept readily available.**

**1910.180(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes *shall be prepared and kept on file* where readily **available.** All inspections shall be performed by an *appointed or authorized person.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Training and Communications**

**1910.180(h)(3)(xii)**—When two or more cranes are used to lift one load, *one designated person* shall be responsible for the operation. He shall be required to analyze the operation and *instruct all personnel* involved in the proper positioning, rigging of the load, and the movements to be made.

**1910.180(i)(5)(ii)**—Operating and maintenance personnel *shall be made familiar* with the use and care of the fire extinguishers provided.

### **Qualified Person**

**1910.180(b)(3)**—*Designated personnel. Only designated personnel shall be permitted* to operate a crane covered by this section.

**1910.180(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the **signature of the person** who performed the inspection and an identifier for the ropes *shall be prepared and kept on file* where readily **available.** All inspections shall be performed by an *appointed or authorized person.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

**1910.180(h)(3)(xii)**—When two or more cranes are used to lift one load, *one designated person* shall be responsible for the operation. He shall be required to analyze the operation and *instruct all personnel* involved in the proper positioning, rigging of the load, and the movements to be made.

### **Signs, Markings and Tags**

**1910.180(c)(2)**—**Load rating chart.** A substantial and **lasting rating chart** with clearly legible letters and figures shall be provided with each crane and securely fixed to the crane cab in a location easily visible to the operator while seated at his control station.

## **1910.181—DERRICKS**

**Scope/Application:** *This section applies to guy, stiffleg, basket, breast, gin pole, Chicago boom and A-frame derricks of the stationary type, capable of handling loads at variable reaches and powered by hoists through systems of rope reeving, used to perform lifting hook work, single or multiple line bucket work, grab, grapple, and magnet work.*

*Derricks may be permanently installed for temporary use as in construction work. The requirements of this section also apply to any modification of these types which retain their fundamental features, except for floating derricks.*

**Exception:** *This standard does not apply to floating derricks.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—preventive maintenance program
- Inspections and Tests—initial, frequent and periodic inspections, initial tests
- Recordkeeping—records
- Certification—records
- Training and Communications—communication system
- Qualified Person—designated personnel
- Signs, Markings and Tags—charts posted and prepared

### Programs, Policies and Procedures

**1910.181(f)(1)**—Preventive maintenance. A ***preventive maintenance program*** based on the derrick manufacturer’s recommendations *shall be established*.

### Inspections and Tests

**1910.181(d)(1)(i)**—*Prior to initial use all new and altered derricks shall be inspected to insure compliance with the provisions of this section.*

**1910.181(d)(1)(ii)**—*Inspection procedure for derricks in regular service is divided into two general classifications based upon the intervals at which inspection should be performed. The intervals in turn are dependent upon the nature of the critical components of the derrick and the degree of their exposure to wear, deterioration, or malfunction. The two general classifications are herein designated as frequent and periodic with respective intervals between inspections as defined below:*

**1910.181(d)(1)(ii)(a)**—*Frequent inspection—Daily to monthly intervals.*

**1910.181(d)(1)(ii)(b)**—*Periodic inspection—1- to 12-month intervals, or as specified by the manufacturer.*

**1910.181(d)(2)**—*Frequent inspection. Items such as the following shall be inspected for defects at intervals as defined in paragraph (d)(1)(ii)(a) [Frequent Inspections] of this section or as specifically indicated, including observation during operation for any defects which might appear between regular inspections. Deficiencies shall be carefully examined for any safety hazard:*

**1910.181(d)(2)(i)**—All control mechanisms: *Inspect daily* for adjustment, wear, and lubrication.

**1910.181(d)(2)(ii)**—All chords and lacing: *Inspect daily, visually.*

**1910.181(d)(2)(iii)**—Tension in guys: *Daily.*

**1910.181(d)(2)(v)**—Deterioration or leakage in air or hydraulic systems: *Daily.*

**1910.181(d)(2)(vii)**—Rope reeving; *visual inspection* for noncompliance with derrick manufacturer’s recommendations.

**1910.181(d)(2)(viii)**—Hoist brakes, clutches, and operating levers: *check daily* for proper functioning before beginning operations.

**1910.181(d)(3)(i)**—*Complete inspections of the derrick shall be performed at intervals as generally defined in paragraph (d)(1)(ii)(b) [Periodic Inspection] of this section depending upon its activity, severity of service, and environment, or as specifically indicated below. These inspections shall include the requirements of paragraph (d)(2) [Frequent Inspections] of this section and in addition, items such as the following. Deficiencies shall be carefully examined and a determination made as to whether they constitute a safety hazard. [Reference paragraph (d)(3) for specific information.]*

**1910.181(d)(4)(i)**—*A derrick which has been idle for a period of 1 month or more, but less than 6 months, shall be given an inspection conforming with requirements of paragraph (d)(2) [Frequent Inspections] of this section and paragraph (g)(3) [Idle Ropes] of this section before placing in service.*

**1910.181(d)(4)(ii)**—*A derrick which has been idle for a period of over 6 months shall be given a complete inspection conforming with requirements of paragraphs (d)(2) [Frequent Inspections] and (3) [Periodic Inspections] of this section and paragraph (g)(3) [Idle Ropes] of this section before placing in service.*

**1910.181(d)(4)(iii)**—Standby derricks *shall be inspected at least semiannually in accordance with requirements of paragraph (d)(2) [Frequent Inspections] of this section and paragraph (g)(3) [Idle Ropes] of this section.*

**1910.181(e)(1)**—Operational tests. *Prior to initial use all new and altered derricks shall be tested to insure compliance with this section*

**1910.181(e)(2)**—Anchorages. All anchorages *shall be approved by the appointed person.* Rock and hairpin anchorages may require *special testing.*

**1910.181(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the signature of the person who performed the inspection, and an identifier for the ropes which were inspected *shall be prepared and kept on file* where readily *available.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Recordkeeping**

**1910.181(c)(2)**—Nonpermanent installations. For nonpermanent installations, the manufacturer *shall provide sufficient information from which capacity charts can be prepared* for the particular installation. The *capacity charts shall be located* at the derricks or the jobsite office.

**1910.181(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the *signature of the person* who performed the inspection, and an identifier for the ropes which were inspected *shall be prepared and kept on file* where readily *available.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Certification**

**1910.181(g)(1)**—Running ropes. A *thorough inspection of all ropes in use shall be made at least once a month and a certification record* which includes the date of inspection, the *signature of the person* who performed the inspection, and an identifier for the ropes which were inspected *shall be prepared and kept on file* where readily *available.* Any deterioration, resulting in appreciable loss of original strength shall be carefully observed and determination made as to whether further use of the rope would constitute a safety hazard.

### **Training and Communications**

**1910.181(f)(2)(i)(f)**—A *good communication system* shall be set up between the hoist operator and the *appointed individual in charge* of derrick operations before any work on the equipment is started.

### **Qualified Person**

**1910.181(b)(3)**—*Designated personnel.* Only *designated personnel* shall be permitted to operate a derrick covered by this section.

**1910.181(f)(2)(i)(f)**—A *good communication system* shall be set up between the hoist operator and the *appointed individual in charge* of derrick operations before any work on the equipment is started.

### **Signs, Markings and Tags**

**1910.181(c)(1)**—*Rated load marking.* For permanently installed derricks with fixed lengths of boom, guy, and mast, a substantial, durable, and *clearly legible rating chart shall be provided* with each derrick and *securely affixed* where it is visible to personnel responsible for the safe operation of the equipment.

**1910.181(c)(2)**—Nonpermanent installations. For nonpermanent installations, the manufacturer *shall provide sufficient information from which capacity charts can be prepared* for the particular installation. The *capacity charts shall be located* at the derricks or the jobsite office.

## 1910.183—HELICOPTERS

**Scope/Application:** *This section applies helicopters.*

### STANDARD HIGHLIGHTS

- Training and Communications—briefing prior to each day, instructions

### Training and Communications

**1910.183(b)**—*Briefing. Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the plan of operation for the pilot and ground personnel.*

**1910.183(m)**—*Visibility. Ground personnel shall be instructed and the employer shall ensure that when visibility is reduced by dust or other conditions, they shall exercise special caution to keep clear of main and stabilizing rotors. Precautions shall also be taken by the employer to eliminate, as far as practical, the dust or other conditions reducing the visibility.*

**1910.183(n)**—*Signal systems. The employer shall instruct the aircrew and ground personnel on the signal systems to be used and shall review the system with the employees in advance of hoisting the load. This applies to both radio and hand signal systems. Hand signals, where used, shall be as shown in Figure N-1.*

**1910.183(p)**—*Approaching helicopter. The employer shall instruct employees, and shall ensure, that whenever approaching or leaving a helicopter which has its blades rotating, all employees shall remain in full view of the pilot and keep in a crouched position. No employee shall be permitted to work in the area from the cockpit or cabin rearward while blades are rotating, unless authorized by the helicopter operator to work there.*

## 1910.184—SLINGS

**Scope/Application:** *This section applies to slings used in conjunction with other material handling equipment for the movement of material by hoisting, in employments covered by this part. The types of slings covered are those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene).*

### STANDARD HIGHLIGHTS

- Inspections and Tests—initial and periodic inspections, competent person, initial tests
- Recordkeeping—records
- Certification—proof test certificate
- Competent Person—inspections
- Signs, Markings and Tags—slings marked

### Inspections and Tests

**1910.184(d)**—*Inspections. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.*

**1910.184(e)(3)(i)**—*In addition to the inspection required by paragraph (d) [Inspections] of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of (A) frequency of sling use; (B) severity of service conditions; (C) nature of lifts being made; and (D) experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months.*

**1910.184(e)(3)(iii)**—*The thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service.*

**1910.184(e)(4)**—*Proof testing. The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly, shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391-65, which is incorporated by reference as specified in Sec. 1910.6 (ANSI G61.1-1968). The employer shall retain a certificate of the proof test and shall make it available for examination.*

**1910.184(g)(5)**—*Sling testing.* All new and repaired metal mesh slings, including handles, *shall not be used unless proof tested by the manufacturer or equivalent entity at a minimum of 1½ times their rated capacity.* Elastomer impregnated slings *shall be proof tested* before coating.

**1910.184(i)(8)(ii)**—Each repaired sling *shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service.* The employer shall **retain a certificate of the proof test and make it available** for examination.

### **Recordkeeping**

**1910.184(e)(3)(ii)**—The employer *shall make and maintain a record of the most recent month in which each alloy steel chain sling was thoroughly inspected, and shall make such record available* for examination.

**1910.184(e)(4)**—*Proof testing.* The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly, *shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391-65, which is incorporated by reference as specified in Sec. 1910.6 (ANSI G61.1-1968).* The employer shall **retain a certificate of the proof test and shall make it available** for examination.

**1910.184(g)(8)(ii)**—Once repaired, each sling *shall be permanently marked or tagged, or a written record maintained,* to indicate the date and nature of the repairs and the person or organization that performed the repairs. **Records of repairs shall be made available** for examination.

**1910.184(i)(8)(ii)**—Each repaired sling *shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service.* The employer shall **retain a certificate of the proof test and make it available** for examination.

### **Certification**

**1910.184(e)(4)**—*Proof testing.* The employer shall ensure that before use, each new, repaired, or reconditioned alloy steel chain sling, including all welded components in the sling assembly, *shall be proof tested by the sling manufacturer or equivalent entity, in accordance with paragraph 5.2 of the American Society of Testing and Materials Specification A391-65, which is incorporated by reference as specified in Sec. 1910.6 (ANSI G61.1-1968).* The employer shall **retain a certificate of the proof test and shall make it available** for examination.

**1910.184(i)(8)(ii)**—Each repaired sling *shall be proof tested by the manufacturer or equivalent entity to twice the rated capacity prior to its return to service.* The employer shall **retain a certificate of the proof test and make it available** for examination.

### **Competent Person**

**1910.184(d)**—*Inspections.* Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. *Additional inspections shall be performed during sling use, where service conditions warrant.* Damaged or defective slings shall be immediately removed from service.

**1910.184(e)(3)(iii)**—The *thorough inspection of alloy steel chain slings shall be performed by a competent person designated by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length.* Where such defects or deterioration are present, the sling shall be immediately removed from service.

### **Signs, Markings and Tags**

**1910.184(g)(8)(ii)**—Once repaired, each sling *shall be permanently marked or tagged, or a written record maintained,* to indicate the date and nature of the repairs and the person or organization that performed the repairs. **Records of repairs shall be made available** for examination.

**1910.184(i)(1)**—*Sling identification.* Each sling shall be **marked or coded** to show the *rated capacities* for each type of hitch and type of synthetic web material.

## 29 CFR Subpart O—Machinery and Machine Guarding

### 1910.215—ABRASIVE WHEEL MACHINERY

**Scope/Application:** *This section applies abrasive wheel machinery.*

**Exception:** *Provides exception to safety guards when wheels are used for internal work while within the work being ground, mounted wheels used in portable operations 2 inches and smaller in diameter, and types 16, 17, 18, 18R and 19 cones, plugs, and threaded pot balls where work offers protection. Provides exception to abrasive wheels mounted between flanges not less than one-third the diameter of the wheel for mounted wheels, portable wheels with threaded inserts, abrasive discs, plate mounted wheels, cylinders, cup, and segmented wheels, types 27 and 28 wheels, certain internal wheels, modified types 6 and 11 wheels, cutting off wheels, types 1 and 27A.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—ring test before mounting wheels, inspections
- Signs, Markings and Tags—marked operating wheel

#### Inspections and Tests

**1910.215(d)(1)**—*Inspection. Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum **operating speed marked** on the wheel. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used. This is known as the “Ring Test”.*

#### Signs, Markings and Tags

**1910.215(d)(1)**—*Inspection. Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum **operating speed marked on the wheel**. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used. This is known as the “Ring Test”.*

### 1910.217—MECHANICAL POWER PRESSES

**Scope/Application:** *This section applies mechanical power presses.*

**Exception:** *This standard excludes press brakes, hydraulic and pneumatic power presses, bulldozers, hot bending and hot metal presses, forging presses and hammers, riveting machines and similar types of fastener applicators.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—inspection program
- Inspections and Tests—periodic, weekly and regular inspections
- Recordkeeping—records
- Certification—records, initial and annual certification
- Training and Communications—furnished instructions, initial and periodic training
- Signs, Markings and Tags—labels

#### Programs, Policies and Procedures

**1910.217(e)(1)**—**Inspection and maintenance records.** The employer shall establish and follow an **inspection program** having a general component and a directed component.

**1910.217(e)(1)(i)**—Under the *general component of the **inspection program***, the employer shall:

**1910.217(e)(1)(i)(A)**—*Conduct periodic and regular inspections of each power press to ensure that all of its parts, auxiliary equipment, and safeguards, including the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism, are in a safe operating condition and adjustment;*

**1910.217(e)(1)(i)(C)**—*Maintain a **certification record** of each inspection, and each maintenance and repair task performed, under the general component of the **inspection program** that includes the date of the inspection, mainte-*



nance, or repair work, the **signature of the person** who performed the inspection, maintenance, or repair work, and the serial number, or other identifier, of the *power press inspected, maintained, and repaired*.

**1910.217(e)(1)(ii)**—Under the *directed component of the inspection program*, the employer shall:

**1910.217(e)(1)(ii)(A)**—*Inspect and test each press on a regular basis* at least once a week to determine the condition of the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism;

**1910.217(e)(1)(ii)(C)**—*Maintain a certification record of each maintenance task performed under the directed component of the inspection program* that includes the date of the maintenance task, the **signature of the person** who performed the maintenance task, and the serial number, or other identifier, of the power press maintained.

## Inspections and Tests

**1910.217(e)(1)**—**Inspection and maintenance records.** The employer shall establish and follow an *inspection program* having a general component and a directed component.

**1910.217(e)(1)(i)**—Under the *general component of the inspection program*, the employer shall:

**1910.217(e)(1)(i)(A)**—*Conduct periodic and regular inspections* of each power press to ensure that all of its parts, auxiliary equipment, and safeguards, including the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism, are in a safe operating condition and adjustment;

**1910.217(e)(1)(i)(C)**—*Maintain a certification record of each inspection*, and each maintenance and repair task performed, under the general component of the *inspection program* that includes the *date of the inspection*, maintenance, or repair work, the **signature of the person** who performed the inspection, maintenance, or repair work, and the serial number, or other identifier, of the *power press inspected, maintained, and repaired*.

**1910.217(e)(1)(ii)**—Under the directed component of the *inspection program*, the employer shall:

**1910.217(e)(1)(ii)(A)**—Inspect and test each press on a regular basis *at least once a week* to determine the condition of the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism;

**1910.217(e)(1)(ii)(C)**—*Maintain a certification record* of each maintenance task performed under the directed component of the *inspection program* that includes the date of the maintenance task, the **signature of the person** who performed the maintenance task, and the serial number, or other identifier, of the power press maintained.

**Note to paragraph (e)(1)(ii):** *Inspections of the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism conducted under the directed component of the inspection program are exempt from the requirement to maintain certification records specified by paragraph (e)(1)(i)(C) of this section, but inspections of the clutch/brake mechanism, antirepeat feature, and single-stroke mechanism conducted under the general component of the inspection program are not exempt from this requirement.*

**1910.217(h)(10)(ii)**—The following checks shall be made at the beginning of each shift and whenever a die change is made.

**1910.217(h)(10)(ii)(A)**—A check shall be performed using the test rod according to the presence sensing device **manufacturer's instructions** to determine that the presence sensing device used for PSDI is operational.

**1910.217(h)(10)(ii)(B)**—The safety distance shall be checked for compliance with paragraph (h)(9)(v) [*Safeguarding the Point of Operation*] of this section.

**1910.217(h)(10)(ii)(C)**—A check shall be made to determine that all supplemental safeguarding is in place. Where presence sensing devices are used for supplemental safeguarding, a *check for proper operation shall be performed using the test rod* according to the presence sensing device manufacturer's instructions.

**1910.217(h)(10)(ii)(D)**—A check shall be made to assure that the barriers and/or supplemental presence sensing devices required by paragraph (h)(9)(ix) [*Safeguarding the Point of Operation*] of this section are operating properly.

**1910.217(h)(10)(ii)(E)**—A *system or visual check shall be made* to verify correct counterbalance adjustment for die weight according to the press **manufacturer's instructions**, when a press is equipped with a slide counterbalance system.

**1910.217(h)(10)(iii)**—When presses used in the PSDI mode have flywheel or bullgear running on crankshaft mounted journals and bearings, or a flywheel mounted on back shaft journals and bearings, *periodic inspections* following the press manufacturer's recommendations shall be made to ascertain that bearings are in good working order, and that automatic lubrication systems for

these bearings (if automatic lubrication is provided) are supplying proper lubrication. On presses with provision for manual lubrication of flywheel or bullgear bearings, lubrication shall be provided *according to the press manufacturer's recommendations*.

**1910.217(h)(10)(iv)**—*Periodic inspections* of clutch and brake mechanisms shall be performed to assure they are in proper operating condition. The press **manufacturer's recommendations** shall be followed.

### Recordkeeping

**1910.217(e)(1)(i)(C)**—**Maintain a certification record** of each inspection, and each maintenance and repair task performed, under the general component of the **inspection program** that includes the *date of the inspection*, maintenance, or repair work, the **signature of the person** who performed the inspection, maintenance, or repair work, and the serial number, or other identifier, of the *power press inspected*, maintained, and repaired.

**1910.217(e)(1)(ii)(C)**—**Maintain a certification record** of each maintenance task performed under the directed component of the **inspection program** that includes the *date of the maintenance task*, the **signature of the person** who performed the maintenance task, and the serial number, or other identifier, of the power press maintained.

**1910.217(h)(11)(i)**—*Prior to the initial use* of any mechanical press in the PSDI mode, *two sets of certification and validation* are required.

**1910.217(h)(11)(iv)**—**Records of the installation certification and validation and the most recent recertification and revalidation** shall be **maintained** for each safety system equipped press by the employer as long as the press is in use. The **records** shall include the *manufacture and model number* of each component and subsystem, the calculations of the safety distance as required by *paragraph (h)(9)(v) [Safeguarding the Point of Operation]* of this section, and the stopping time measurements required by *paragraph (h)(2)(ii) [Brake and Clutch Requirements]* of this section. The *most recent records* shall be made **available** to OSHA upon request.

**1910.217(h)(13)(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.

### Certification

**1910.217(e)(1)(i)(C)**—**Maintain a certification record** of each inspection, and each maintenance and repair task performed, under the general component of the **inspection program** that includes the *date of the inspection*, maintenance, or repair work, the **signature of the person** who performed the inspection, maintenance, or repair work, and the serial number, or other identifier, of the *power press inspected*, maintained, and repaired.

**1910.217(e)(1)(ii)(C)**—**Maintain a certification record** of each maintenance task performed under the directed component of the **inspection program** that includes the *date of the maintenance task*, the **signature of the person** who performed the maintenance task, and the serial number, or other identifier, of the power press maintained.

**1910.217(h)(11)(i)**—*Prior to the initial use* of any mechanical press in the PSDI mode, *two sets of certification and validation* are required.

**1910.217(h)(11)(i)(B)**—*Alter a press has been equipped with a safety system whose design has been certified and validated in accordance with paragraph (h)(11)(i) [Safety System Certification/Validation] of this section*, the safety system installation shall be **certified** by the employer, and then shall be validated by an **OSHA-recognized third-party validation organization** to meet all applicable requirements of *paragraphs (a) through (h) [Mechanical Power Press Requirements]* and *appendix A [Mandatory Requirements for Certification/Validation of Safety Systems for Presence Sensing Device Initiation of Mechanical Power Presses]* of this section.

**1910.217(h)(11)(ii)**—*At least annually thereafter*, the safety system on a mechanical power press used in the PSDI mode shall be **recertified** by the employer and **revalidated** by an **OSHA-recognized third-party validation organization** to meet all applicable requirements of *paragraphs (a) through (h) [Mechanical Power Press Requirements]* and *appendix A [Mandatory Requirements for Certification/Validation of Safety Systems for Presence Sensing Device Initiation of Mechanical Power Presses]* of this section. *Any press whose safety system has not been recertified and revalidated within the preceding 12 months* shall be removed from service in the PSDI mode until the safety system is **recertified** and **revalidated**.

**1910.217(h)(11)(iii)**—A **label** shall be affixed to the press as part of each installation **certification/validation** and the most recent **recertification/revalidation**. The **label** shall indicate the press serial number, the minimum safety distance (Ds) required by (h)(9)(v) [Safeguarding the Point of Operation] of this section, the fulfillment of design **certification/validation**, the employer’s signed **certification**, the identification of the **OSHA-recognized third-party validation organization**, its **signed validation**, and the date the **certification/validation** and **recertification/revalidation** are issued.

**1910.217(h)(11)(iv)**—**Records** of the installation **certification** and **validation** and the most recent **recertification** and **revalidation** shall be **maintained** for each safety system equipped press by the employer as long as the press is in use. The **records** shall include the manufacture and model number of each component and subsystem, the calculations of the safety distance as required by paragraph (h)(9)(v) [Safeguarding the Point of Operation] of this section, and the stopping time measurements required by paragraph (h)(2)(ii) [Brake and Clutch Requirements] of this section. The most recent **records** shall be made **available** to OSHA upon request.

**1910.217(h)(11)(v)**—The employer shall notify the **OSHA-recognized third-party validation** organization within five days whenever a component or a subsystem of the safety system fails or modifications are made which may affect the safety of the system. The failure of a critical component shall necessitate the removal of the safety system from service until it is **recertified and revalidated**, except **recertification** by the employer without **revalidation** is permitted when a non-critical component or subsystem is replaced by one of the same manufacture and design as the original, or determined by the third-party **validation** organization to be equivalent by similarity analysis, as set forth in appendix A [Mandatory Requirements for Certification/Validation of Safety Systems for Presence Sensing Device Initiation of Mechanical Power Presses].

**1910.217(h)(13)(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.

### **Training and Communications**

**1910.217(e)(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.

**1910.217(e)(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.

**1910.217(f)(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.

**1910.217(h)(10)(i)**—Any press equipped with presence sensing devices for use in PSDI, or for supplemental safeguarding on presses used in the PSDI mode, shall be equipped with a test rod of diameter specified by the presence sensing device manufacturer to represent the minimum object sensitivity of the sensing field. **Instructions** for use of the test rod shall be noted on a **label** affixed to the presence sensing device.

**1910.217(h)(10)(vi)**—It shall be the responsibility of the employer to ensure the competence of personnel caring for, inspecting, and maintaining power presses equipped for PSDI operation, through initial and periodic training.

**1910.217(h)(11)(vi)**—The employer shall notify the **OSHA-recognized third-party validation** organization within five days of the occurrence of any point of operation injury while a press is used in the PSDI mode. This is in addition to the **report** of injury required by paragraph (g) [Reports of Injuries to Employees Operating Mechanical Power Presses] of this section; however, a **copy** of that **report** may be used for this purpose.

**1910.217(h)(13)(i)**—The operator training required by paragraph (f)(2) [Instruction to Operators] 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.

### **Signs, Markings and Tags**

**1910.217(h)(10)(i)**—Any press equipped with presence sensing devices for use in PSDI, or for supplemental safeguarding on presses used in the PSDI mode, shall be equipped with a test rod of diameter specified by the presence sensing device manufacturer to represent the minimum object sensitivity of the sensing field. **Instructions** for use of the test rod shall be noted on a **label** affixed to the presence sensing device.

**1910.217(h)(11)(iii)**—A **label** shall be affixed to the press as part of each installation **certification/validation** and the most recent **recertification/revalidation**. The **label** shall indicate the press serial number, the minimum safety distance (Ds) required by paragraph (h)(9)(v) [Safeguarding the Point of Operation] of this section, the fulfillment of design **certification/validation**, the employer’s signed **certification**, the identification of the OSHA-recognized third-party validation organization, its signed validation, and the date the **certification/validation** and **recertification/revalidation** are issued.

## **1910.218—FORGING MACHINES**

**Scope/Application:** *The safety requirements of this subparagraph apply to lead casts or other use of lead in the forge shop or die shop.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—safety checks, periodic and regular inspections
- Recordkeeping—records
- Certification—records
- Training and Communications—initial training

### **Inspections and Tests**

**1910.218(a)(2)(i)**—*Establishing periodic and regular maintenance safety checks and keeping **certification records** of these inspections* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, for the forging machine which was inspected.

**1910.218(a)(2)(ii)**—*Scheduling and recording the inspection of guards and point of operation protection devices at frequent and regular intervals. **Recording of inspections** shall be in the form of a **certification record*** which includes the date the inspection was performed, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the equipment inspected.

### **Recordkeeping**

**1910.218(a)(2)(i)**—*Establishing periodic and regular maintenance safety checks and keeping **certification records** of these inspections* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, for the forging machine which was inspected.

**1910.218(a)(2)(ii)**—*Scheduling and **recording** the inspection of guards and point of operation protection devices at frequent and regular intervals. **Recording of inspections** shall be in the form of a **certification record*** which includes the date the inspection was performed, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the equipment inspected.

### **Certification**

**1910.218(a)(2)(i)**—*Establishing periodic and regular maintenance safety checks and keeping **certification records** of these inspections* which include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, for the forging machine which was inspected.

**1910.218(a)(2)(ii)**—*Scheduling and **recording** the inspection of guards and point of operation protection devices at frequent and regular intervals. **Recording of inspections** shall be in the form of a **certification record*** which includes the date the inspection was performed, the **signature of the person** who performed the inspection and the serial number, or other identifier, of the equipment inspected.

### **Training and Communications**

**1910.218(a)(2)(iii)**—*Training personnel for the proper inspection and maintenance of forging machinery and equipment.*

## 1910.219—MECHANICAL POWER-TRANSMISSION APPARATUS

**Scope/Application:** *This section covers all types and shapes of power-transmission belts.*

**Exception:** *This standard does not cover flat belts one inch or less in width, flat belts two inches or less in width which are free from metal lacings/fasteners, round belts one-half inch or less in diameter, or single strand V-belts thirteen thirty-seconds (13/32) inch or less in width, all of which when operating at two hundred and fifty (250) feet per minute or less.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—initial and periodic inspections

#### Inspections and Tests

**1910.219(p)(1)**—General. All power-transmission equipment *shall be inspected at intervals not exceeding 60 days* and be kept in good working condition at all times.

**1910.219(p)(4)**—Hangers. *Hangers shall be inspected* to make certain that all supporting bolts and screws are tight and that supports of hanger boxes are adjusted properly.

**1910.219(p)(6)(ii)**—*Inspection shall be made* of belts, lacings, and fasteners and such equipment kept in good repair.

## 29 CFR Subpart P—Hand and Portable Powered Tools and Other Hand-Held Equipment

### 1910.243—GUARDING OF PORTABLE POWERED TOOLS

**Scope/Application:** *This section applies portable powered tools.*

**Exception:** *Provides exception to safety guards for abrasive wheels when used for internal work while within the work being ground, mounted wheels used in portable operations 2 inches and smaller in diameter, and types 16, 17, 18, 18R and 19 cones, plugs, and threaded pot balls where work offers protection. Exception for safety guards on all operations where the work provides a suitable measure of protection to the operator may be so constructed that the spindle end, nut and outer flange are exposed.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections before mounting, before use, and regular, tests

#### Inspections and Tests

**1910.243(c)(5)(i)**—*Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test, see Subpart O, 1910.215(d)(1)) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum **operating speed marked** on the wheel.*

**1910.215(d)(1)**—*Abrasive wheel machinery. Inspection. Immediately before mounting, all wheels shall be closely inspected and sounded by the user (ring test) to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum **operating speed marked** on the wheel. Wheels should be tapped gently with a light nonmetallic implement, such as the handle of a screwdriver for light wheels, or a wooden mallet for heavier wheels. If they sound cracked (dead), they shall not be used. This is known as the “Ring Test”.*

**1910.243(d)(4)(i)**—*Before using a tool, the operator shall inspect it to determine to his satisfaction that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions.*

**1910.243(d)(4)(xiv)**—*Any tool found not in proper working order shall be immediately removed from service. The tool shall be inspected at regular intervals and shall be repaired in accordance with the manufacturer’s specifications.*

### 1910.244—OTHER PORTABLE TOOLS AND EQUIPMENT

**Scope/Application:** *This section applies jacks and abrasive blast cleaning nozzles.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—6 month inspections, periodic inspections

#### Inspections and Tests

**1910.244(a)(2)(vi)**—*Each jack shall be thoroughly inspected at times which depend upon the service conditions. Inspections shall be not less frequent than the following:*

**1910.244(a)(2)(vi)(a)**—*For constant or intermittent use at one locality, once every 6 month.*

**1910.244(a)(2)(vi)(b)**—*For jacks sent out of shop for special work, when sent out and when returned.*

**1910.244(a)(2)(vi)(c)**—*For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.*

## 29 CFR Subpart Q—Welding, Cutting and Brazing

### 1910.252—GENERAL REQUIREMENTS

*Scope/Application:* This section applies to welding, cutting and brazing.

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—hazard communication program, safety data sheets
- Inspections and Tests—inspections, atmospheric tests, permits
- Recordkeeping—permits
- Training and Communications—initial training, fire watchers, hazard communication
- Qualified Person—designated management representative
- Signs, Markings and Tags—labels, notices

#### Programs, Policies and Procedures

**1910.252(a)(2)(xiii)(A)**—Based on fire potentials of plant facilities, establish areas for cutting and welding, and *establish procedures* for cutting and welding, in other areas.

**1910.252(c)(1)(iv)**—Hazard communication. The employer shall include the potentially hazardous materials employed in fluxes, coatings, coverings, and filler metals, all of which are potentially used in welding and cutting, or are released to the atmosphere during welding and cutting, *in the program established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200)*. The employer shall ensure that each employee *has access to labels on containers of such materials and safety data sheets, and is trained* in accordance with the provisions of Sec. 1910.1200. Potentially hazardous materials shall include but not be limited to the materials itemized in paragraphs (c)(5) [*Fluorine Compounds*] through (c)(12) [*Cutting of Stainless Steels*] of this section.

#### Inspections and Tests

**1910.252(a)(2)(iv)**—Authorization. Before cutting or welding is permitted, the area *shall be inspected by the individual responsible for authorizing cutting and welding operations*. He shall designate precautions to be followed in granting authorization to proceed preferably in the form of a **written permit**.

**1910.252(b)(2)(ii)(I)**—Filter lenses *must meet the test* for transmission of radiant energy prescribed by any of the consensus standards listed in 29 CFR 1910.133(b)(1) [*Criteria for Protective Eye and Face Protection*].

**1910.252(c)(8)**—*Beryllium*. Welding or cutting indoors, outdoors, or in confined spaces involving beryllium-containing base or filler metals shall be done using local exhaust ventilation and airline respirators unless *atmospheric tests under the most adverse conditions have established* that the workers' exposure is within the acceptable concentrations defined by 1910.1000 of this part. In all cases, workers in the immediate vicinity of the welding or cutting operations shall be protected as necessary by local exhaust ventilation or airline respirators.

**1910.252(c)(9)(i)**—*Cadmium*. In confined spaces or indoors, welding or cutting operations involving cadmium-bearing or cadmium-coated base metals must be done using local exhaust ventilation or airline respirators unless *atmospheric tests* under the most adverse conditions show that employee exposure is within the acceptable concentrations specified by 29 CFR 1910.1000—*Toxic and Hazardous Substances*. Such operations, when done outdoors, must be done using respirators, such as fume respirators, **approved** for this purpose by **NIOSH** under 42 CFR Part 84.

**1910.252(c)(10)**—*Mercury*. In confined spaces or indoors, welding or cutting operations involving metals coated with mercury-bearing materials, including paint, must be done using local exhaust ventilation or *airline respirators unless atmospheric tests under the most adverse conditions show* that employee exposure is within the acceptable concentrations specified by 29 CFR 1910.1000 [*Toxic and Hazardous Substances*]. Such operations, when done outdoors, must be done using respirators **approved** for this purpose by **NIOSH** under 42 CFR Part 84.

**1910.252(d)(1)(iv)**—*Pressure testing*. In *pressure testing of pipelines*, the workers and the public shall be protected against injury by the blowing out of closures or other pressure restraining devices. Also, protection shall be provided against expulsion of loose dirt that may have become trapped in the pipe.

**1910.252(d)(1)(vii)**—*X-ray inspection*. The use of X-rays and radioactive isotopes *for the inspection of welded pipeline joints shall be carried out* in conformance with the **American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1-1963**, which is incorporated by reference as specified in Sec. 1910.6.

**1910.252(d)(2)(ii)**—*X-ray inspection.* The use of X-rays and radioactive isotopes *for the inspection of welded piping joints shall be in conformance with the American National Standard Safety Standard for Non-Medical X-ray and Sealed Gamma-Ray Sources, ANSI Z54.1-1963.*

### **Recordkeeping**

**1910.252(a)(2)(iv)**—Authorization. Before cutting or welding is permitted, the area *shall be inspected by the individual responsible for authorizing cutting and welding operations.* He *shall designate precautions* to be followed in granting authorization to proceed preferably in the *form of a written permit.*

**1910.252(c)(1)(iv)**—Hazard communication. The employer shall include the potentially hazardous materials employed in fluxes, coatings, coverings, and filler metals, all of which are potentially used in welding and cutting, or are released to the atmosphere during welding and cutting, *in the program established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200).* The employer shall ensure that each employee *has access to labels on containers of such materials and safety data sheets, and is trained* in accordance with the provisions of Sec. 1910.1200. Potentially hazardous materials shall include but not be limited to the materials itemized in *paragraphs (c)(5) [Fluorine Compounds] through (c)(12) [Cutting of Stainless Steels]* of this section.

### **Training and Communications**

**1910.252(a)(2)(iii)(B)**—Fire watchers shall have fire extinguishing equipment readily available and *be trained in its use.* They *shall be familiar* with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm. *A fire watch shall be maintained* for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

**1910.252(a)(2)(xiii)(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.

**1910.252(c)(1)(iv)**—Hazard communication. The employer shall include the potentially hazardous materials employed in fluxes, coatings, coverings, and filler metals, all of which are potentially used in welding and cutting, or are released to the atmosphere during welding and cutting, *in the program established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200).* The employer shall ensure that each employee *has access to labels on containers of such materials and safety data sheets, and is trained* in accordance with the provisions of Sec. 1910.1200. Potentially hazardous materials shall include but not be limited to the materials itemized in *paragraphs (c)(5) [Fluorine Compounds] through (c)(12) [Cutting of Stainless Steels]* of this section.

### **Qualified Person**

**1910.252(a)(2)(xiv)(D)**—*Shall secure authorization* for the cutting and welding operations from the *designated management representative.*

### **Signs, Markings and Tags**

**1910.252(c)(1)(v)(A)**—The suppliers *shall determine and shall label* in accordance with Sec. 1910.1200 [*Hazard Communication*] any hazards associated with the use of their materials in welding, cutting, and brazing.

**1910.252(c)(1)(v)(B)**—In addition to any requirements imposed by Sec. 1910.1200 [*Hazard Communication*], all filler metals and fusible granular materials *shall carry the following notice*, as a minimum, on **tags**, boxes, or other containers:

Do not use in areas without adequate ventilation. See ANSI Z49.1-1967 *Safety in Welding, Cutting, and Allied Processes* published by the American Welding Society.

**1910.252(c)(1)(v)(C)**—Where brazing (welding) filler metals contain cadmium in significant amounts, the **labels** *shall indicate the hazards* associated with cadmium including cancer, lung and kidney effects, and acute toxicity effects.

**1910.252(c)(1)(v)(D)**—Where brazing and gas welding fluxes contain fluorine compounds, the **labels** *shall indicate the hazards* associated with fluorine compounds including eye and respiratory tract effects.



## 1910.253—OXYGEN-FUEL GAS WELDING AND CUTTING

**Scope/Application:** *This section applies to oxygen-fuel gas welding and cutting.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections before use, tests
- Recordkeeping—instructions
- Training and Communications—posted instructions, instruct employees initially
- Signs, Markings and Tags—warning signs, tags

### Inspections and Tests

**1910.253(c)(3)(iii)**—The assembled manifold including leads *shall be tested* and proven gas-tight at a pressure of 300 psig (2.04 MPa). The fluid used for testing oxygen manifolds shall be oil-free and not combustible.

**1910.253(d)(5)(i)**—Piping systems *shall be tested* and proved gastight at 1½ times the maximum operating pressure, and shall be thoroughly purged of air *before being placed in service*. The material used for testing oxygen lines shall be oil free and noncombustible. Flames shall not be used to detect leaks.

**1910.253(e)(6)(iv)**—Union nuts and connections on regulators *shall be inspected before use* to detect faulty seats which may cause leakage of gas when the regulators are attached to the cylinder valves.

### Recordkeeping

**1910.253(a)(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*.

**1910.253(b)(5)(ii)(R)(1)**—Cylinder valves shall not be tampered with nor should any attempt be made to repair them. If trouble is experienced, the *supplier should be sent a report promptly* indicating the character of the trouble and the cylinder's serial number. **Supplier's instructions** as to its disposition shall be followed.

**1910.253(f)(7)(i)(A)**—**Operating instructions** *shall be posted in a conspicuous place* near the generator or kept in a suitable place available for ready reference.

**1910.253(f)(7)(i)(B)**—When recharging generators the order of operations specified in the **instructions** *supplied by the manufacturer* shall be followed.

**1910.253(f)(7)(i)(C)**—In the case of batch-type generators, when the charge of carbide is exhausted and before additional carbide is added, the generating chamber shall always be flushed out with water, renewing the water supply in accordance with the **instruction card** *furnished by the manufacturer*.

### Training and Communications

**1910.253(a)(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*.

**1910.253(b)(5)(ii)(R)(1)**—Cylinder valves shall not be tampered with nor should any attempt be made to repair them. If trouble is experienced, the *supplier should be sent a report promptly* indicating the character of the trouble and the cylinder's serial number. **Supplier's instructions** as to its disposition shall be followed.

**1910.253(f)(7)(i)(A)**—**Operating instructions** *shall be posted in a conspicuous place* near the generator or kept in a suitable place **available** *for ready reference*.

**1910.253(f)(7)(i)(B)**—When recharging generators the order of operations specified in the **instructions** *supplied by the manufacturer* shall be followed.

**1910.253(f)(7)(i)(C)**—In the case of batch-type generators, when the charge of carbide is exhausted and before additional carbide is added, the generating chamber shall always be flushed out with water, renewing the water supply in accordance with the **instruction card** *furnished by the manufacturer*.

## Signs, Markings and Tags

**1910.253(b)(5)(iii)(G)**—A *warning should be placed near cylinders* having leaking fuse plugs or other leaking safety devices not to approach them with a lighted cigarette or other source of ignition. Such cylinders *should be plainly tagged*; the supplier should be promptly notified and his instructions followed as to their return.

**1910.253(f)(7)(i)(A)**—*Operating instructions shall be posted in a conspicuous place* near the generator or kept in a suitable place *available for ready reference*.

## 1910.254—ARC WELDING AND CUTTING

**Scope/Application:** *This section applies to oxygen-fuel gas welding and cutting.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tests before use
- Recordkeeping—manufacturers' instructions
- Training and Communications—instruct employees, printed instructions

### Inspections and Tests

**1910.254(d)(9)(ii)**—Machines which have become wet *shall be thoroughly dried and tested before being used*.

### Recordkeeping

**1910.254(d)(6)**—*Manufacturers' instructions. Printed rules and instructions* covering operation of equipment supplied by the manufacturers shall be strictly followed.

### Training and Communications

**1910.254(a)(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) Operation and Maintenance* of this section.

**1910.254(d)(6)**—*Manufacturers' instructions. Printed rules and instructions* covering operation of equipment supplied by the manufacturers shall be strictly followed.

## 1910.255—RESISTANCE WELDING

**Scope/Application:** *This section applies to resistance welding.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic inspections
- Recordkeeping—records
- Certification—records
- Training and Communications—instruct employees

### Inspections and Tests

**1910.255(e)**—Maintenance. *Periodic inspection shall be made by qualified maintenance personnel, and a certification record maintained*. The *certification record* shall include the date of inspection, the *signature of the person* who performed the inspection and the serial number, or other identifier, for the equipment inspected. The operator *shall be instructed to report any equipment defects to his supervisor* and the use of the equipment shall be discontinued until safety repairs have been completed.

### Recordkeeping

**1910.255(e)**—Maintenance. *Periodic inspection shall be made by qualified maintenance personnel, and a certification record maintained*. The *certification record* shall include the date of inspection, the *signature of the person* who performed the inspection and the serial number, or other identifier, for the equipment inspected. The operator *shall be instructed to report any equipment defects to his supervisor* and the use of the equipment shall be discontinued until safety repairs have been completed.

## **Certification**

**1910.255(e)**—Maintenance. *Periodic inspection shall be made by qualified maintenance personnel, and a **certification record maintained**. The **certification record** shall include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, for the equipment inspected. The operator *shall be instructed to report any equipment defects to his supervisor* and the use of the equipment shall be discontinued until safety repairs have been completed.*

## **Training and Communications**

**1910.255(a)(3)**—Personnel. Workmen designated to operate resistance welding equipment *shall have been properly instructed and judged competent to operate such equipment.*

**1910.255(e)**—Maintenance. *Periodic inspection shall be made by qualified maintenance personnel, and a **certification record maintained**. The **certification record** shall include the date of inspection, the **signature of the person** who performed the inspection and the serial number, or other identifier, for the equipment inspected. The operator *shall be instructed to report any equipment defects to his supervisor* and the use of the equipment shall be discontinued until safety repairs have been completed.*

## 29 CFR Subpart R—Special Industries

### 1910.261—PULP, PAPER, AND PAPERBOARD MILLS

**Scope/Application:** *This section applies to establishments where pulp, paper, and paperboard are manufactured and converted.*

**Exception:** *This section does not apply to logging and the transportation of logs to pulp, paper, and paperboard mills.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—blue flag policy, lockout/tagout
- Inspections and Tests—before use, daily, and semi-annual inspections, periodic tests
- Training and Communications—employee instructions
- Signs, Markings and Tags—tags

#### Programs, Policies and Procedures

**1910.261(c)(9)(i)**—A flagman shall direct the movement of cranes or locomotives being moved across railroad tracks or roads, and at any points where the vision of the operator is restricted. The flagman must always remain in sight of the operator when the crane or locomotive is in motion. The **blue flag policy** shall be used to **mark** stationary cars day and night. This **policy** shall include **marking** the track in advance of the spotted cars (flag for daytime, light for darkness).

**1910.261(g)(15)(i)**—Valves controlling lines leading into a digester shall be **locked out and tagged**. The keys to the locks shall be in the possession of a person or persons doing the inspecting or making repairs.

**1910.261(g)(19)(iii)**—When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank being inspected or repaired shall be **locked or tagged out**, or the line shall be disconnected and blocked off.

**1910.261(g)(21)**—*Inspection and repair of tanks.* All piping leading to tanks shall be **blanked off or valved and locked or tagged**. Any lines to sewers shall be blanked off to protect workers from air contaminants.

**1910.261(j)(4)(ii)**—When cleaning, inspecting, or other work requires that persons enter the beaters, all control devices shall be **locked or tagged out**, in accordance with *paragraph (b)(4) [Lockouts]* of this section.

**1910.261(j)(5)(iii)**—When cleaning, inspecting, or other work requires that persons enter pulpers, all steam, water, or other control devices shall be **locked or tagged out**. Blank flanging and tagging of pipe lines is acceptable in place of closed and locked or tagged valves. Blank flanging of steam and water lines shall be acceptable in place of valve locks.

**1910.261(j)(6)(i)**—All control devices shall be **locked or tagged out** when persons enter stock chests, in accordance with *paragraph (b)(4) [Lockouts]* of this section.

**1910.261(m)(5)**—*Unloading Cars.* Flag signals, derails, or other protective devices shall be used to protect men during switching operations. The **blue flag policy** shall be invoked according to *paragraph (c)(9)(i) [Traffic Warning and Signs or Signals]* of this section.

#### Inspections and Tests

**1910.261(g)(3)**—*Acid tower structure.* Outside elevators shall be **inspected daily** during winter months when ice materially affects safety. Elevators, runways, stairs, etc., for the acid tower shall be **inspected monthly** for defects that may occur because of exposure to acid or corrosive gases.

**1910.261(g)(7)**—*Hoops for acid storage tanks.* Hoops of tanks shall be made of rods rather than flat strips and shall be **safely maintained by scheduled inspections**.

**1910.261(g)(10)**—*Gas masks (digester building).* Gas masks must be available, and they must furnish adequate protection against sulfurous acid and chlorine gases and be **inspected** and repaired in accordance with *29 CFR 1910.134 [Respiratory Protection—Respirator Standard]*.

**1910.261(g)(12)(iii)**—*Heavy duty pipe, valves, and fittings* shall be used between the digester and blow pit. These valves, fittings, and pipes shall be **inspected at least semiannually** to determine the degree of deterioration.

**1910.261(g)(15)(iii)**—No inspector shall enter a digester unless a lifeline is securely fastened to his body by means of a safety belt and at least one other experienced employee is stationed outside the digester to handle the line and to summon assistance. All ladders and lifelines shall be **inspected before each use**.

**1910.261(g)(16)(ii)**—The pressure tanks-accumulators *shall be inspected twice annually. (See the ASME Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels—1968, with Addenda.)*

**1910.261(g)(18)(iii)**—Heavy-duty pipe, valves, and fittings shall be used between digester and blow pit. These *shall be inspected at least semiannually* to determine the degree of deterioration and repaired or replaced when necessary, in accordance with *American National Standards B31.1—1955, B31.1a—1963, B31.1.0—1967, and B31.2—1968.*

**1910.261(g)(19)(iii)**—When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank *being inspected or repaired shall be locked or tagged out, or the line shall be disconnected and blocked off.*

**1910.261(g)(21)**—Inspection and repair of tanks. All piping leading to tanks *shall be blanked off or valved and locked or tagged.* Any lines to sewers shall be blanked off to protect workers from air contaminants.

**1910.261(h)(3)(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.*

**1910.261(k)(1)**—Emergency stops. Paper machines shall be equipped with devices that will stop the machine quickly in an emergency. The devices shall consist of push buttons for electric motive power (or electrically operated engine stops), pull cords connected directly to the prime mover, control clutches, or other devices, interlocked with adequate braking action. The devices *shall be tested periodically* by making use of them when stopping the machine and shall be so located that any person working on the machine can quickly disconnect the machine from the source of power in case of emergency.

**1910.261(k)(24)(ii)**—All lifting equipment (clamps, cables, and slings) *shall be maintained in a safe condition and inspected regularly.*

**1910.261(l)(2)**—Emergency stops. Electrically or manually operated quick power disconnecting devices, interlocked with braking action, shall be provided on all operating sides of the machine within easy reach of all employees. These devices *shall be tested* by making use of them when stopping the machine.

### **Training and Communications**

**1910.261(h)(3)(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.*

### **Signs, Markings and Tags**

**1910.261(g)(15)(i)**—Valves controlling lines leading into a digester *shall be locked out and tagged.* The keys to the locks shall be in the *possession of a person or persons doing the inspecting* or making repairs.

**1910.261(g)(19)(iii)**—When blow lines from more than one digester lead into one pipe, the cock or valve of the blow line from the tank *being inspected* or repaired *shall be locked or tagged out, or the line shall be disconnected and blocked off.*

**1910.261(g)(21)**—*Inspection and repair of tanks.* All piping leading to tanks *shall be blanked off or valved and locked or tagged.* Any lines to sewers shall be blanked off to protect workers from air contaminants.

**1910.261(j)(4)(ii)**—*When cleaning, inspecting, or other work requires* that persons enter the beaters, all control devices *shall be locked or tagged out, in accordance with paragraph (b)(4) [Lockouts]* of this section.

**1910.261(j)(5)(iii)**—*When cleaning, inspecting, or other work requires* that persons enter pulpers, all steam, water, or other control devices *shall be locked or tagged out.* Blank flanging and tagging of pipe lines is acceptable in place of closed and locked or tagged valves. Blank flanging of steam and water lines shall be acceptable in place of valve locks.

**1910.261(j)(6)(i)**—All control devices *shall be locked or tagged out* when persons enter stock chests, in accordance with *paragraph (b)(4) [Lockouts]* of this section.

## **1910.263—BAKERY EQUIPMENT**

**Scope/Application:** *The requirements of this section shall apply to the design, installation, operation and maintenance of machinery and equipment used within a bakery.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—inspections every 30 days, semi-monthly tests
- Signs, Markings and Tags—markings

## Inspections and Tests

**1910.263(h)(2)**—Emergency stop bar. An emergency stop bar shall be provided, and so located that the body of the operator will press against the bar if the operator slips and falls toward the rolls, or if the operator gets his hand caught in the rolls. The bar shall apply the body pressure to open positively a circuit that will deenergize the drive motor. In addition, a brake which is inherently self-engaging by requiring power or force from an external source to cause disengagement shall be activated at the same time causing the rolls to stop instantly. The emergency stop bar *shall be checked for proper operation every 30 days*.

**1910.263(l)(3)(ii)**—All piping at ovens *shall be tested* to be gastight.

**1910.263(l)(9)(ii)**—All safety devices on ovens *shall be inspected at intervals of not less than twice a month by an especially appointed, properly instructed bakery employee, and not less than once a year by representatives of the oven manufacturers*.

**1910.263(l)(9)(v)(b)**—The safety shutoff valve shall be positively tight and *shall be tested at least twice monthly*.

**1910.263(l)(15)(iii)**—Duct systems (in ovens) operating under pressure *shall be tested for tightness in the initial starting of the oven and also at intervals not farther apart than 6 months*.

## Signs, Markings and Tags

**1910.263(i)(12)(i)**—All chain tackle *shall be **marked** prominently, permanently, and legibly* with maximum load capacity.

**1910.263(i)(12)(ii)**—All chain tackle *shall be **marked** permanently and legibly* with minimum support specification.

**1910.263(i)(13)(i)**—All hoists *shall be **marked** prominently, permanently, and legibly* with maximum load capacity.

**1910.263(i)(13)(ii)**—All hoists *shall be **marked** permanently and legibly* with minimum support specifications.

## 1910.264—LAUNDRY MACHINERY AND OPERATIONS

**Scope/Application:** *This section applies to moving parts of equipment used in laundries and to conditions peculiar to this industry, with special reference to the point of operation of laundry machines.*

**Exception:** *This standard does not apply to dry-cleaning operations.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—safe practices
- Recordkeeping—instructions
- Training and Communications—instruct employees

### Programs, Policies and Procedures

**1910.264(d)(1)(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*.

### Recordkeeping

**1910.264(d)(1)(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*.

### Training and Communications

**1910.264(d)(1)(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*.

## 1910.265—SAWMILLS

**Scope/Application:** *This section includes safety requirements for sawmill operations including, but not limited to, log and lumber handling, sawing, trimming, and planing; waste disposal; operation of dry kilns; finishing; shipping; storage; yard and yard equipment; and for power tools and affiliated equipment used in connection with such operations.*

**Exception:** *This section does not apply to the manufacture of plywood, cooperage, and veneer.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—frequent, initial, monthly, and weekly inspections
- Signs, Markings and Tags—markings

### Inspections and Tests

**1910.265(c)(19)(i)**—Foundations and walkways. Tramways and trestles shall have substantial mud sills or foundations which *shall be frequently inspected* and kept in repair. When vehicles are operated on tramways and trestles which are used for foot passage, traffic shall be controlled or a walkway with standard handrails at the outer edge and shear timber on the inner edge shall be provided. This walkway shall be wide enough to allow adequate clearance to vehicles. When walkways cross over other thoroughfares, they shall be solidly fenced at the outer edge to a height of 42 inches over such thoroughfares.

**1910.265(c)(24)(ix)(a)**—Chains used in load carrying service *shall be inspected before initial use and weekly thereafter*.

**1910.265(c)(26)(ix)**—*Inspection*. Every stacker and unstacker *shall be inspected at frequent intervals* and all defective parts shall be immediately repaired or replaced.

**1910.265(d)(2)(iii)(d)**—*Periodic inspection* of cable or dogging lines shall be made to determine when repair or removal from service is necessary.

**1910.265(d)(2)(iv)(d)**—*Inspection, maintenance, and ventilation of the bilge area shall be provided* to prevent accumulation of highly combustible materials.

**1910.265(e)(2)(i)(b)**—Band head saws *shall be thoroughly inspected* for cracks, splits, broken teeth, and other defects. A bandsaw with a crack greater than one-tenth the width of the saw shall not be placed in service until width of saw is reduced to eliminate crack, until cracked section is removed, or crack development is stopped.

**1910.265(e)(2)(ii)(b)**—Band head saw wheels *shall be subjected to monthly inspections*. Hubs, spokes, rims, bolts, and rivets shall be thoroughly examined in the course of such inspections. A loose or damaged hub, a rim crack, or loose spokes shall make the wheel unfit for service.

### Signs, Markings and Tags

**1910.265(c)(3)(ii)**—Areas beneath floor openings. Areas under floor openings shall, where practical, be fenced off. When this is not practical, they *shall be plainly marked* and telltales shall be installed to hang over these areas.

**1910.265(c)(11)**—*Hazard marking*. Physical hazard *marking* shall be as specified in §1910.144 [*Safety Color Code for Marking Physical Hazards*] of this part.

**1910.265(c)(24)(v)(b)**—Wire rope removed from service due to defects *shall be plainly marked or identified* as being unfit for further use on cranes, hoists, and other load-carrying devices.

**1910.265(c)(31)(ii)**—Restricted overhead clearance. All areas of restricted side or overhead clearance *shall be plainly marked*.

**1910.265(c)(31)(iii)**—Pickup and unloading points. Pickup and unloading points and paths for lumber packages on conveyors and transfers and other areas where accurate spotting is required, *shall be plainly marked* and wheel stops provided where necessary.

## 1910.266—LOGGING OPERATIONS

**Scope/Application:** *This standard applies to all logging operations as defined by this section. This standard establishes safety practices, means, methods and operations for all types of logging, regardless of the end use of the wood. These types of logging include, but are not limited to, pulpwood and timber harvesting and the logging of sawlogs, veneer bolts, poles, pilings and other forest products.*

**Exception:** *This standard does apply to the construction or use of cable yarding systems.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—initial and during each work shift inspections
- Recordkeeping—records
- Certification—records
- Training and Communications—initial training, instructions for maintenance, monthly meetings
- Qualified Person—designated person

## Inspections and Tests

**1910.266(d)(1)(ii)**—The employer shall assure that personal protective equipment, including any personal protective equipment provided by an employee, *is inspected before initial use during each workshift*. Defects or damage shall be repaired or the unserviceable personal protective equipment shall be replaced before work is commenced.

**1910.266(e)(1)(ii)**—The employer shall assure that each tool, including any tool provided by an employee, *is inspected before initial use during each workshift*.

**1910.266(f)(1)(ii)**—The employer shall assure that each machine, including any machine provided by an employee, *is inspected before initial use during each workshift*. Defects or damage shall be repaired or the unserviceable machine shall be replaced before work is commenced.

**1910.266(g)(2)**—The employer shall assure that each vehicle used to perform any logging operation *is inspected before initial use during each workshift*. Defects or damage shall be repaired or the unserviceable vehicle shall be replaced before work is commenced.

## Recordkeeping

**1910.266(f)(1)(iii)**—The employer shall assure that operating and *maintenance instructions are available on the machine or in the area where the machine is being operated*. Each machine operator and maintenance employee shall comply with the *operating and maintenance instructions*.

**1910.266(g)(3)**—The employer shall assure that operating and *maintenance instructions are available* in each vehicle. Each vehicle operator and maintenance employee shall comply with the *operating and maintenance instructions*.

**1910.266(i)(7)(ii)**—The employer *shall assure* that each employee's *first-aid and CPR training and/or certificate of training remain current*.

**1910.266(i)(10)(i)**—The employer *shall verify compliance with paragraph (i) [Training]* 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.

**1910.266(i)(10)(ii)**—The *most recent training certification shall be maintained*.

## Certification

**1910.266(i)(7)(ii)**—The employer *shall assure* that each employee's *first-aid and CPR training and/or certificate of training remain current*.

**1910.266(i)(10)(i)**—The employer *shall verify compliance with paragraph (i) [Training]* 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.

## Training and Communications

**1910.266(f)(1)(iii)**—The employer shall assure that operating and *maintenance instructions are available on the machine or in the area where the machine is being operated*. Each machine operator and maintenance employee shall comply with the *operating and maintenance instructions*.

**1910.266(g)(3)**—The employer shall assure that operating and *maintenance instructions are available* in each vehicle. Each vehicle operator and maintenance employee shall comply with the *operating and maintenance instructions*.

**1910.266(i)(1)**—The employer *shall provide training* for each employee, including supervisors, at no cost to the employee. *[Reference paragraph (i)(3) for training information.]*

**1910.266(i)(2)**—*Frequency. Training shall be provided as follows:*

**1910.266(i)(2)(i)**—*As soon as possible but not later than the effective date of this section for initial training for each current and new employee;*



**1910.266(i)(2)(ii)**—Prior to initial assignment for each new employee;

**1910.266(i)(2)(iii)**—Whenever the employee is assigned new work tasks, tools, equipment, machines or vehicles; and

**1910.266(i)(2)(iv)**—Whenever an employee demonstrates unsafe job performance.

**1910.266(i)(5)(iii)**—The employer shall train each current and new employee in those elements for which the employee has not received training.

**1910.266(i)(7)(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—First Aid and CPR Training.

**1910.266(i)(11)**—Safety and health meetings. The employer shall hold safety and health meetings as necessary and at least each month for each employee. Safety and health meetings may be conducted individually, in crew meetings, in larger groups, or as part of other staff meetings.

### Qualified Person

**1910.266(i)(8)**—All training shall be conducted by a designated person.

## 1910.268—TELECOMMUNICATIONS

**Scope/Application:** This section sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers and at telecommunications field installations, which are located outdoors or in building spaces used for such field installations.

**Exception:** This standard does not apply to construction work or to installations under the exclusive control of electric utilities used for the purpose of communications or metering, or for generation, control, transformation, transmission, and distribution of electric energy, which are located in buildings used exclusively by the electric utilities for such purposes, or located outdoors on property owned or leased by the electric utilities or on public highways, streets, roads, etc., or outdoors by established rights on private property.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—procedures
- Inspections and Tests—initial, weekly, before each day's use, initial and periodic tests, competent person
- Recordkeeping—records
- Certification—records
- Training and Communications—initial training, employee instruction, first aid training
- Exposure Monitoring—atmospheric tests
- Competent Person—inspections
- Signs, Markings, and Tags—posted signs, marking

### Programs, Policies and Procedures

**1910.268(b)(2)(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 spattering. 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.

**1910.268(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:

**1910.268(c)(1)**—Recognition and avoidance of dangers relating to encounters with harmful substances and animal, insect, or plant life;

**1910.268(c)(2)**—*Procedures to be followed in emergency situations*; and,

**1910.268(c)(3)**—*First aid training, including instruction* in artificial respiration.

**1910.268(j)(4)(iv)(G)**—Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only *with written certification from the manufacturer*, or other equivalent entity, such as a *nationally recognized testing laboratory*, that the modification **results** in the equipment being safe for its intended use. Such changes shall require the changing and **posting of revised capacity and instruction decals or plates**. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

**1910.268(p)(2)**—Hazardous area. Accessible areas associated with microwave communication systems where the electromagnetic radiation level exceeds the **radiation protection guide** given in §1910.97 [*Nonionizing Radiation*] shall be posted as described in that section.

### **Inspections and Tests**

**1910.268(b)(6)**—Support structures. No employee, or any material or equipment, may be supported or permitted to be supported on any portion of a pole structure, platform, ladder, walkway or other elevated structure or aerial device unless the employer ensures that the support structure *is first inspected by a competent person* and it is determined to be adequately strong, in good working condition and properly secured in place.

**1910.268(e)**—Tools and personal protective equipment—Generally. Personal protective equipment, protective devices and special tools needed for the work of employees shall be provided and the employer shall ensure that they are used by employees. *Before each day's use* the employer shall ensure that these personal protective devices, tools, and equipment *are carefully inspected by a competent person* to ascertain that they are in good condition.

**1910.268(f)(2)**—The employer *is responsible for the periodic retesting* of all insulating gloves, blankets, and other rubber insulating equipment. This *retesting shall be electrical, visual and mechanical*.

**1910.268(g)(1)**—General. Safety belts and straps shall be provided and the employer shall ensure their use when work is performed at positions more than 4 feet above ground, on poles, and on towers, except as provided in *paragraphs (n)(7) [Outside Work Platforms] and (n)(8) [Other Elevated Locations]* of this section. No safety belts, safety straps or lanyards acquired after July 1, 1975 may be used unless they meet the tests set forth in *paragraph (g)(2) [Telecommunication Lineman's Body Belts, Safety Straps, and Lanyards]* of this section. The employer shall ensure that all safety belts and straps *are inspected by a competent person prior to each day's use* to determine that they are in safe working condition.

**1910.268(g)(2)(i)(A)**—Hardware for lineman's body belts, safety straps, and lanyards shall be drop forged or pressed steel and shall have a corrosion resistant finish tested *to meet the requirements of the American Society for Testing and Materials B117-64*, which is incorporated by reference *as specified in §1910.6 (50-hour test) [Incorporation by Reference]*. Surfaces shall be smooth and free of sharp edges. Production samples of lineman's safety straps, body belts and lanyards shall be approved by a nationally recognized testing laboratory, *as having been tested* in accordance with and as meeting the requirements of this paragraph.

**1910.268(g)(2)(i)(B)**—All buckles *shall withstand a 2,000-pound tensile test* with a maximum permanent deformation no greater than one sixty-fourth inch.

**1910.268(g)(2)(i)(C)**—D rings *shall withstand a 5,000 pound tensile test* without cracking or breaking.

**1910.268(g)(2)(i)(D)**—Snaphooks *shall withstand a 5,000 pound tensile test, or shall withstand a 3,000-pound tensile test and a 180° bend test*. Tensile failure is indicated by distortion of the snaphook sufficient to release the keeper; bend test failure is indicated by cracking of the snaphook.

**1910.268(g)(2)(ii)(A)(1)**—All fabric used for safety straps *shall be capable of withstanding an A.C. dielectric test* of not less than 25,000 volts per foot "dry" for 3 minutes, without visible deterioration.

**1910.268(g)(2)(ii)(A)(2)**—All fabric and leather *used shall be tested* for leakage current. Fabric or leather may not be used if the leakage current exceeds 1 milliamperes when a potential of 3,000 volts is applied to the electrodes positioned 12 inches apart.

**1910.268(g)(2)(ii)(A)(3)**—In lieu of alternating current tests, equivalent direct current *tests may be performed*.

**1910.268(g)(2)(ii)(G)**—Safety straps, lanyards, and body belts *shall be tested*.

**1910.268(g)(3)(ii)**—The employer shall ensure that pole climbers *are inspected by a competent person* for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used.

**1910.268(g)(3)(iii)**—Pole climbers *shall be inspected as required in this paragraph (g)(3) [Pole Climbers] before each day's use* and a gaff cut-out test performed *at least weekly when in use*.

**1910.268(h)(1)**—The employer shall ensure that no employee nor any material or equipment may be supported or permitted to be supported on any portion of a ladder unless it is first determined, *by inspections and checks conducted by a competent person* that such ladder is adequately strong, in good condition, and properly secured in place, as required in *subpart D [Walking-Working Surfaces]* of this part and as required in this section.

**1910.268(j)(1)(i)**—The employer *shall ensure that visual inspections* are made of the equipment by a competent person each day the equipment is to be used to ascertain that it is in good condition.

**1910.268(j)(1)(ii)**—The employer *shall ensure that tests shall be made at the beginning of each shift by a competent person* to insure the vehicle brakes and operating systems are in proper working condition.

**1910.268(j)(4)(iv)(F)**—The employer shall ensure that the derrick and its associated equipment *are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained* including the dates of inspections, and necessary repairs made, if corrective action was required.

**1910.268(m)(3)(i)**—Metal power conduit on joint use poles, exposed vertical power ground wires, and street light fixtures which are below communications attachments or less than 20 inches above these attachments, shall be considered energized and *shall be tested for voltage unless the employee can visually determine that they are bonded to the communications suspension strand or cable sheath*.

**1910.268(m)(4)(i)**—A vertical ground wire which *has been tested*, found safe, and is connected to a power system multi-grounded neutral or the grounded neutral of a power secondary system where there are at least three services connected.

**1910.268(m)(7)(iv)**—All radio frequency line wires *shall be tested* for pickup with an insulated probe before they are handled either with bare hands or with metal tools.

**1910.268(n)(2)**—*Need for testing wood poles.* Unless temporary guys or braces are attached, the following poles *shall be tested in accordance with paragraph (n)(3) [Methods for Testing Wood Poles]* of this section and determined to be safe before employees are permitted to climb them.

**1910.268(n)(3)**—*Methods for testing wood poles.* One of the following methods or an equivalent method *shall be used for testing* wood poles.

**1910.268(n)(5)(i)**—Before attaching a splicing platform to a cable suspension strand, the strand *shall be tested* and determined to have strength sufficient to support the weight of the platform and the employee. Where the strand crosses above power wires or railroad tracks it *may not be tested but shall be inspected in accordance with paragraph (n)(6) [Inspection of Strand]* of this section.

**1910.268(n)(6)**—*Inspection of strand.* Where strand passes over electric power wires or railroad tracks, it *shall be inspected* from an elevated working position at each pole supporting the span in question.

**1910.268(n)(11)(v)**—The guard or insulating material used to protect the pole shall meet the appropriate *3 minute proof test voltage requirements contained in the ANSI J6.4-1971*.

**1910.268(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.

**1910.268(o)(2)(i)(A)**—The internal atmosphere *shall be tested for combustible gas* and, except when continuous forced ventilation is provided, the atmosphere *shall also be tested* for oxygen deficiency.

**1910.268(o)(5)(i)**—A *test for combustible gas shall be made immediately before using* the open flame device, *and at least once per hour while using* the device.

**1910.268(q)(2)(i)**—Employers shall ensure that a close inspection is made by the employee and by the foremen or supervisor in charge before climbing, entering, or working around any tree, to determine whether an electrical power conductor passes through the tree, or passes within reaching distance of an employee working in the tree. If any of these conditions exist either directly or indirectly, an electrical hazard shall be considered to exist unless the system operator/owner has caused the hazard to be removed by deenergizing the lines, or installing protective equipment.

### Recordkeeping

**1910.268(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: (Reference paragraph (c) for specific subjects.)

**1910.268(j)(4)(iv)(F)**—The employer shall ensure that the derrick and its associated equipment are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained including the dates of inspections, and necessary repairs made, if corrective action was required.

**1910.268(j)(4)(iv)(G)**—Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only with written certification from the manufacturer, or other equivalent entity, such as a nationally recognized testing laboratory, that the modification results in the equipment being safe for its intended use. Such changes shall require the changing and posting of revised capacity and instruction decals or plates. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

### Certification

**1910.268(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:

**1910.268(j)(4)(iv)(G)**—Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only with written certification from the manufacturer, or other equivalent entity, such as a nationally recognized testing laboratory, that the modification results in the equipment being safe for its intended use. Such changes shall require the changing and posting of revised capacity and instruction decals or plates. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

### Training and Communications

**1910.268(b)(2)(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 spattering. 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.

**1910.268(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:

**1910.268(c)(1)**—*Recognition and avoidance of dangers* relating to encounters with harmful substances and animal, insect, or plant life;

**1910.268(c)(2)**—*Procedures to be followed in emergency situations*; and,

**1910.268(c)(3)**—*First aid training, including instruction* in artificial respiration.

**1910.268(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.

**1910.268(j)(4)(iv)(D)**—Only *persons trained* in the operation of the derrick shall be permitted to operate the derrick.

**1910.268(l)(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.

**1910.268(o)(1)(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) [Requirements of Telecommunications]* of this section do not adequately protect the employee(s).

**1910.268(o)(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) [Joint Power and Telecommunication Manholes]* 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.

**1910.268(p)(2)**—Hazardous area. Accessible areas associated with microwave communication systems where the electromagnetic radiation level exceeds the **radiation protection guide** given in §1910.97 [*Nonionizing Radiation*] shall be **posted** as described in that section. The lower half of the warning symbol shall include the following:

Radiation in this area may exceed hazard limitations and special precautions are required. *Obtain specific instruction before entering.*

**1910.268(s)(35)**—Qualified line-clearance tree-trimmer trainee. Any worker regularly assigned to a line-clearance tree-trimming crew and undergoing *on-the-job* training who, in the *course of such training*, has demonstrated his ability to perform his duties safely at his level of training.

## Exposure Monitoring

**1910.268(o)(2)(i)(A)**—The internal atmosphere *shall be tested for combustible gas* and, except when continuous forced ventilation is provided, the atmosphere *shall also be tested* for oxygen deficiency.

**1910.268(o)(5)(i)**—A test for combustible gas shall be made immediately before using the open flame device, and at least once per hour while using the device.

## Competent Person

**1910.268(b)(6)**—Support structures. No employee, or any material or equipment, may be supported or permitted to be supported on any portion of a pole structure, platform, ladder, walkway or other elevated structure or aerial device unless the employer ensures that the support structure *is first inspected by a competent person* and it is determined to be adequately strong, in good working condition and properly secured in place.

**1910.268(e)**—Tools and personal protective equipment—Generally. Personal protective equipment, protective devices and special tools needed for the work of employees shall be provided and the employer shall ensure that they are used by employees. Before each day's use the employer shall ensure that these personal protective devices, tools, and equipment *are carefully inspected by a competent person* to ascertain that they are in good condition.

**1910.268(g)(1)**—General. Safety belts and straps shall be provided and the employer shall ensure their use when work is performed at positions more than 4 feet above ground, on poles, and on towers, except as provided in *paragraphs (n)(7) and (n)(8) [Handling Suspension Strand]* of this section. No safety belts, safety straps or lanyards acquired after July 1, 1975 may be used unless they meet the tests set forth in *Paragraph (G)(2) [Telecommunication Lineman's Body Belts, Safety Straps, and Lanyards]* of this section. The employer shall ensure that all safety belts and straps *are inspected by a competent person prior to each day's use* to determine that they are in safe working condition.

**1910.268(g)(3)(ii)**—The employer shall ensure that pole climbers *are inspected by a competent person* for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used.

**1910.268(h)(1)**—The employer shall ensure that no employee nor any material or equipment may be supported or permitted to be supported on any portion of a ladder unless it is first determined, *by inspections and checks conducted by a competent person* that such ladder is adequately strong, in good condition, and properly secured in place, as required in *Subpart D [Walking-Working Surfaces]* of this part and as required in this section.

**1910.268(j)(1)(i)**—The employer *shall ensure that visual inspections* are made of the equipment *by a competent person each day the equipment is to be used* to ascertain that it is in good condition.

**1910.268(j)(4)(iv)(F)**—The employer shall ensure that the derrick and its associated equipment *are inspected by a competent person at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained* including the dates of inspections, and necessary repairs made, if corrective action was required.

## Signs, Markings and Tags

**1910.268(b)(1)(v)**—Equipment, machinery and machine guarding. When power plant machinery in telecommunications centers is operated with commutators and couplings uncovered, the adjacent housing *shall be clearly marked* to alert personnel to the rotating machinery.

**1910.268(f)(3)**—Gloves and blankets *shall be marked* to indicate compliance with the retest schedule, and shall be *marked* with the date the next test is due. Gloves found to be defective in the field or by the tests set forth in *paragraph (f)(2) [Rubber Insulating Equipment]* of this section shall be destroyed by cutting them open from the finger to the gauntlet.

**1910.268(i)(7)**—Portable lights, tools, and appliances. Portable lights, tools, and appliances having noncurrent-carrying external metal housing may be used with power equipment described in *paragraph (i)(5) [Portable Power Equipment]* of this section without an equipment grounding conductor. When operated from commercial power such metal parts of these devices shall be grounded, unless these tools or appliances are protected by a system of double insulation, or its equivalent. Where such a system is employed, the equipment *shall be distinctively marked* to indicate double insulation.

**1910.268(j)(4)(iv)(B)**—*Rated load capacities and instructions related to derrick operation shall be conspicuously posted* on a permanent weather-resistant plate or decal in a location on the derrick *that is plainly visible to the derrick operator*.

**1910.268(j)(4)(iv)(G)**—Modifications or additions to the derrick and its associated equipment that alter its capacity or affect its safe operation shall be made only *with written certification from the manufacturer*, or other equivalent entity, such as a nationally recognized testing laboratory, that the modification results in the equipment being safe for its intended use. Such changes shall require the changing and *posting of revised capacity and instruction decals or plates*. These new ratings or limitations shall be as provided by the manufacturer or other equivalent entity.

**1910.268(m)(7)(iii)(A)**—Where no grounding switches are provided, grounding sticks shall be used, one on each side of line, and *tags shall be placed* on the grounding sticks, antenna switch, or plate power switch *in a conspicuous place*.

**1910.268(p)(2)**—Hazardous area. Accessible areas associated with microwave communication systems where the electromagnetic radiation level exceeds the *radiation protection guide* given in §1910.97 [Nonionizing Radiation] shall be *posted* as described in that section.

## **1910.269—ELECTRIC POWER GENERATION, TRANSMISSION, AND DISTRIBUTION**

**Scope/Application:** *This section covers the operation and maintenance of electric power generation, control, transformation, transmission, and distribution lines and equipment.*

**Exception:** *This standard does not apply to construction or to electrical installations, electrical safety-related work practices, or electrical maintenance considerations covered by Subpart S.*

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—energy control program, procedures, work practices
- Inspections and Tests—annually, frequently, periodically
- Recordkeeping—certification records
- Certification—records
- Training and Communications—initially, first aid training
- Exposure Monitoring—testing atmosphere
- Competent Person—competency
- Qualified Person—authorized employee
- Signs, Markings and Tags—tags

### **Programs, Policies and Procedures**

**1910.269(d)(2)(i)**—The employer shall establish a **program** consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

**1910.269(d)(2)(ii)(A)**—If an energy isolating device is not capable of being locked out, the employer's **program** shall use a tagout system.

**1910.269(d)(2)(ii)(B)**—If an energy isolating device is capable of being locked out, the employer's **program** shall use lockout, unless the employer can demonstrate that the use of a tagout system will provide full employee protection. (Reference paragraph (d)(2)(ii) for specific requirements.)

**1910.269(d)(2)(ii)(B)(1)**—When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the **tagout program** will provide a level of safety equivalent to that obtained by the use of a **lockout program**.

**1910.269(d)(2)(ii)(B)(2)**—In demonstrating that a level of safety is achieved in the **tagout program** equivalent to the level of safety obtained by the use of a **lockout program**, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of *additional safety measures* such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energizing.

**1910.269(d)(2)(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. (Reference paragraph (d)(2)(vi) for specific requirements.)

**1910.269(d)(2)(vii)(E)**—Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall **energy control program**.

**1910.269(d)(7)**—Release from lockout/tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employees to ensure the following. (Reference paragraph (d)(7) for specific information.)

**1910.269(d)(7)(iv)**—Each lockout or tagout device shall be removed from each energy isolating device by the authorized employee who applied the lockout or tagout device. However, if that employee is not available to remove it, the 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 a degree of safety equivalent to that provided by the removal of the device by the authorized employee who applied it. The specific procedure shall include elements. (Reference paragraph (d)(7)(iv) for specific requirements.)

**1910.269(e)(11)**—Ventilation, and monitoring for flammable gases or vapors. If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A continuous **monitoring program** to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.

**1910.269(n)(8)**—Removal of grounds for test. The employer may permit employees to remove grounds temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment, shall isolate each employee from any hazards involved, and shall implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

**1910.269(o)(2)(i)**—The employer shall establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices shall include, as a minimum, test area safeguarding, grounding, the safe use of measuring and control circuits, and a means providing for periodic safety checks of field test areas.

**1910.269(o)(6)(i)**—Safety practices governing employee work at temporary or field test areas shall provide, at the beginning of each series of tests, for a routine safety check of such test areas.

**1910.269(t)(3)(iii)**—For the purpose of inspection, housekeeping, taking readings, or similar work, an employee working alone may enter, for brief periods of time, a manhole or vault where energized cables or equipment are in service if the employer can demonstrate that the employee will be protected from all electrical hazards.

## Inspections and Tests

**1910.269(a)(2)(iv)**—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.

**1910.269(b)(3)**—First-aid kits. The employer shall maintain each first-aid kit, shall ensure that it is readily available for use, and shall inspect it frequently enough to ensure that expended items are replaced. The employer also shall inspect each first aid kit at least once per year.

**1910.269(d)(2)(i)**—The employer shall establish a **program** consisting of energy control procedures, employee training, and periodic inspections to ensure that, before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, start up, or release of stored energy could occur and cause injury, the machine or equipment is isolated from the energy source and rendered inoperative.

**1910.269(d)(2)(iv)(D)**—Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

**1910.269(d)(2)(v)**—The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the provisions of paragraph (d) of this section [Hazardous Energy Control (Lockout/Tagout) Procedures] are being followed.



**1910.269(d)(2)(v)(A)**—The *periodic inspection shall be performed by an authorized employee who is not using the energy control procedure being inspected.*

**1910.269(d)(2)(v)(B)**—The *periodic inspection shall be designed to identify and correct any deviations or inadequacies.*

**1910.269(d)(2)(v)(C)**—If lockout is used for energy control, the *periodic inspection shall include a review, between the inspector and each authorized employee, of that employee’s responsibilities under the energy control procedure being inspected.*

**1910.269(d)(2)(v)(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 (d)(2)(vii) [Hazardous Energy Control (Lockout/Tagout) Procedures] of this section.*

**1910.269(d)(2)(v)(E)**—The employer shall *certify that the inspections* required by *paragraph (d)(2)(v) [Hazardous Energy Control (Lockout/Tagout) Procedures]* of this section have been accomplished. The certification shall identify the machine or equipment on which the *energy control procedure* was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

**1910.269(d)(2)(viii)(B)**—*Retraining shall also be conducted whenever a periodic inspection under paragraph (d)(2)(v) [Hazardous Energy Control (Lockout/Tagout) Procedures] of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee’s knowledge or use of the energy control procedures.*

**1910.269(d)(6)(vii)**—Before starting work on machines or equipment that have been *locked out or tagged out, the authorized employee shall verify* that isolation and deenergizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, *a test shall be performed* to ensure that these parts are deenergized.

**1910.269(d)(7)(i)**—The work area *shall be inspected* to ensure that nonessential items have been removed and that machine or equipment components are operationally intact.

**1910.269(d)(8)(i)**—If the lockout or tagout devices must be temporarily removed from energy isolating devices and the machine or equipment *must be energized to test* or position the machine, equipment, or component thereof, the following sequence of actions shall be followed. (*Reference paragraph (d)(8)(i) for specific requirements.*)

**1910.269(e)(9)**—*Testing for oxygen deficiency.* Before an employee enters an enclosed space, the atmosphere in the enclosed space *shall be tested for oxygen deficiency* with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for offsite evaluation. If continuous forced-air ventilation is provided, testing is not required provided *that the procedures* used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

**1910.269(e)(10)**—*Testing for flammable gases and vapors.* Before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This *test shall be performed* after the oxygen testing and ventilation required by *paragraph (e)(9) [Testing for oxygen deficiency]* of this section demonstrate that there is sufficient oxygen to ensure the *accuracy of the test* for flammability.

**1910.269(e)(14)**—*Open flames.* If open flames are used in enclosed spaces, a *test for flammable gases and vapors shall be made immediately before the open flame device is used and at least once per hour* while the device is used in the space. *Testing shall be conducted more frequently* if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

**1910.269(g)(2)(iv)(A)**—Work-positioning equipment *shall be inspected before use each day* to determine that the equipment is in safe working condition. Work-positioning equipment that is not in safe working condition may not be used.

**1910.269(j)(2)(i)**—Each liveline tool shall be wiped clean and *visually inspected* for defects *before use each day.*

**1910.269(j)(2)(ii)**—If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and *examined and tested* according to *paragraph (j)(2)(iii) [Condition of Tools]* of this section before being returned to service.

**1910.269(j)(2)(iii)**—Live-line tools used for primary employee protection shall be removed from service every 2 years, and whenever required under *paragraph (j)(2)(ii) [Condition of Tools]* of this section, for *examination, cleaning, repair, and testing* as follows. (*Reference paragraph (j)(2) for specific requirements.*)

**1910.269(l)(11)**—Non-current-carrying metal parts. Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, shall be treated as energized at the highest voltage to which these parts are exposed, unless the *employer inspects the installation* and determines that these parts are grounded before employees begin performing the work.

**1910.269(n)(5)**—*Testing*. The employer shall ensure that, unless a previously installed ground is present, *employees test lines and equipment and verify* the absence of nominal voltage before employees install any ground on those lines or that equipment.

**1910.269(n)(8)**—*Removal of grounds for test*. The employer may permit employees to remove grounds *temporarily during tests*. *During the test procedure*, the employer shall ensure that each employee uses insulating equipment, shall isolate each employee from any hazards involved, and shall implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

**1910.269(o)(1)**—*Application*. *Paragraph (o) [Testing and test facilities.]* of this section provides for *safe work practices* for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements using high voltage, high power, or combinations of high voltage and high power, and not to testing involving *continuous measurements* as in routine metering, relaying, and normal line work.

**1910.269(o)(2)(i)**—The employer *shall establish and enforce work practices* for the protection of each worker from the hazards of high-voltage or high-power *testing at all test areas*, temporary and permanent. Such *work practices shall include, as a minimum*, test area safeguarding, grounding, the safe use of measuring and control circuits, and a means providing for *periodic safety checks* of field test areas.

**1910.269(o)(2)(ii)**—The employer shall ensure that each employee, upon initial assignment to the test area, *receives training in safe work practices, with retraining* provided as required by *paragraph (a)(2) [Training]* of this section.

**1910.269(o)(4)(iv)**—For *tests in which using the equipment grounding conductor* in the equipment power cord to ground the test equipment would result in greater hazards to test personnel or prevent the taking of satisfactory measurements, the employer may use a ground clearly indicated in the test set-up if the employer *can demonstrate that this ground affords protection* for employees equivalent to the protection afforded by an equipment grounding conductor in the power supply cord.

**1910.269(o)(6)(i)**—*Safety practices* governing employee work at temporary or field test areas shall provide, *at the beginning of each series of tests*, for a *routine safety check* of such test areas.

**1910.269(o)(6)(ii)**—*The test operator in charge shall conduct these routine safety checks* before each *series of tests and shall verify* at least the following conditions

**1910.269(p)(1)(i)**—The critical safety components of mechanical elevating and rotating equipment shall receive a thorough *visual inspection before use on each shift*.

**1910.269(q)(3)(xiii)**—The employer shall ensure that employees *perform a boom-current test before starting work each day, each time during the day* when they encounter a higher voltage, and when changed conditions indicate a need for an additional test.

**1910.269(r)(7)(ii)**—*Rope shall be inspected before each use* and, if unsafe (for example, because of damage or defect), may not be used.

**1910.269(t)(6)**—*Moving cables*. Except when *paragraph (t)(7)(ii) [Protection Against Faults]* of this section permits employees to perform work that could cause a fault in an energized cable in a manhole or vault, the employer shall ensure that *employees inspect* energized cables to be moved for abnormalities.

**1910.269(v)(6)(i)**—*A designated employee shall inspect* conditions before work is permitted and after its completion. Eye protection, or full face protection if necessary, shall be worn at all times when condenser, heater, or boiler tubes are being cleaned.

**1910.269(v)(9)(i)**—*Before internal furnace or ash hopper repair work is started, overhead areas shall be inspected* for possible falling objects. If the hazard of falling objects exists, overhead protection such as planking or nets shall be provided.

**1910.269(w)(5)(ii)**—The employer shall maintain each personal flotation device in safe condition and *shall inspect each personal flotation device frequently* enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.

### **Recordkeeping**

**1910.269(a)(3)(i)(A)**—The characteristics of the host employer’s installation that are related to the safety of the work to be performed and are listed in *paragraphs (a)(4)(i) through (a)(4)(v)* of this section.

*Note to paragraph (a)(3)(i)(A): This paragraph requires the host employer to obtain information listed in paragraphs (a)(4)(i) through (a)(4)(v) of this section if it does not have this information in existing records.*

**1910.269(a)(3)(i)(B)**—Conditions that are related to the safety of the work to be performed, that are listed in *paragraphs (a)(4)(vi) through (a)(4)(viii) [Application]* of this section, and that are known to the host employer.

*Note to paragraph (a)(3)(i)(B): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.*

**1910.269(a)(3)(i)(C)**—Information about the **design** and operation of the host employer’s installation that the contract employer needs to make the assessments required by this section.

*Note to paragraph (a)(3)(i)(C): This paragraph requires the host employer to obtain information about the design and operation of its installation that contract employers need to make required assessments if it does not have this information in existing records.*

**1910.269(a)(3)(i)(D)**—Any other information about the **design** and operation of the host employer’s installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer’s employees.

*Note to paragraph (a)(3)(i)(D): For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing records through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.*

**1910.269(d)(2)(v)(E)**—The employer shall **certify** that the inspections required by *paragraph (d)(2)(v) [Hazardous Energy Control]* of this section have been accomplished. The **certification** shall identify the machine or equipment on which the *energy control procedure* was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

*Note to paragraph (d)(2)(v)(E): If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.*

### **Certification**

**1910.269(d)(2)(v)(E)**—The employer shall **certify** that the inspections required by *paragraph (d)(2)(v) [Hazardous Energy Control Procedures]* of this section have been accomplished. The **certification** shall identify the machine or equipment on which the *energy control procedure* was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

*Note to paragraph (d)(2)(v)(E): If normal work schedule and operation records demonstrate adequate inspection activity and contain the required information, no additional certification is required.*

**1910.269(d)(2)(ix)**—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.

### **Training and Communications**

**1910.269(a)(2)(i)**—All employees performing work covered by this section shall be trained. (*Reference paragraph (a)(2)(i) for specific requirements.*)

**1910.269(a)(2)(i)(A)**—Each *employee shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements* in this section that pertain to his or her job assignments.

**1910.269(a)(2)(i)(B)**—Each *employee 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 his or her work and are necessary for his or her safety.

**1910.269(a)(2)(i)(C)**—The *degree of training shall be determined* by the risk to the employee for the hazard involved.

**1910.269(a)(2)(ii)**—*Each qualified employee shall also be trained and competent. (Reference paragraph (a)(2)(ii) for specific requirements.)*

**1910.269(a)(3)**—*Information transfer:*

**1910.269(a)(3)(i)**—*Before work begins, the host employer shall inform contract employers*

**1910.269(b)(1)**—*First-aid training.* When employees are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, persons with *first-aid training shall be available* as follows:

**1910.269(b)(1)(i)**—For field work involving two or more employees at a work location, *at least two trained persons* shall be available. However, for line-clearance tree trimming operations performed by line-clearance tree trimmers who are not qualified employees, *only one trained person* need be available if all new employees are trained in first aid within 3 months of their hiring dates.

**1910.269(b)(1)(ii)**—For fixed work locations such as substations, 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), each employee at the work location *shall be a trained employee.*

**1910.269(d)(2)(vii)(E)**—*Tags* may evoke a false sense of security, and their meaning *needs to be understood as part of the overall energy control program.*

**1910.269(c)(1)**—*Job Briefings. Before each job.*

**1910.269(c)(1)(ii)**—The employer shall ensure that the *employee in charge conducts a job briefing* that meets *paragraphs (c)(2), (c)(3), and (c)(4) [Job Briefings]* of this section with the employees involved *before they start* each job.

**1910.269(c)(2)**—*Subjects to be covered.* The *briefing shall cover at least* the following subjects: hazards associated with the job, *work procedures* involved, special precautions, energy-source controls, and personal protective equipment requirements.

**1910.269(c)(3)(i)**—If the work or operations to be performed during the work day or shift are repetitive and similar, *at least one job briefing shall be conducted before the start of the first job of each day or shift.*

**1910.269(c)(3)(ii)**—*Additional job briefings shall be held if significant changes*, which might affect the safety of the employees, occur during the course of the work.

**1910.269(c)(4)(i)**—*A brief discussion* is satisfactory if the work involved is routine and if the employees, by virtue of *training and experience*, can reasonably be expected to recognize and avoid the hazards involved in the job.

**1910.269(d)(2)(vi)(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.

**1910.269(d)(2)(vi)(B)**—Each *affected employee shall be instructed* in the purpose and use of the *energy control procedure.*

**1910.269(d)(2)(vii)**—When tagout systems are used, employees shall *also be trained* in the following limitations of *tags.* (Reference paragraph (d)(2)(vii) for specific requirements.)

**1910.269(d)(2)(viii)**—*Retraining* shall be provided by the employer as follows:

**1910.269(d)(2)(viii)(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.

**1910.269(d)(2)(viii)(B)**—*Retraining shall also be conducted* whenever a *periodic inspection* under paragraph (d)(2)(v) [Training] of this section reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in an employee’s knowledge or use of the *energy control procedures*.

**1910.269(d)(2)(viii)(C)**—The *retraining shall reestablish employee proficiency* and shall introduce *new or revised control methods and procedures*, as necessary.

**1910.269(d)(5)**—*Notification*. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. *Notification shall be given before* the controls are applied and after they are removed from the machine or equipment.

**1910.269(d)(6)(i)**—*Before an authorized or affected employee* turns off a machine or equipment, the *authorized employee shall have knowledge* of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.

**1910.269(d)(7)(iv)**—Each lockout or tagout device shall be removed from each energy isolating device by the *authorized employee* who applied the lockout or tagout device. However, if that employee is not available to remove it, the 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 a degree of safety equivalent to that provided by the removal of the device by the *authorized employee* who applied it. The *specific procedure shall include* elements. (Reference paragraph (d)(7)(iv) for specific requirements.)

**1910.269(o)(2)(ii)**—The employer shall ensure that each employee, *upon initial assignment to the test area, receives training in safe work practices, with retraining* provided as required by paragraph (a)(2) [Training] of this section.

### **Exposure Monitoring**

**1910.269(e)(9)**—*Testing for oxygen deficiency*. Before an employee enters an enclosed space, the atmosphere in the enclosed space shall be tested for oxygen deficiency with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for offsite evaluation. If continuous forced-air ventilation is provided, testing is not required provided that the procedures used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

**1910.269(e)(10)**—*Testing for flammable gases and vapors*. Before an employee enters an enclosed space, the internal atmosphere shall be tested for flammable gases and vapors with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This test shall be performed after the oxygen testing and ventilation required by paragraph (e)(9) [Testing for Oxygen Deficiency] of this section demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.

**1910.269(e)(11)**—*Ventilation, and monitoring for flammable gases or vapors*. If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A **continuous monitoring program** to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.

**1910.269(e)(14)**—*Open flames*. If open flames are used in enclosed spaces, a test for flammable gases and vapors shall be made immediately before the open flame device is used and at least once per hour while the device is used in the space. *Testing shall be conducted more frequently* if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

### **Competent Person**

**1910.269(a)(2)(ii)**—Each *qualified employee shall also be trained and competent*. (Reference paragraph (a)(2)(ii) for specific requirements.)

**1910.269(a)(2)(iii)**—Each line-clearance tree trimmer who *is not a qualified employee shall also be trained and competent*. (Reference paragraph (a)(2)(iii) for specific requirements.)

## Qualified Person

**1910.269(c)(1)(i)**—In assigning an employee or a group of employees to perform a job, the employer shall provide the *employee in charge* of the job with all **available information** that relates to the determination of existing characteristics and conditions required by *paragraph (a)(4) [Existing characteristics and conditions]* of this section.

**1910.269(c)(1)(ii)**—The employer shall ensure that the employee in charge *conducts a job briefing that meets paragraphs (c)(2), (c)(3), and (c)(4) [Job Briefing]* of this section with the employees involved *before they start each job*.

**1910.269(d)(2)(vi)(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.

**1910.269(d)(5)**—*Notification. Affected employees shall be notified by the employer or authorized employee of the application and removal of lockout or tagout devices. Notification shall be given before the controls are applied and after they are removed from the machine or equipment.*

**1910.269(d)(6)(i)**—*Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.*

**1910.269(d)(6)(iv)**—Lockout or tagout devices shall be affixed to each energy isolating device *by authorized employees*.

**1910.269(d)(6)(vii)**—Before starting work on machines or equipment that have been locked out or tagged out, the *authorized employee shall verify* that isolation and deenergizing of the machine or equipment have been accomplished. If normally energized parts will be exposed to contact by an employee while the machine or equipment is deenergized, *a test shall be performed* to ensure that these parts are deenergized.

**1910.269(d)(7)**—*Release from lockout/tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employees to ensure the following. (Reference paragraph (d)(7) for specific information.)*

**1910.269(k)(2)(i)**—In areas to which access is not restricted *to qualified persons only*, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances, plus a distance that provides for the maximum sag and side swing of all conductors and for the height and movement of material-handling equipment:

**1910.269(u)(5)(ii)**—Except for fuse replacement and other necessary *access by qualified persons*, the employer shall maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

**1910.269(v)(5)(ii)**—Except for fuse replacement and other necessary *access by qualified persons*, the employer shall maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

## Signs, Markings and Tags

**1910.269(d)(2)(vii)**—When *tagout systems* are used, employees *shall also be trained* in the following limitations of **tags**. (*Reference paragraph (d)(2)(vii) for specific requirements.*)

**1910.269(d)(2)(vii)(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.

**1910.269(d)(3)(i)**—Locks, **tags**, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware *shall be provided* by the employer for isolating, securing, or blocking of machines or equipment from energy sources.

**1910.269(m)(3)(v)**—**Tags shall prohibit** operation of the disconnecting means and shall indicate that employees are at work.

**1910.269(s)(1)(ii)**—If the electromagnetic-radiation level within an accessible area associated with microwave communications systems exceeds the *radiation-protection guide* specified by § 1910.97(a)(2) [*Non-Ionizing Radiation*], the employer *shall post the area with warning signs* containing the warning symbol described in § 1910.97(a)(3). The lower half of the warning symbol shall include the following statements, or ones that the employer can demonstrate are equivalent: “Radiation in this area may exceed hazard limitations and special precautions are required. *Obtain specific instruction before entering.*”

**1910.269(o)(3)(iii)(A)**—Distinctively *colored safety tape* supported approximately waist high with **safety signs** attached to it.

**1910.269(o)(6)(ii)(C)**—Clearly **marked** test-power disconnects are readily available in an emergency.

**1910.269(u)(4)(iv)**—The employer *shall display signs* at entrances to the rooms and other spaces warning unqualified persons to keep out.

**1910.269(v)(4)(iv)**—The employer *shall display signs* at entrances to the rooms and other spaces warning unqualified persons to keep out.

**1910.269(v)(7)(i)(A)**—The area *shall be posted with signs* restricting entry and warning of the hazards of fire and explosion;

**1910.269(v)(8)(i)**—Chlorine system enclosures *shall be posted with signs* restricting entry and warning of the hazard to health and the hazards of fire and explosion.

**1910.269(v)(10)(i)**—Turbine generators. Smoking and other ignition sources are prohibited near hydrogen or hydrogen sealing systems, and *signs warning of the danger of explosion and fire shall be posted*.

**1910.269(v)(11)(x)**—If a conveyor that could cause injury when started is automatically controlled or is controlled from a remote location, an audible device shall be provided that sounds an alarm that will be recognized by each employee as a warning that the conveyor will start and that can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the device starting the conveyor and shall continue for a period of time before the conveyor starts that is long enough to allow employees to move clear of the conveyor system. A *visual warning* may be used in place of the audible device if the employer can demonstrate that it will provide an equally effective warning in the particular circumstances involved. However if the employer can demonstrate that the system's function would be seriously hindered by the required time delay, *warning signs* may be provided in place of the *audible warning device*. If the system was installed before January 31, 1995, *warning signs* may be provided in place of the audible warning device until such time as the conveyor or its control system is rebuilt or rewired. These *warning signs* shall be clear, concise, and legible and shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. These *warning signs shall be provided* along the conveyor at areas not guarded by position or location.

**1910.269(w)(6)(i)**—*Employee protection in public work areas. Traffic-control signs* and traffic-control devices used for the protection of employees shall meet § 1926.200(g)(2) [*Accident Prevention Signs and Tags*] of this chapter.

**1910.269(w)(6)(ii)**—*Before employees begin work* in the vicinity of vehicular or pedestrian traffic that may endanger them, the employer *shall place warning signs* or flags and other traffic-control devices in conspicuous locations to alert and channel approaching traffic.

## 1910.272—GRAIN HANDLING FACILITIES

**Scope/Application:** *This section contains requirements for the control of grain dust fires and explosions, and certain other safety hazards associated with grain handling facilities. It applies in addition to all other relevant provisions of part 1910 (or part 1917 at marine terminals).*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency action plan, hot work permits, housekeeping program, preventive maintenance procedures, lockout/tagout procedures
- Inspections and Tests—tests, regular
- Recordkeeping—permit, records
- Certification—records
- Training and Communications—initial and annual training
- Signs, Markings and Tags—tags

### Programs, Policies and Procedures

**1910.272(d)**—**Emergency action plan.** The employer *shall develop and implement an emergency action plan meeting the requirements contained in 29 CFR 1910.38 [Emergency Action Plan].*

**1910.272(f)(1)**—The employer *shall issue a permit for all hot work.*

**1910.272(j)(1)**—The employer *shall develop and implement a written housekeeping program* that establishes the frequency and method(s) determined best to reduce accumulations of fugitive grain dust on ledges, floors, equipment, and other exposed surfaces.

**1910.272(m)(1)**—The employer *shall implement preventive maintenance procedures.* [Reference paragraph (m) for specific information.]

**1910.272(m)(4)**—The employer *shall implement procedures for the use of tags and locks* which will prevent the inadvertent application of energy or motion to equipment being repaired, serviced, or adjusted, which could result in employee injury. Such locks and *tags shall be removed in accordance with established procedures* only by the employee installing them or, if unavailable, by his or her supervisor.

### **Inspections and Tests**

**1910.272(g)(1)(iii)**—The atmosphere within a bin, silo, or tank *shall be tested* for the presence of combustible gases, vapors, and toxic agents when the employer has reason to believe they may be present. Additionally, the atmosphere within a bin, silo, or tank *shall be tested* for oxygen content unless there is continuous natural air movement or continuous forced-air ventilation before and during the period employees are inside. If the oxygen level is less than 19.5%, or if combustible gas or vapor is detected in excess of 10% of the lower flammable limit, or if toxic agents are present in excess of the ceiling values listed in *subpart Z of 29 CFR part 1910 [Toxic and Hazardous Substances]*, or if toxic agents are present in concentrations that will cause health effects which prevent employees from effecting self-rescue or communication to obtain assistance, the following provisions apply.

**1910.272(m)(1)(i)**—*Regularly scheduled inspections* of at least the mechanical and safety control equipment associated with dryers, grain stream processing equipment, dust collection equipment including filter collectors, and bucket elevators.

**1910.272(q)(7)**—*Paragraphs (q)(5) and (q)(6) [Inside Bucket Elevators]* of this section do not apply to grain elevators having a permanent storage capacity of less than one million bushels, *provided that daily visual inspection is made* of bucket movement and tracking of the belt.

### **Recordkeeping**

**1910.272(f)(2)**—The *permit shall certify that the requirements contained in §1910.252(a) [Welding, Cutting and Brazing—Fire Prevention and Protection]* have been implemented prior to beginning the hot work operations. The *permit shall be kept on file until completion of the hot work operations.*

**1910.272(j)(1)**—The employer *shall develop and implement a written housekeeping program* that establishes the frequency and method(s) determined best to reduce accumulations of fugitive grain dust on ledges, floors, equipment, and other exposed surfaces.

**1910.272(m)(3)**—A *certification record shall be maintained* of each inspection, performed in accordance with this paragraph (m) [Preventive Maintenance], containing the date of the inspection, the name of the person who performed the inspection and the serial number, or other identifier, of the equipment specified in paragraph (m)(1)(i) [Preventive Maintenance] of this section that was inspected.

### **Certification**

**1910.272(f)(2)**—The *permit shall certify that the requirements contained in §1910.252(a) [Welding, Cutting and Brazing—Fire Prevention and Protection]* have been implemented prior to beginning the hot work operations. The *permit shall be kept on file until completion of the hot work operations.*

**1910.272(m)(3)**—A *certification record shall be maintained* of each inspection, performed in accordance with this paragraph (m) [Preventive Maintenance], containing the date of the inspection, the name of the person who performed the inspection and the serial number, or other identifier, of the equipment specified in paragraph (m)(1)(i) [Preventive Maintenance] of this section that was inspected.

### **Training and Communications**

**1910.272(e)(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.*

**1910.272(e)(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.*

**1910.272(i)(1)**—The employer *shall inform contractors* performing work at the grain handling facility of known potential fire and explosion hazards related to the contractor's work and work area. The employer *shall also inform contractors* of the applicable safety rules of the facility.



## Signs, Markings and Tags

**1910.272(m)(4)**—The employer *shall implement procedures for the use of **tags** and locks* which will prevent the inadvertent application of energy or motion to equipment being repaired, serviced, or adjusted, which could result in employee injury. Such *locks and **tags** shall be removed in accordance with established procedures* only by the employee installing them or, if unavailable, by his or her supervisor.

## 29 CFR Subpart S—Electrical

### 1910.304—WIRING DESIGN AND PROTECTION

**Scope/Application:** *This subpart addresses electrical safety requirements that are necessary for the practical safeguarding of employees in their workplaces.*

**Exception:** *These standards do not apply to installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles; installations underground in mines; installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes; installations of communication equipment under the exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installations; or installations under the exclusive control of electric utilities for the purpose of communication or metering; or for the generation, control, transformation, transmission, and distribution of electric energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—assured equipment grounding program
- Inspections and Tests—visual inspections each day, tests before use
- Recordkeeping—records
- Competent Person

#### Programs, Policies and Procedures

**1910.304(b)(3)(ii)(C)**—Where the ground-fault circuit-interrupter protection required by *paragraph (b)(3)(ii)(B) [Ground-Fault Circuit Interrupter Protection for Personnel]* of this section is not available for receptacles other than 125-volt, single-phase, 15-, 20-, and 30-ampere, the employer *shall establish and implement an assured **equipment grounding conductor program*** covering cord sets, receptacles that are not a part of the building or structure, and equipment connected by cord and plug that are available for use or used by employees on those receptacles. This **program** *shall comply with the following requirements:*

**1910.304(b)(3)(ii)(C)(1)**—*A **written description** of the **program**, including the specific procedures adopted by the employer, shall be available at the jobsite for inspection and **copying** by the Assistant Secretary of Labor and any affected employee.*

#### Inspections and Tests

**1910.304(b)(3)(ii)(C)(3)**—Each cord set, attachment cap, plug, and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, *shall be visually inspected before each day's use* for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage. Equipment found damaged or defective shall not be used until repaired.

**1910.304(b)(3)(ii)(C)(4)**—*The following tests shall be performed on all cord sets and receptacles which are not a part of the permanent wiring of the building or structure, and cord- and plug-connected equipment required to be grounded.*

**1910.304(b)(3)(ii)(C)(4)(i)**—All equipment grounding conductors *shall be tested* for continuity and shall be electrically continuous.

**1910.304(b)(3)(ii)(C)(4)(ii)**—Each receptacle and attachment cap or plug *shall be tested* for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

**1910.304(b)(3)(ii)(C)(4)(iii)**—*All required tests shall be performed before first use; before equipment is returned to service following any repairs; before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over); and at intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.*

**1910.304(b)(3)(ii)(C)(6)**—*Tests performed as required in paragraph (b)(3)(ii)(C) [Ground-Fault Circuit Interrupter Protection for Personnel] of this section shall be **recorded**. This **test record** shall identify each receptacle, cord set, and cord- and plug-connected equipment that passed the test and shall indicate the last date it was tested or the interval for which it was tested. This **record** shall be kept by means of **logs**, color coding, or other effective means and shall be **maintained** until replaced by a more current **record**. The **record** shall be made **available** on the jobsite for inspection by the Assistant Secretary and any affected employee.*

## Recordkeeping

**1910.304(b)(3)(ii)(C)(1)**—A **written description** of the **program**, including the specific procedures adopted by the employer, shall be **available** at the jobsite for inspection and **copying** by the Assistant Secretary of Labor and any affected employee.

**1910.304(b)(3)(ii)(C)(6)**—Tests performed as required in paragraph (b)(3)(ii)(C) [Ground-Fault Circuit Interrupter Protection for Personnel] of this section shall be **recorded**. This **test record** shall identify each receptacle, cord set, and cord- and plug-connected equipment that passed the test and shall indicate the last date it was tested or the interval for which it was tested. This **record** shall be kept by means of **logs**, color coding, or other effective means and shall be **maintained** until replaced by a more current **record**. The **record** shall be made **available** on the jobsite for inspection by the Assistant Secretary and any affected employee.

## Competent Person

**1910.304(b)(3)(ii)(C)(2)**—The employer shall designate one or more competent persons to implement the **program**.

## 1910.305—WIRING METHODS, COMPONENTS, AND EQUIPMENT FOR GENERAL USE

**Scope/Application:** This subpart addresses electrical safety requirements that are necessary for the practical safeguarding of employees in their workplaces.

**Exception:** These standards do not apply to installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles; installations underground in mines; installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes; installations of communication equipment under the exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installations; or installations under the exclusive control of electric utilities for the purpose of communication or metering; or for the generation, control, transformation, transmission, and distribution of electric energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—procedures displayed

### Programs, Policies and Procedures

**1910.305(j)(6)(ii)(D)(3)**—**Switching procedure** prominently **displayed** at the switching location.

## 1910.308—SPECIAL SYSTEMS

**Scope/Application:** This subpart addresses electrical safety requirements that are necessary for the practical safeguarding of employees in their workplaces.

**Exception:** These standards do not apply to installations in ships, watercraft, railway rolling stock, aircraft, or automotive vehicles other than mobile homes and recreational vehicles; installations underground in mines; installations of railways for generation, transformation, transmission, or distribution of power used exclusively for operation of rolling stock or installations used exclusively for signaling and communication purposes; installations of communication equipment under the exclusive control of communication utilities, located outdoors or in building spaces used exclusively for such installations; or installations under the exclusive control of electric utilities for the purpose of communication or metering; or for the generation, control, transformation, transmission, and distribution of electric energy located in buildings used exclusively by utilities for such purposes or located outdoors on property owned or leased by the utility or on public highways, streets, roads, etc., or outdoors by established rights on private property.

### STANDARD HIGHLIGHTS

- Qualified Person—signs
- Signs, Markings and Tags—posted signs

### Qualified Person

**1910.308(a)(6)(i)**—A metallic enclosure shall be provided on the mobile machine for enclosing the terminals of the power cable. The enclosure shall include provisions for a solid connection for the grounding terminal to effectively ground the machine frame. The method of cable termination used shall prevent any strain or pull on the cable from stressing the electrical connections. The enclosure shall have provision for locking so only *authorized qualified persons* may open it and shall be **marked** with a **sign** warning of the presence of energized parts.

**1910.308(a)(6)(ii)**—All energized switching and control parts shall be enclosed in effectively grounded metal cabinets or enclosures. Circuit breakers and protective equipment shall have the operating means projecting through the metal cabinet or enclosure so these units can be reset without locked doors being opened. Enclosures and metal cabinets shall be locked so *that only authorized qualified persons have access and shall be **marked** with a **sign** warning* of the presence of energized parts. Collector ring assemblies on revolving-type machines (shovels, draglines, etc.) shall be guarded.

### Signs, Markings and Tags

**1910.308(a)(5)(iv)**—Where fused cutouts are not suitable to interrupt the circuit manually while carrying full load, an approved means shall be installed to interrupt the entire load. Unless the fused cutouts are interlocked with the switch to prevent opening of the cutouts under load, *a conspicuous **sign** shall be placed at such cutouts* reading: “WARNING—DO NOT OPERATE UNDER LOAD.”

**1910.308(a)(5)(vi)(B)**—Where more than one switch is installed with interconnected load terminals to provide for alternate connection to different supply conductors, *each switch shall be provided with a conspicuous **sign*** reading: “WARNING—SWITCH MAY BE ENERGIZED BY BACKFEED.”

**1910.308(a)(5)(vii)**—A means (for example, a fuseholder and fuse designed for the purpose) shall be provided to completely isolate equipment for inspection and repairs. Isolating means that are not designed to interrupt the load current of the circuit shall be either interlocked with an approved circuit interrupter or *provided with a **sign** warning* against opening them under load.

**1910.308(a)(6)(i)**—A metallic enclosure shall be provided on the mobile machine for enclosing the terminals of the power cable. The enclosure shall include provisions for a solid connection for the grounding terminal to effectively ground the machine frame. The method of cable termination used shall prevent any strain or pull on the cable from stressing the electrical connections. The enclosure shall have provision for locking so only *authorized qualified persons may open it and shall be **marked** with a **sign** warning* of the presence of energized parts.

**1910.308(a)(6)(ii)**—All energized switching and control parts shall be enclosed in effectively grounded metal cabinets or enclosures. Circuit breakers and protective equipment shall have the operating means projecting through the metal cabinet or enclosure so these units can be reset without locked doors being opened. Enclosures and metal cabinets shall be locked so *that only authorized qualified persons have access and shall be **marked** with a **sign** warning* of the presence of energized parts. Collector ring assemblies on revolving-type machines (shovels, draglines, etc.) shall be guarded.

**1910.308(b)(3)(i)**—A ***sign** shall be placed at the service entrance* equipment indicating the type and location of on-site emergency power sources. However, a ***sign*** is not required for individual unit equipment.

**1910.308(b)(3)(ii)**—Where the grounded circuit conductor connected to the emergency source is connected to a grounding electrode conductor at a location remote from the emergency source, there *shall be a **sign** at the grounding location* that shall identify all emergency and normal sources connected at that location.

**1910.308(d)(4)**—Identification. Fire alarm circuits shall be identified at terminal and junction locations in a manner that will prevent unintentional interference with the signaling circuit during testing and servicing. Power-limited *fire alarm circuits shall be durably **marked** as such where plainly visible at terminations.*

## 1910.332—TRAINING

**Scope/Application:** *The provisions of 1910.331 through 1910.335 cover electrical safety work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training). The training requirements contained in section 332 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.*

**Exception:** *These standards do not apply to work performed by qualified persons on or directly associated with the following installations: Generation, transmission, and distribution of electric energy (including communication and metering) located in buildings used for such purposes or located outdoors. This work is covered by 1910.269—Electric Power Generation, Transmission, and Distribution.*

### STANDARD HIGHLIGHTS

- Training and Communications—initial training

### Training and Communications

**1910.332(b)(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 [Covered Work by Both Qualified and Unqualified Persons] that pertain to their respective job assignments. [Reference paragraph (b) for specific information.]*

### **1910.333—SELECTION AND USE OF WORK PRACTICES**

**Scope/Application:** *The provisions of 1910.331 through 1910.335 cover electrical safety work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training).*

**Exception:** *These standards do not apply to work performed by qualified persons on or directly associated with the following installations: Generation, transmission, and distribution of electric energy (including communication and metering) located in buildings used for such purposes or located outdoors. This work is covered by 1910.269—Electric Power Generation, Transmission, and Distribution.*

#### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—safety-related work practices, lockout/tagout procedures
- Inspections and Tests—visual inspections, tests
- Recordkeeping—procedures
- Training and Communications—familiar with techniques
- Qualified Person—inspections
- Signs, Markings and Tags—posted signs

#### **Programs, Policies and Procedures**

**1910.333(a)**—General. *Safety-related work practices shall be employed to prevent electric shock or other injuries resulting from either direct or indirect electrical contacts, when work is performed near or on equipment or circuits which are or may be energized. The specific safety-related work practices shall be consistent with the nature and extent of the associated electrical hazards.*

**1910.333(b)(2)**—*Lockout and Tagging.* While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts *shall be locked out or tagged* or both in accordance with the requirements of this paragraph. The requirements shall be followed in the order in which they are presented (*i.e., paragraph (b)(2)(i) [Procedures] first, then paragraph (b)(2)(ii) [Deenergizing Equipment], etc.*).

**1910.333(b)(2)(i)**—*Procedures.* The employer *shall maintain a written copy of the procedures outlined in paragraph (b)(2) [Lockout and Tagging] and shall make it available for inspection by employees and by the Assistant Secretary of Labor and his or her authorized representatives. The written procedures may be in the form of a copy of paragraph (b) [Working on or Near Exposed Deenergized Parts] of this section.*

**1910.333(c)(2)**—Work on energized equipment. *Only qualified persons may work on electric circuit parts or equipment that have not been deenergized under the procedures of paragraph (b) [Working on or Near Exposed Deenergized Parts] of this section. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.***Inspections and Tests**

**1910.333(b)(2)(iv)(B)**—*A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately after this test.*

**1910.333(b)(2)(v)(A)**—*A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.*

## Recordkeeping

**1910.333(b)(2)(i)**—*Procedures.* The employer shall **maintain a written copy** of the **procedures** outlined in paragraph (b)(2) [Lockout and Tagging] and shall make it available for inspection by employees and by the Assistant Secretary of Labor and his or her authorized representatives. **Note:** The **written procedures** may be in the form of a **copy** of paragraph (b) [Working on or Near Exposed Deenergized Parts] of this section.

## Training and Communications

**1910.333(c)(2)**—Work on energized equipment. *Only qualified persons may work* on electric circuit parts or equipment that have not been deenergized under the procedures of paragraph (b) [Working on or Near Exposed Deenergized Parts] of this section. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

## Qualified Person

**1910.333(b)(2)(iv)(A)**—*A qualified person shall operate* the equipment operating controls or otherwise verify that the equipment cannot be restarted.

**1910.333(b)(2)(iv)(B)**—*A qualified person shall use test equipment* to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately after this test.

**1910.333(b)(2)(v)(A)**—*A qualified person shall conduct tests and visual inspections,* as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

**1910.333(b)(2)(v)(C)**—Each *lock and tag* shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the *lock or tag* may be removed by a *qualified person* designated to perform this task provided that: (Reference Paragraph (b)(2) for specific requirements.)

**1910.333(c)(2)**—Work on energized equipment. *Only qualified persons may work* on electric circuit parts or equipment that have not been deenergized under the procedures of paragraph (b) [Working on or Near Exposed Deenergized Parts] of this section. Such persons shall be capable of working safely on energized circuits and shall be familiar with the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.

**1910.333(c)(3)(ii)**—*Qualified persons.* When a *qualified person* is working in the vicinity of overhead lines, whether in an elevated position or on the ground, the person may not approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table S-5 [Approach Distances for Qualified Employees—Alternating Current] unless certain criteria are met. [Reference paragraph (c)(3)(ii) for specific information.]

**1910.333(c)(3)(iii)(A)(3)**—If the equipment is an aerial lift insulated for the voltage involved, and if the work is performed by a *qualified person*, the clearance (between the uninsulated portion of the aerial lift and the power line) may be reduced to the distance given in Table S-5 [Approach Distances for Qualified Employees—Alternating Current].

**1910.333(c)(10)**—Interlocks. Only a *qualified person* following the requirements of paragraph (c) [Working on or Near Exposed Energized Parts] of this section may defeat an electrical safety interlock, and then only temporarily while he or she is working on the equipment. The interlock system shall be returned to its operable condition when this work is completed.

## Signs, Marking and Tags

**1910.333(b)(2)(v)(C)**—*Each lock and tag shall be removed* by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the *lock or tag* may be removed by a *qualified person* designated to perform this task provided that: (Reference Paragraph (b)(2) for specific requirements.)

## 1910.334—USE OF EQUIPMENT

**Scope/Application:** *The provisions of 1910.331 through 1910.335 cover electrical safety work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training).*

**Exception:** *These standards do not apply to work performed by qualified persons on or directly associated with the following installations: Generation, transmission, and distribution of electric energy (including communication and metering) located in buildings used for such purposes or located outdoors. This work is covered by 1910.269—Electric Power Generation, Transmission, and Distribution.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—visual inspections before use

#### Inspections and Tests

**1910.334(a)(2)(i)**—Portable cord and plug connected equipment and flexible cord sets (extension cords) *shall be visually inspected before use on any shift* for external defects (such as loose parts, deformed and missing pins, or damage to outer jacket or insulation) and for evidence of possible internal damage (such as pinched or crushed outer jacket). Cord and plug connected equipment and flexible cord sets (extension cords) which remain connected once they are put in place and are not exposed to damage need not be visually inspected until they are relocated.

**1910.334(c)(2)**—*Visual inspection.* Test instruments and equipment and all associated test leads, cables, power cords, probes, and connectors *shall be visually inspected for external defects and damage before the equipment is used.* If there is a defect or evidence of damage that might expose an employee to injury, the defective or damaged item shall be removed from service, and no employee may use it until repairs and tests necessary to render the equipment safe have been made.

## 1910.335—SAFEGUARDS FOR PERSONNEL PROTECTION

**Scope/Application:** *The provisions of 1910.331 through 1910.335 cover electrical safety work practices for both qualified persons (those who have training in avoiding the electrical hazards of working on or near exposed energized parts) and unqualified persons (those with little or no such training).*

**Exception:** *These standards do not apply to work performed by qualified persons on or directly associated with the following installations: Generation, transmission, and distribution of electric energy (including communication and metering) located in buildings used for such purposes or located outdoors. This work is covered by 1910.269—Electric Power Generation, Transmission, and Distribution.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic inspections, tests
- Signs, Markings and Tags—safety signs and tags

#### Inspections and Tests

**1910.335(a)(1)(ii)**—Protective equipment shall be maintained in a safe, reliable condition and *shall be periodically inspected or tested, as required by 1910.137 [Electrical Protective Devices].*

#### Signs, Markings and Tags

**1910.335(b)(1)**—**Safety signs and tags.** *Safety signs, safety symbols, or accident prevention tags shall be used where necessary to warn employees about electrical hazards which may endanger them, as required by 1910.145 [Specifications for Accident Prevention Signs and Tags].*

## 29 CFR Subpart T—Commercial Diving Operations

### 1910.410—QUALIFICATIONS OF DIVE TEAM

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

#### STANDARD HIGHLIGHTS

- Training and Communications—initial training
- Qualified Person—designated person-in-charge

#### Training and Communications

**1910.410(a)(1)**—Each dive team member *shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner. [Reference paragraph (a) for specific information.]*

#### Qualified Person

**1910.410(c)(2)**—The *designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.*

### 1910.420—SAFE PRACTICES MANUAL

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—safe practices manual
- Recordkeeping—manual

#### Programs, Policies and Procedures

**1910.420(a)**—General. The employer *shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member. [Reference paragraph (a)(1) for specific information.]*

#### Recordkeeping

**1910.420(a)**—General. The employer *shall develop and maintain a safe practices manual which shall be made available at the dive location to each dive team member. [Reference paragraph (a)(1) for specific information.]*

### 1910.421—PRE-DIVE PROCEDURES

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search,*



rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency list on-site, first aid handbook on site, reporting procedures
- Inspections and Tests—assessment, inspection before dive
- Recordkeeping—first aid handbook
- Training and Communications—briefing prior to dive
- Qualified Person—first aid kit
- Signs, Markings and Tags—flag displayed
- Other—first aid kit approved by physician

### Programs, Policies and Procedures

**1910.421(b)**—*Emergency aid. A list shall be kept at the dive location of the telephone or call numbers.*

**1910.421(c)(1)**—*A first aid kit appropriate for the diving operation and **approved** by a **physician** shall be available at the dive location.*

**1910.421(c)(3)**—*In addition to any other first aid supplies, an American Red Cross standard **first aid handbook** or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be **available** at the dive location.*

**1910.421(f)(2)**—*Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.*

### Inspections and Tests

**1910.421(d)**—*Planning and assessment. Planning of a diving operation shall include an assessment of the safety and health aspects. [Reference paragraph (d) for specific information.]*

**1910.421(g)**—*Equipment inspection. The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive. [Reference paragraph (g) for specific information.]*

### Recordkeeping

**1910.421(c)(1)**—*A first aid kit appropriate for the diving operation and **approved** by a **physician** shall be **available** at the dive location.*

**1910.421(c)(3)**—*In addition to any other first aid supplies, an American Red Cross standard **first aid handbook** or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be **available** at the dive location.*

### Training and Communications

**1910.421(f)(1)**—*Dive team members shall be briefed. [Reference paragraph (f) for specific information.]*

### Qualified Person

**1910.421(c)(1)**—*A first aid kit appropriate for the diving operation and **approved** by a **physician** shall be **available** at the dive location.*

### Signs, Markings and Tags

**1910.421(h)**—*Warning signal. When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the international code flag "A" at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.*

### Other

**1910.421(c)(3)**—*In addition to any other first aid supplies, an American Red Cross standard **first aid handbook** or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be **available** at the dive location.*

## 1910.423—POST-DIVE PROCEDURES

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—investigate each incident, written evaluations
- Recordkeeping—records
- Training and Communications—employee instructions

### Programs, Policies and Procedures

**1910.423(e)(1)**—*Investigate and evaluate each incident of decompression sickness based on the **recorded information**, consideration of the past performance of decompression table used, and individual susceptibility. [Reference paragraph (e) for specific information.]*

**1910.423(e)(3)**—*Prepare a **written evaluation** of the decompression procedure assessment, including any corrective action taken, within 45 days of the incident of decompression sickness. [Reference paragraph (e) for specific information.]*

### Recordkeeping

**1910.423(d)(1)**—*Information shall be **recorded and maintained** for each diving operation. [Reference paragraph (d) for specific information.]*

**1910.423(d)(2)**—*For each dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas, **additional information shall be recorded and maintained.** [Reference paragraph (d) for additional information.]*

**1910.423(d)(3)**—*For each dive in which decompression sickness is suspected or symptoms are evident, **additional information shall be recorded and maintained.** [Reference paragraph (d) for specific information.]*

**1910.423(e)(1)**—*Investigate and evaluate each incident of decompression sickness based on the **recorded information**, consideration of the past performance of decompression table used, and individual susceptibility. [Reference paragraph (e) for specific information.]*

**1910.423(e)(3)**—*Prepare a **written evaluation** of the decompression procedure assessment, including any corrective action taken, within 45 days of the incident of decompression sickness. [Reference paragraph (e) for specific information.]*

### Training and Communications

**1910.423(b)(1)(ii)**—*Instruct the diver to report any physical problems or adverse physiological effects including symptoms of decompression sickness.*

**1910.423(b)(1)(iii)**—*Advise the diver of the location of a decompression chamber which is ready for use.*

**1910.423(b)(2)**—*For any dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas as a breathing mixture, the employer shall instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).*

## 1910.430—EQUIPMENT

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—tagging/logging system
- Inspections and Tests—regular inspections, testing every 6 months and annually
- Recordkeeping—tagging/logging system, records

### Programs, Policies and Procedures

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the name or initials of the person performing the work.

### Inspections and Tests

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the name or initials of the person performing the work.

**1910.430(b)(4)**—The output of air compressor systems shall be tested for air purity every 6 months by means of samples taken at the connection to the distribution system, except that non-oil lubricated compressors need not be tested for oil mist.

**1910.430(c)(1)(iii)**—Be tested at least annually to 1.5 times their working pressure.

**1910.430(f)(3)(ii)**—Mufflers on intake and exhaust lines, which shall be regularly inspected and maintained.

**1910.430(g)(2)**—Each depth gauge shall be deadweight tested or calibrated against a master reference gauge every 6 months, and when there is a discrepancy greater than two percent (2 percent) of full scale between any two equivalent gauges.

### Recordkeeping

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the name or initials of the person performing the work.

## 1910.440—RECORDKEEPING REQUIREMENTS

**Scope/Application:** This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.

**Exception:** This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

## STANDARD HIGHLIGHTS

- Recordkeeping—retention requirements

### Recordkeeping

**1910.440(a)(2)**—The employer shall **record** the occurrence of any diving-related injury or illness which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

**1910.440(b)(1)**—Upon the request of the Assistant Secretary of Labor for Occupational Safety and Health, or the Director, National Institute for Occupational Safety and Health, Department of Health and Human Services of their designees, the employer shall make **available** for inspection and **copying** any **record or document** required by this standard.

**1910.440(b)(2)**—**Records and documents** required by this standard shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Medical Records]. **Safe practices manuals** (Sec. 1910.420), **depth-time profiles** (Sec. 1910.422), **recordings** of dives

(Sec. 1910.423), **decompression procedure assessment evaluations** (Sec. 1910.423), and **records** of hospitalizations (Sec. 1910.440) shall be provided in the same manner as employee exposure **records** or analyses using **exposure or medical records**. Equipment inspections and **testing records** which pertain to employees (Sec. 1910.430) shall also be provided upon request to employees and their designated representatives.

**1910.440(b)(3)**—**Records and documents** required by this standard shall be **retained** by the employer for the following period:

**1910.440(b)(3)(ii)**—**Safe practices manual** (Sec. 1910.420)—**current document only**.

**1910.440(b)(3)(iii)**—**Depth-time profile** (Sec. 1910.422)—**until completion of the recording of dive**, or until completion of **decompression procedure assessment** where there has been an incident of decompression sickness.

**1910.440(b)(3)(iv)**—**Recording of dive** (Sec. 1910.423)—**1 year**, except **5 years** where there has been an incident of decompression sickness.

**1910.440(b)(3)(v)**—**Decompression procedure assessment evaluations** (Sec. 1910.423)—**5 years**.

**1910.440(b)(3)(vi)**—**Equipment inspections and testing records** (Sec. 1910.430)—**current entry or tag**, or until equipment is withdrawn from service.

**1910.440(b)(3)(vii)**—**Records of hospitalizations** (Sec. 1910.440)—**5 years**.

## 29 CFR Subpart Z—Toxic and Hazardous Substances

### 1910.1000—AIR CONTAMINANTS

**Scope/Application:** *An employee's exposure to any substance listed in Tables Z-1, Z-2, or Z-3 of this section shall be limited in accordance with the requirements of the following paragraphs of this section.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—administrative and engineering controls, respirator program
- Competent Person—industrial hygienist
- Qualified Person—technically qualified person

#### Programs, Policies and Procedures

**1910.1000(e)**—To achieve compliance with *paragraphs (a) through (d) Tables Z-1 through Z-3 of this section, administrative or engineering controls must first be determined and implemented* whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be *approved for each particular use by a competent industrial hygienist or other technically qualified person*. Whenever respirators are used, their use shall comply with 1910.134 [Respiratory Protection].

#### Competent Person

**1910.1000(e)**—To achieve compliance with *paragraphs (a) through (d) Tables Z-1 through Z-3 of this section, administrative or engineering controls must first be determined and implemented* whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be *approved for each particular use by a competent industrial hygienist or other technically qualified person*. Whenever respirators are used, their use shall comply with 1910.134 [Respiratory Protection].

#### Qualified Person

**1910.1000(e)**—To achieve compliance with *paragraphs (a) through (d) Tables Z-1 through Z-3 of this section, administrative or engineering controls must first be determined and implemented* whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or any other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and/or technical measures used for this purpose must be *approved for each particular use by a competent industrial hygienist or other technically qualified person*. Whenever respirators are used, their use shall comply with 1910.134 [Respiratory Protection].

### 1910.1001—ASBESTOS

**Scope/Application:** *This section applies to all occupational exposures to asbestos in all industries covered by the Occupational Safety and Health Act, except as provided in paragraph (a)(2) and (3) [Scope and Application] of this section.*

**Exception:** *This standard does not apply to construction work, ship repairing, shipbuilding, and shipbreaking employments and related employments. They fall under 1926.1101 and 1915.1001 respectively.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, compliance program, respirator program, medical surveillance program, hazard communication program
- Inspections and Tests—tests, inspections
- Recordkeeping—retention requirements
- Training and Communications—initial and annual training, inform
- Exposure Monitoring—initial and every 6 month monitoring, results posted, evaluations
- Medical Surveillance—program, initial, annual, and termination examinations, written opinions, information provided to the physician
- Competent Person—Certified Industrial Hygienist (CIH)
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, posted signs, labels

## Programs, Policies and Procedures

**1910.1001(f)(1)(i)**—The employer *shall institute engineering controls and work practices to reduce and **maintain** employee exposure* to or below the TWA and/or excursion limit *prescribed in paragraph (c) [Permissible Exposure Limit]* of this section, except to the extent that such controls are not feasible.

**1910.1001(f)(2)(i)**—Where the TWA and/or excursion limit is exceeded, the employer *shall establish and implement a **written program*** to reduce employee exposure to or below the TWA and to or below the excursion limit by means of *engineering and work practice controls as required by paragraph (f)(1) [Methods of Compliance]* of this section, and by the use of respiratory protection where required or permitted under this section.

**1910.1001(f)(2)(ii)**—*Such **programs** shall be **reviewed and updated*** as necessary to reflect significant changes in the status of the employer's **compliance program**.

**1910.1001(f)(2)(iii)**—***Written programs** shall be submitted upon request for examination and **copying*** to the Assistant Secretary, the Director, *affected employees* and designated employee representatives.

**1910.1001(f)(3)(i)**—*Engineering controls and work practices* for brake and clutch repair and service. During automotive brake and clutch inspection, disassembly, repair and assembly operations, the employer *shall institute engineering controls and work practices* to reduce employee exposure to materials containing asbestos using a negative pressure enclosure/HEPA vacuum system method or low pressure/wet cleaning method, which meets the detailed requirements set out in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section. The employer may also comply using an equivalent method which follows **written procedures** which the employer demonstrates can achieve results equivalent to Method A in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section. For facilities in which no more than 5 pair of brakes or 5 clutches are inspected, disassembled, repaired, or assembled per week, the method set forth in *paragraph [D] [Wet Method]* of *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section may be used.

**1910.1001(f)(3)(ii)**—The employer *may also comply by using an equivalent method which follows **written procedures**, which the employer demonstrates can achieve equivalent exposure reductions* as do the two “preferred methods.” Such demonstration *must include **monitoring data*** conducted under workplace conditions closely resembling the process, type of asbestos containing materials, control method, work practices and environmental conditions which the equivalent method will be used, *or **objective data**, which **document*** that under all reasonably foreseeable conditions of brake and clutch repair applications, the method **results** in exposures which are equivalent to the methods set out in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section.

**1910.1001(g)(2)(i)**—The employer *must implement a **respiratory protection program** in accordance with 29 CFR 134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1001(j)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for asbestos.

**1910.1001(j)(1)(iii)**—Employers shall include asbestos in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers *shall ensure that each employee has access to **labels** on containers of asbestos and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (j)(7) [Employee Information and Training]* of this section.

**1910.1001(j)(7)(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**. *[Reference paragraph (j) for specific information.]*

**1910.1001(l)(1)(i)**—Employees covered. The employer *shall institute a **medical surveillance program*** for all employees who are or will be exposed to airborne concentrations of fibers of asbestos at or above the TWA and/or excursion limit.

## Inspections and Tests

**1910.1001(f)(3)(i)**—*Engineering controls and work practices* for brake and clutch repair and service. During automotive brake and clutch inspection, disassembly, repair and assembly operations, the employer *shall institute engineering controls and work practices* to reduce employee exposure to materials containing asbestos using a negative pressure enclosure/HEPA

vacuum system method or low pressure/wet cleaning method, which meets the detailed requirements set out in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch inspection, Disassembly, Repair and Assembly]* to this section. The employer may also comply using an equivalent method which follows **written procedures** which the employer demonstrates can achieve **results** equivalent to Method A in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch inspection, Disassembly, Repair and Assembly]* to this section. For facilities in which no more than 5 pair of brakes or 5 clutches are inspected, disassembled, repaired, or assembled per week, the method set forth in paragraph [D] (*Wet Method*) of *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch inspection, Disassembly, Repair and Assembly]* to this section may be used.

**1910.1001(j)(8)(ii)(B)**—*Performing tests of the material* containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The *tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH*. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a **nationally recognized testing program** such as the **National Voluntary Laboratory Accreditation Program (NVLAP)** or the **National Institute for Standards and Technology (NIST)** or the **Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA)** or an equivalent **nationally-recognized round robin testing program**.

### Recordkeeping

**1910.1001(d)(7)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this sections, notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to affected employees.

**1910.1001(d)(7)(ii)**—The **written notification** required by paragraph (d)(7)(i) [*Employee Notification of Monitoring Results*] of this section shall contain the corrective action being taken by the employer to reduce employee exposure to or below the TWA and/or excursion limit, wherever **monitoring results** indicated that the TWA and/or excursion limit had been exceeded.

**1910.1001(f)(2)(iii)**—**Written programs** shall be submitted upon request for examination and copying to the Assistant Secretary, the Director, affected employees and designated employee representatives.

**1910.1001(f)(3)(i)**—*Engineering controls and work practices* for brake and clutch repair and service. During automotive brake and clutch inspection, disassembly, repair and assembly operations, the employer shall institute *engineering controls and work practices* to reduce employee exposure to materials containing asbestos using a negative pressure enclosure/HEPA vacuum system method or low pressure/wet cleaning method, which meets the detailed requirements set out in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section. The employer may also comply using an equivalent method which follows **written procedures** which the employer demonstrates can achieve results equivalent to Method A in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section. For facilities in which no more than 5 pair of brakes or 5 clutches are inspected, disassembled, repaired, or assembled per week, the method set forth in paragraph [D] [*Wet Method*] of *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section may be used.

**1910.1001(f)(3)(ii)**—The employer may also comply by using an equivalent method which follows **written procedures**, which the employer demonstrates can achieve equivalent exposure reductions as do the two “preferred methods.” Such demonstration *must include monitoring data* conducted under workplace conditions closely resembling the process, type of asbestos containing materials, control method, *work practices* and environmental conditions which the equivalent method will be used, or **objective data, which document** that under all reasonably foreseeable conditions of brake and clutch repair applications, the method **results** in exposures which are equivalent to the methods set out in *Appendix F [Work Practices and Engineering Controls for Automotive Brake and Clutch Inspection, Disassembly, Repair and Assembly]* to this section.

**1910.1001(j)(1)(iii)**—Employers shall include asbestos in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers of asbestos and to safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(7) [*Employee Information and Training*] of this section.

**1910.1001(j)(3)(ii)**—Building and facility owners shall **maintain records** of all information required to be provided pursuant to this section and/or otherwise known to the building owner concerning the presence, location and quantity of ACM and PACM in the building/facility. *Such records shall be kept for the duration of ownership and shall be transferred* to successive owners.

**1910.1001(l)(7)(i)**—The employer shall obtain a **written signed opinion** from the examining physician. This **written opinion** shall contain the **results** of the medical examination. [Reference paragraph (l)(7) for specific information.]

**1910.1001(l)(7)(iii)**—The employer shall provide a **copy of the physician's written opinion** to the affected employee within 30 days from its receipt.

**1910.1001(m)(1)(i)**—The employer shall keep an accurate **record** of all **measurements** taken to monitor employee exposure to asbestos as prescribed in paragraph (d) [Exposure Monitoring] of this section.

**1910.1001(m)(1)(iii)**—The employer shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1001(m)(2)(i)**—Where the processing, use, or handling of products made from or containing asbestos is exempted from other requirements of this section under paragraph (d)(2)(iii) [Initial Monitoring] of this section, the employer shall establish and **maintain an accurate record of objective data** reasonably relied upon in support of the exemption.

**1910.1001(m)(2)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1001(m)(3)(i)**—The employer shall establish and **maintain an accurate record** for each employee subject to medical surveillance by paragraph (l)(1)(i) [Medical Surveillance] of this section, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1001(m)(3)(iii)**—The employer shall ensure that this **record is maintained** for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1001(m)(4)**—**Training.** The employer shall **maintain all employee training records** for one (1) year beyond the last date of employment of that employee.

**1910.1001(m)(5)(i)**—The employer, upon **written request**, shall make all **records** required to be **maintained** by this section **available** to the Assistant Secretary and the Director for examination and **copying**.

**1910.1001(m)(5)(ii)**—The employer, upon request shall make any **exposure records** required by paragraph (m)(1) [Recordkeeping] of this section **available** for examination and **copying** to affected employees, former employees, designated representatives and the Assistant Secretary, in accordance with 29 CFR 1910.1020(a) through (e) and (g) through (i) [Access to Employee Exposure and Medical Records].

**1910.1001(m)(5)(iii)**—The employer, upon request, shall make employee **medical records** required by paragraph (m)(3) of this section **available** for examination and **copying** to the subject employee, to anyone having the **specific written consent** of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

## **Training and Communications**

**1910.1001(d)(7)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this sections, **notify each affected employee of these results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

**1910.1001(h)(3)(v)**—The employer shall **inform any person who launders or cleans** protective clothing or equipment contaminated with asbestos of the potentially harmful effects of exposure to asbestos.

**1910.1001(j)(1)(iii)**—Employers shall include asbestos in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of asbestos and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(7) [Employee Information and Training] of this section.

**1910.1001(j)(3)(i)**—Building and facility owners shall determine the presence, location, and quantity of ACM and/or PACM at the work site. Employers and building and facility owners shall exercise due diligence in complying with these requirements to **inform employers and employees** about the presence and location of ACM and PACM.

**1910.1001(j)(3)(iii)**—Building and facility owners shall **inform employers of employees, and employers shall inform employees who will perform housekeeping activities** in areas which contain ACM and/or PACM of the presence and location of ACM and/or PACM in such areas which may be contacted during such activities.



**1910.1001(j)(4)(i)—Posting.** *Warning signs shall be provided and displayed at each regulated area. In addition, warning signs shall be posted at all approaches to regulated areas so that an employee may read the signs and take necessary protective steps before entering the area.*

**1910.1001(j)(4)(iii)**—The employer shall ensure that employees working in and contiguous to regulated areas *comprehend the warning signs required to be posted by paragraph (j)(4)(i) [Posting]* of this section. Means to ensure employee comprehension may include the use of foreign languages, pictographs and graphics.

**1910.1001(j)(4)(iv)**—At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM and/or PACM, the building owner *shall post signs which identify the material which is present, its location, and appropriate work practices* which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in *contact with these signs can comprehend them.* Means to ensure employee comprehension may include the use of foreign languages, **pictographs, graphics, and awareness training.**

**1910.1001(j)(5)(i)—Labeling.** *Labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers. When a building owner or employer identifies previously installed ACM and/or PACM, labels or signs shall be affixed or posted so that employees will be notified of what materials contain ACM and/or PACM. The employer shall attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. Signs required by paragraph (j) [Hazard Communication] of this section may be posted in lieu of labels so long as they contain the information required for labeling.*

**1910.1001(j)(7)(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.** [Reference paragraph (j) for specific information.]

**1910.1001(j)(7)(ii)**—*Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.*

**1910.1001(j)(7)(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.*

**1910.1001(j)(7)(v)(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.

**1910.1001(l)(1)(ii)(B)**—Persons other than *licensed physicians,* who administer the pulmonary function testing required by this section, *shall complete a training course in spirometry* sponsored by an *appropriate academic or professional institution.*

**1910.1001(l)(6)—Information provided to the physician.** The employer shall **provide information to the examining physician.** [Reference paragraph (l)(6) for specific information.]

## **Exposure Monitoring**

**1910.1001(d)(2)(i)**—Each employer who has a workplace or work operation covered by this standard, except as provided for in *paragraphs (d)(2)(ii) and (d)(2)(iii) [Initial Monitoring]* of this section, *shall perform initial monitoring* of employees who are, or may reasonably be expected to be exposed to airborne concentrations at or above the TWA permissible exposure limit and/or excursion limit.

**1910.1001(d)(3)**—*Monitoring frequency (periodic monitoring) and patterns.* After the initial determinations required by *paragraph (d)(2)(i) [Initial Monitoring]* of this section, *samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees. In no case shall sampling be at intervals greater than six months for employees whose exposures may reasonably be foreseen to exceed the TWA permissible exposure limit and/or excursion limit.*

**1910.1001(d)(5)**—*Additional monitoring.* Notwithstanding the provisions of *paragraphs (d)(2)(ii) [Initial Monitoring]* and *(d)(4) [Changes in Monitoring Frequency]* of this section, the employer *shall institute the exposure monitoring required under paragraphs (d)(2)(i) [Initial Monitoring] and (d)(3) [Monitoring Frequency] of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures above*

the TWA permissible exposure limit and/or excursion limit or when the employer has any reason to suspect that a change may result in new or additional exposures above the PEL and/or excursion limit.

**1910.1001(d)(6)(ii)**—All samples taken to satisfy the monitoring requirements of *paragraph (d) [Exposure Monitoring]* of this section shall be evaluated using the OSHA Reference Method (ORM) specified in *Appendix A—OSHA Reference Method* of this section, or an equivalent counting method.

**1910.1001(d)(7)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this sections, notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to affected employees.

**1910.1001(d)(7)(ii)**—The **written notification** required by *paragraph (d)(7)(i) [Employee Notification of Monitoring Results]* of this section shall contain the **corrective action** being taken by the employer to reduce employee exposure to or below the TWA and/or excursion limit, wherever **monitoring results** indicated that the TWA and/or excursion limit had been exceeded.

### Medical Surveillance

**1910.1001(l)(1)(i)**—Employees covered. The employer shall institute a **medical surveillance program** for all employees who are or will be exposed to airborne concentrations of fibers of asbestos at or above the TWA and/or excursion limit.

**1910.1001(l)(2)(i)**—*Before an employee is assigned to an occupation exposed to airborne concentrations of asbestos fibers at or above the TWA and/or excursion limit, a pre-placement medical examination shall be provided or made available by the employer.*

**1910.1001(l)(3)(i)**—*Periodic medical examinations shall be made available annually.*

**1910.1001(l)(4)(i)**—The employer shall provide, or make available, a **termination of employment medical examination** for any employee who has been exposed to airborne concentrations of fibers of asbestos at or above the TWA and/or excursion limit.

**1910.1001(l)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [*Reference paragraph (l)(6) for specific information.*]

**1910.1001(l)(7)(i)**—The employer shall obtain a **written signed opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination. [*Reference paragraph (l)(7) for specific information.*]

### Competent Person

**1910.1001(j)(8)(ii)(B)**—*Performing tests of the material containing PACM which demonstrate that no ACM is present in the material. Such tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests, evaluation and sample collection shall be conducted by an accredited inspector or by a CIH. Analysis of samples shall be performed by persons or laboratories with proficiency demonstrated by current successful participation in a nationally recognized testing program such as the National Voluntary Laboratory Accreditation Program (NVLAP) or the National Institute for Standards and Technology (NIST) or the Round Robin for bulk samples administered by the American Industrial Hygiene Association (AIHA) or an equivalent nationally-recognized round robin testing program.*

### Qualified Person

**1910.1001(l)(1)(ii)(B)**—Persons other than licensed physicians, who administer the pulmonary function testing required by this section, shall complete a **training course in spirometry** sponsored by an appropriate **academic or professional institution**.

**1910.1001(l)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [*Reference paragraph (l)(6) for specific information.*]

**1910.1001(l)(7)(i)**—The employer shall obtain a **written signed opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination. [*Reference paragraph (l)(7) for specific information.*]

### Signs, Markings and Tags

**1910.1001(e)(1)**—Establishment. The employer shall establish **regulated areas** wherever airborne concentrations of asbestos and/or PACM [presumed asbestos containing material] are in excess of the TWA and/or excursion limit *prescribed in paragraph (c) [Permissible Exposure Limit]* of this section.

**1910.1001(h)(2)(iv)**—The employer shall ensure that containers of contaminated protective devices or work clothing, which are to be taken out of change rooms or the workplace for cleaning, maintenance or disposal, *bear labels in accordance with paragraph (j) [Communications of Hazards to Employees]* of this section.

**1910.1001(h)(3)(iv)**—The employer shall ensure that contaminated clothing is transported in sealed impermeable bags, or other closed, impermeable containers, and *labeled in accordance with paragraph (j) [Communications of Hazards to Employees]* of this section.

**1910.1001(h)(3)(vi)**—Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and *labeled in accordance with paragraph (j) [Communications of Hazards to Employees]* of this section.

**1910.1001(j)(1)(iii)**—Employers shall include asbestos in the *hazard communication program* established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of asbestos and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (j)(7) [Employee Information and Training]* of this section.

**1910.1001(j)(4)(i)**—**Posting. Warning signs** shall be provided and displayed at each regulated area. In addition, **warning signs** shall be **posted** at all approaches to regulated areas so that an employee may read the **signs** and take necessary protective steps before entering the area.

**1910.1001(j)(4)(iv)**—At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM [asbestos-containing material] and/or PACM, the building owner shall **post signs** which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in contact with these **signs** can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, **pictographs, graphics, and awareness training**.

**1910.1001(j)(5)(i)**—**Labeling. Labels** shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers. When a building owner or employer identifies previously installed ACM and/or PACM, **labels or signs** shall be **affixed or posted** so that employees will be notified of what materials contain ACM and/or PACM. The employer shall **attach such labels** in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. **Signs** required by *paragraph (j) [Hazard Communication]* of this section may be **posted** in lieu of **labels** so long as they contain the information required for **labeling**.

### 1910.1003—13 CARCINOGENS (4-NITROBIPHENYL, ETC.)

**Scope/Application:** *This section applies to any area in which the 13 carcinogens addressed by this section are manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3) and (4) of this section. The 13 carcinogens are the following: 4-Nitrobiphenyl, alpha-Naphthylamine, methyl chloromethyl ether, 3,3'-Dichlorobenzidine (and its salts), bis-Chloromethyl ether, beta-Naphthylamine, Benzidine, 4-Aminodiphenyl, Ethyleneimine, beta-Propiolactone, 2-Acetylaminofluorene, 4-Dimethylaminoazo-benzene, and N-Nitrosodimethylamine.*

**Exception:** *The standard does not apply to transshipment in sealed containers except the labeling. It does not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl; methyl chloromethyl ether; bis-chloromethyl ether; beta-Naphthylamine; benzidine or 4-Aminodiphenyl; and solid or liquid mixtures containing less than 1.0 percent by weight or volume of alpha-Naphthylamine; 3,3'-Dichlorobenzidine (and its salts); Ethyleneimine; beta-Propiolactone; 2-Acetylaminofluorene; 4-Dimethylaminoazobenzene, or N-Nitrosodimethylamine.*

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—respirator program, medical surveillance program, emergency procedures, hazard communication program
- Recordkeeping—records
- Training and Communications—initial and annual training
- Medical Surveillance—program, initial, annual, and emergency examinations, written opinion
- Qualified Person—physician
- Signs, Markings and Tags—posted signs, labels, posted emergency procedures

## Programs, Policies and Procedures

**1910.1003(d)(1)—Respiratory program.** The employer *must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b), (c), (d) (except (d)(1)(iii) and (iv), and (d)(3)), and (e) through (m), which covers each employee required by this section to use a respirator.*

**1910.1003(e)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for each carcinogen listed in paragraph (e)(1)(iv) [List of Carcinogens] of this section.*

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (e)(4) [Training and Indoctrination] of this section.**

**1910.1003(e)(2)(v)**—*Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.*

**1910.1003(e)(4)(i)**—Each employee prior to being authorized to enter a regulated area, *shall receive a **training and indoctrination program**. [Reference paragraph (e) for specific information.]*

**1910.1003(e)(4)(ii)**—Specific ***emergency procedures** shall be prescribed, and **posted**, and employees shall be familiarized with their terms, and rehearsed in their application.*

**1910.1003(g)**—*Medical surveillance. At no cost to the employee, a **program of medical surveillance** shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.*

## Recordkeeping

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (e)(4) [Training and Indoctrination] of this section.**

**1910.1003(e)(2)(v)**—*Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.*

**1910.1003(e)(4)(ii)**—Specific ***emergency procedures** shall be prescribed, and **posted**, and employees shall be familiarized with their terms, and rehearsed in their application.*

**1910.1003(g)(2)(i)**—Employers of employees examined pursuant to this paragraph shall cause to be ***maintained complete and accurate records** of all such medical examinations. **Records** shall be **maintained** for the duration of the employee's employment.*

**1910.1003(g)(2)(ii)**—***Records** required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020 (a) through (e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These **records** shall also be provided upon request to the Director.*

**1910.1003(g)(2)(iii)**—Any ***physician** who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]*

## Training and Communications

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens] and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (e)(4) [Training and Indoctrination] of this section.**

**1910.1003(e)(2)(v)**—*Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.*

**1910.1003(e)(4)(i)**—Each employee prior to being *authorized* to enter a regulated area, shall receive a **training and indoctrination program** [Reference paragraph (e) for specific information.]

**1910.1003(e)(4)(i)(I)**—A review of this section at the employee's first **training and indoctrination program** and annually thereafter.

**1910.1003(g)(2)(iii)**—Any **physician** who conducts a medical examination required by this paragraph shall **furnish** to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]

### Medical Surveillance

**1910.1003(d)(2)(iii)**—Special medical surveillance by a **physician** shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency.

**1910.1003(g)**—Medical surveillance. At no cost to the employee, a **program** of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

**1910.1003(g)(1)(i)**—Before an employee is assigned to enter a regulated area, a preassignment physical examination by a **physician** shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

**1910.1003(g)(1)(ii)**—Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

**1910.1003(g)(2)(iii)**—Any **physician** who conducts a medical examination required by this paragraph shall **furnish** to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]

### Qualified Person

**1910.1003(d)(2)(iii)**—Special medical surveillance by a **physician** shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency.

**1910.1003(g)(1)(i)**—Before an employee is assigned to enter a regulated area, a preassignment physical examination by a **physician** shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

**1910.1003(g)(1)(ii)**—Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.

**1910.1003(g)(2)(iii)**—Any **physician** who conducts a medical examination required by this paragraph shall **furnish** to the employer a **statement** of the employee's suitability for employment in the specific exposure.

### Signs, Markings and Tags

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in paragraph (e)(1)(iv) [List of Carcinogens] of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of the carcinogens listed in paragraph (e)(1)(iv) [List of Carcinogens] and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (e)(4) [Training and Indoctrination] of this section.

**1910.1003(e)(2)(i)**—The employer shall **post** entrances to regulated areas with **signs** bearing a legend. [Reference paragraph (e)(2)(i) for specific information.]

**1910.1003(e)(2)(ii)**—The employer shall **post signs** at entrances to regulated areas containing operations covered in paragraph (c)(5) [Maintenance and Decontamination Activities] of this section.

**1910.1003(e)(2)(v)**—Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

## 1910.1017—VINYL CHLORIDE

**Scope/Application:** *This section includes requirements for the control of employee exposure to vinyl chloride (chloroethene).*

**Exception:** *This standard does not apply to the handling or use of fabricated products made of polyvinyl chloride.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—exposure monitoring program, respirator program, emergency plan, medical surveillance program, work practice controls, annual updates, hazard communication program
- Recordkeeping—retention requirements, medical records, safety data sheets
- Training and Communications—initially, annually
- Exposure Monitoring—program, monitoring quarterly, measurements, results posted
- Medical Surveillance—program, examinations, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—labels, posting signs

### Programs, Policies and Procedures

1910.1017(d)(1)—A **program of initial monitoring and measurement** shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

**1910.1017(d)(2)**—Where a determination conducted under *paragraph (d)(1) [Monitoring]* of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a **program for determining exposures for each such employee** shall be established. Such a **program**:

**1910.1017(d)(2)(i)**—*Must be repeated at least quarterly* for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

**1910.1017(d)(2)(ii)**—*Must be repeated not less than every 6 months* for any employee exposed without regard to the use of respirators, at or above the action level.

**1910.1017(f)(2)**—Wherever *feasible engineering and work practice controls which can be instituted immediately* are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with *paragraph (g) [Respiratory Protection]* of this section. A **program** shall be *established and implemented* to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of *engineering and work practice controls*, as soon as feasible.

**1910.1017(f)(3)**—Such **plans** must be updated at least annually.

**1910.1017(g)(2)**—**Respirator program.** *The employer must implement a respiratory protection program in accordance 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (f) through (m) which covers each employee required by this section to use a respirator.*

**1910.1017(i)**—Emergency situations. A **written operational plan for emergency situations** shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1017(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. *[Reference paragraph (j) for specific information.]*

**1910.1017(j)(1)(ix)**—*A review of this standard at the employee's first training and indoctrination program, and annually thereafter.*

**1910.1017(k)**—**Medical surveillance.** A **program of medical surveillance** shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The **program** shall provide each such employee with an opportunity for *examinations and tests* in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the *supervision of a licensed physician*, and shall be provided without cost to the employee.

**1910.1017(l)(1)(i)**—Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for vinyl chloride and polyvinyl chloride.

**1910.1017(l)(1)(iii)**—Employers shall include vinyl chloride in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of vinyl chloride and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j) [Training] of this section.

**1910.1017(n)**—Employee notification of **monitoring results**. The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results and the steps being taken to reduce exposures within the permissible exposure limit either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

### Recordkeeping

**1910.1017(i)**—Emergency situations. A **written operational plan** for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1017(l)(1)(iii)**—Employers shall include vinyl chloride in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of vinyl chloride and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j) [Training] of this section.

**1910.1017(m)(2)**—Records of required **monitoring and measuring and medical records** shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These records shall be provided upon request to the Director. **Authorized personnel rosters** shall also be provided upon request to the Assistant Secretary and the Director.

**1910.1017(m)(2)(i)(C)**—Be maintained for not less than 30 years.

**1910.1017(m)(2)(iii)**—Medical records shall be maintained for the duration of the employment of each employee plus 20 years, or 30 years, whichever is longer.

### Training and Communications

**1910.1017(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. [Reference paragraph (j) for specific information.]

**1910.1017(j)(1)(ix)**—A review of this standard at the employee's first **training and indoctrination program**, and annually thereafter.

**1910.1017(k)(4)**—A **statement** of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining **physician** promptly after any examination. A copy of the **physician's statement** shall be provided each employee. [Reference paragraph (k) for specific information.]

**1910.1017(n)**—Employee notification of monitoring results. The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results and the steps being taken to reduce exposures within the permissible exposure limit either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

### Exposure Monitoring

**1910.1017(d)(1)**—A **program of initial monitoring and measurement** shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

**1910.1017(d)(2)**—Where a determination conducted under paragraph (d)(1) [Monitoring] of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a **program for determining exposures for each such employee** shall be established. Such a **program**:

**1910.1017(d)(2)(i)**—Must be repeated at least quarterly for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

**1910.1017(d)(2)(ii)**—Must be repeated not less than every 6 months for any employee exposed without regard to the use of respirators, at or above the action level.

**1910.1017(n)**—Employee notification of **monitoring results**. The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results* and the steps being taken to reduce exposures within the permissible exposure limit either individually *in writing or by posting the results* in an appropriate location that is accessible to affected employees.

### Medical Surveillance

**1910.1017(k)**—*Medical surveillance. A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.*

**1910.1017(k)(2)**—*Examinations must be provided in accordance with this paragraph at least annually.*

**1910.1017(k)(2)(i)**—*Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer.*

**1910.1017(k)(2)(ii)**—*Annually for all other employees.*

**1910.1017(k)(3)**—*Each employee exposed to an emergency shall be afforded appropriate medical surveillance.*

**1910.1017(k)(4)**—*A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee. [Reference paragraph (k) for specific information.]*

**1910.1017(k)(7)**—*If the examining physician determines that alternative medical examinations to those required by paragraph (k)(1) [Medical Surveillance] of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of paragraph (k)(1) [Medical Surveillance] of this section, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director.*

### Qualified Person

**1910.1017(k)**—*Medical surveillance. A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.*

**1910.1017(k)(4)**—*A statement of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A copy of the physician's statement shall be provided each employee.*

**1910.1017(k)(7)**—*If the examining physician determines that alternative medical examinations to those required by paragraph (k)(1) [Medical Surveillance] of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of paragraph (k)(1) [Medical Surveillance] of this section, if the employer obtains a statement from the examining physician setting forth the alternative examinations and the rationale for substitution. This statement shall be available upon request for examination and copying to authorized representatives of the Assistant Secretary and the Director.*

### Signs, Markings and Tags

**1910.1017(l)(1)(iii)**—*Employers shall include vinyl chloride in the hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of vinyl chloride and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (j) [Training] of this section.*

**1910.1017(l)(2)(i)**—*The employer shall post entrances to regulated areas with legible signs bearing a legend. [Reference paragraph (l)(2)(i) for specific information.]*



**1910.1017(l)(2)(ii)**—The employer shall **post signs** at areas containing hazardous operations or where emergencies currently exist.

**1910.1017(l)(3)(i)**—In addition to the other requirements in this paragraph (l) [*Hazard Communication*], the employer shall ensure that **labels** for containers of polyvinyl chloride resin waste from reactors or other waste contaminated with vinyl chloride are legible and include specific information. [*Reference paragraph (l)(3)(i) for specific information.*]

**1910.1017(l)(5)**—Containers of vinyl chloride shall be legibly **labeled**.

### **1910.1018—INORGANIC ARSENIC**

**Scope/Application:** *This section applies to all occupational exposures to inorganic arsenic except that this section does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.*

**Exception:** *This standard does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.*

#### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—compliance program, respirator program, training program, housekeeping and maintenance plan, medical surveillance program, hazard communication program
- Recordkeeping—retention requirements, safety data sheets
- Training and Communications—program, initial and annual training
- Exposure Monitoring—initially, quarterly and 6 month monitoring, written results posted
- Medical Surveillance—initial, examinations, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—posted signs, labels

#### **Programs, Policies and Procedures**

**1910.1018(g)(1)(i)**—The employer shall institute at the earliest possible time but not later than December 31, 1979, engineering and work practice controls to reduce exposures to or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible.

**1910.1018(g)(2)(i)**—The employer shall establish and implement a **program** to reduce exposures to or below the permissible exposure limit by means of engineering and work practice controls.

**1910.1018(h)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with 1910.134 [*Respiratory Protection*] (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1910.1018(k)(4)**—A **written housekeeping and maintenance plan** shall be kept which shall list appropriate frequencies for carrying out housekeeping operations, and for cleaning and maintaining dust collection equipment. The **plan** shall be **available** for inspection by the Assistant Secretary.

**1910.1018(k)(5)**—Maintenance of equipment. *Periodic cleaning* of dust collection and ventilation equipment and checks of their effectiveness shall be carried out to *maintain* the effectiveness of the system and a **notation kept** of the last check of effectiveness and cleaning or maintenance.

**1910.1018(n)(1)(i)**—Employees covered. The employer shall institute a **medical surveillance program**.

**1910.1018(o)(1)(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.

**1910.1018(p)(1)(i)**—Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for inorganic arsenic.

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [*Training Program*] of this section.

## Recordkeeping

**1910.1018(k)(4)**—A **written housekeeping and maintenance plan** shall be **kept** which shall list appropriate frequencies for carrying out housekeeping operations, and for cleaning and *maintaining* dust collection equipment. The **plan** shall be **available** for inspection by the Assistant Secretary.

**1910.1018(k)(5)**—Maintenance of equipment. *Periodic cleaning* of dust collection and ventilation equipment and checks of their effectiveness shall be carried out to *maintain* the effectiveness of the system and a **notation kept** of the last check of effectiveness and cleaning or maintenance.

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.

**1910.1018(q)(1)(i)**—The employer shall establish and **maintain** an accurate **record** of all monitoring required by paragraph (e) [Exposure Monitoring] of this section.

**1910.1018(q)(1)(iii)**—The employer shall **maintain** these **monitoring records** for at least 40 years or for the duration of employment plus 20 years, whichever, is longer.

**1910.1018(q)(2)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance as required by paragraph (n) [Medical Surveillance] of this section.

**1910.1018(q)(2)(iv)**—The employer shall **maintain** or assure that the **physician maintains** those **medical records** for at least 40 years, or for the duration of employment plus 20 years whichever is longer.

**1910.1018(q)(3)(i)**—The employer shall make **available** upon request all **records** required to be **maintained** by paragraph (q) [Recordkeeping] of this section to the Assistant Secretary and the Director for examination and **copying**.

**1910.1018(q)(3)(ii)**—**Records** required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Employee Exposure and Medical Records].

## Training and Communications

**1910.1018(e)(5)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting** the **results** in an appropriate location that is accessible to affected employees.

**1910.1018(e)(5)(ii)**—Whenever the **results** indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall include in the **written notice** a **statement** that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

**1910.1018(n)(6)(iii)**—The employer shall provide a **copy** of the **written opinion** to the affected employee.

**1910.1018(o)(1)(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**. [Reference paragraph (o)(1) for specific information.]

**1910.1018(o)(1)(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.

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.

## Exposure Monitoring

**1910.1018(e)(2)**—*Initial monitoring.* Each employer who has a workplace or work operation covered by this standard shall monitor each such workplace and work operation to accurately determine the airborne concentration of inorganic arsenic to which employees may be exposed.

**1910.1018(e)(3)(ii)**—If the *initial monitoring*, required by this section, or subsequent monitoring reveals employee exposure to be above the permissible exposure limit, the employer shall repeat monitoring at least quarterly.

**1910.1018(e)(3)(iii)**—If the *initial monitoring*, required by this section, or subsequent monitoring reveals employee exposure to be above the action level and below the permissible exposure limit the employer shall repeat monitoring at least every six months.

**1910.1018(e)(3)(iv)**—The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven (7) days apart, are below the action level at which time the employer may discontinue monitoring for that employee until such time as any of the events in paragraph (e)(4) [Additional Monitoring] of this section occur.

**1910.1018(e)(4)**—Additional monitoring. Whenever there has been a production, process, control or personal change which may result in new or additional exposure to inorganic arsenic, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to inorganic arsenic, additional monitoring which complies with paragraph (e) [Exposure Monitoring] of this section shall be conducted.

**1910.1018(e)(5)(i)**—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to affected employees.

**1910.1018(e)(5)(ii)**—Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall include in the written notice a statement that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

## Medical Surveillance

**1910.1018(n)(1)(i)**—Employees covered. The employer shall institute a medical surveillance program.

**1910.1018(n)(2)**—*Initial examinations.* By December 1, 1978, for employees initially covered by the medical provisions of this section, or thereafter at the time of initial assignment to an area where the employee is likely to be exposed over the action level at least 30 days per year, the employer shall provide each affected employee an opportunity for a medical examination.

**1910.1018(n)(3)(i)**—Examinations must be provided in accordance with this paragraph at least annually.

**1910.1018(n)(3)(ii)**—Whenever a covered employee has not taken the examinations specified in paragraphs (n)(2)(i) and (n)(2)(ii) [Initial Examinations] of this section within six (6) months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

**1910.1018(n)(5)**—*Information provided to the physician.* The employer shall provide information to the examining physician. [Reference paragraph (n)(5) for specific information.]

**1910.1018(n)(6)(i)**—The employer shall obtain a written opinion from the examining physician. [Reference paragraph (n)(6) for specific information.]

**1910.1018(n)(6)(iii)**—The employer shall provide a copy of the written opinion to the affected employee.

## Qualified Person

**1910.1018(n)(5)**—*Information provided to the physician.* The employer shall provide information to the examining physician.

**1910.1018(n)(6)(i)**—The employer shall obtain a written opinion from the examining physician.

## Signs, Markings and Tags

**1910.1018(j)(2)(vii)(A)**—The employer shall ensure that the containers of contaminated protective clothing and equipment in the workplace or which are to be removed from the workplace are labeled and that the labels include specific information. [Reference paragraph (j)(2)(vii)(A) for specific information.]

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (o) [Training Program]* of this section.

**1910.1018(p)(2)(i)**—The employer shall **post signs** demarcating regulated areas bearing a **legend**. [*Reference paragraph (p)(2)(i) for specific information.*]

**1910.1018(p)(2)(iii)**—The employer shall ensure that **signs** required by this *paragraph (p) [Hazard Communication]* are illuminated and cleaned as necessary so that the legend is readily visible.

## **1910.1020—ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS**

**Scope/Application:** *The purpose of this section is to provide employees and their designated representatives a right of access to relevant exposure and medical records; and to provide representatives of the Assistant Secretary a right of access to these records in order to fulfill responsibilities under the Occupational Safety and Health Act. Access by employees, their representatives, and the Assistant Secretary is necessary to yield both direct and indirect improvements in the detection, treatment, and prevention of occupational disease. Each employer is responsible for assuring compliance with this section, but the activities involved in complying with the access to medical records provisions can be carried out, on behalf of the employer, by the physician or other health care personnel in charge of employee medical records. This section applies to all employee exposure and medical records, and analyses thereof, of such employees, whether or not the records are mandated by specific occupational safety and health standards. The requirements apply to all industries and employers.*

### **STANDARD HIGHLIGHTS**

- Recordkeeping—retention requirements, safety data sheets
- Training and Communications—inform employees

### **Recordkeeping**

**1910.1020(d)(1)(i)**—Employee **medical records**. The **medical record** for each employee shall be preserved and **maintained** for at least the duration of employment plus thirty (30) years.

**1910.1020(d)(1)(ii)**—Employee **exposure records**. Each employee **exposure record** shall be preserved and **maintained** for at least thirty (30) years.

**1910.1020(d)(1)(ii)(A)**—**Background data** to environmental (workplace) monitoring or measuring, such as **laboratory reports** and **worksheets**, need only be retained for one (1) year so long as the **sampling results**, the collection methodology (**sampling plan**), a **description** of the **analytical and mathematical methods** used, and a summary of other **background data** relevant to interpretation of the **results obtained**, are **retained** for at least thirty (30) years.

**1910.1020(d)(1)(ii)(B)**—**Safety data sheets** and *paragraph (c)(5)(iv) [Employee Exposure Record]* concerning the identity of a substance or agent need not be **retained** for any specified period as long as some **record** of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used is retained for at least thirty (30) years. [*Reference Safety data sheets must be kept for those chemicals currently in use that are effected by the Hazard Communication Standard in accordance with 29 CFR 1910.1200(g) [Hazard Communication].*]

**1910.1020(d)(1)(ii)(C)**—**Biological monitoring results** designated as **exposure records** by specific occupational safety and health standards shall be preserved and **maintained** as required by the specific standard.

**1910.1020(d)(1)(iii)**—Analyses using **exposure or medical records**. Each analysis using **exposure or medical records** shall be preserved and **maintained** for at least thirty (30) years.

**1910.1020(e)(1)(i)**—Whenever an employee or designated representative requests access to a **record**, the employer shall assure that access is provided in a reasonable time, place, and manner. If the employer cannot reasonably provide access to the **record** within fifteen (15) working days, the employer shall within the fifteen (15) working days apprise the employee or designated representative requesting the **record** of the reason for the delay and the earliest date when the **record** can be made **available**.

**1910.1020(g)(1)**—Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section specific information. [Reference paragraph (g)(1) for specific information.]

**1910.1020(g)(2)**—Each employer shall keep a **copy** of this **section** and its appendices, and make **copies** readily **available**, upon request, to employees. The employer shall also distribute to current employees any **informational materials** concerning this section which are made **available** to the employer by the Assistant Secretary of Labor for Occupational Safety and Health.

**1910.1020(h)(1)**—Whenever an employer is ceasing to do business, the employer shall transfer all **records** subject to this section to the successor employer. The successor employer shall receive and **maintain** these **records**.

**1910.1020(h)(2)**—Whenever an employer is ceasing to do business and there is no successor employer to receive and **maintain** the **records** subject to this standard, the employer shall notify affected current employees of their rights of access to **records** at least three (3) months prior to the cessation of the employer's business.

### **Training and Communications**

**1910.1020(g)(1)**—Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section specific information. [Reference paragraph (g)(1) for specific information.]

**1910.1020(h)(2)**—Whenever an employer is ceasing to do business and there is no successor employer to receive and **maintain** the **records** subject to this standard, the employer shall notify affected current employees of their rights of access to **records** at least three (3) months prior to the cessation of the employer's business.

## **1910.1024—BERYLLIUM**

**Scope/Application:** This standard applies to occupational exposure to beryllium in all forms, compounds, and mixtures in general industry, except those articles and materials exempted by paragraphs (a)(2) and (a)(3) of this standard. Paragraph (a)(2); This standard does not apply to articles, as defined in the Hazard Communication standard (HCS) (§ 1910.1200(c)), that contain beryllium and that the employer does not process. Paragraph (a)(3); This standard does not apply to materials containing less than 0.1% beryllium by weight where the employer has objective data demonstrating that employee exposure to beryllium will remain below the action level as an 8-hour TWA under any foreseeable conditions.

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—written exposure control plan, procedures, respirator program, hazard communication program, employer-funded compensation program
- Recordkeeping—written exposure control plan, training records, data
- Training and Communications—initial and annual training
- Exposure Monitoring—monitoring exposures
- Medical Surveillance—medical surveillance program
- Qualified Person—physician
- Signs, Markings and Tags—signs

### **Programs, Policies and Procedures**

**1910.1024(d)(7)(iii)**—The employer must ensure that each observer follows all other applicable safety and health procedures.

**1910.1024(e)(3)(ii)**—Persons entering a regulated area as designated representatives of employees for the purpose of exercising the right to observe *exposure monitoring procedures* under paragraph (d)(7) of this standard.

**1910.1024(f)(1)(i)**—The employer must establish, implement, and maintain a **written exposure control plan**, which must contain. (Reference paragraph (f)(1) for specific information).

**1910.1024(f)(1)(i)(D)**—Procedures for minimizing cross-contamination, including preventing the transfer of beryllium between surfaces, equipment, clothing, materials, and articles within beryllium work areas;

**1910.1024(f)(1)(i)(E)**—Procedures for keeping surfaces as free as practicable of beryllium.

**1910.1024(f)(1)(i)(F)**—Procedures for minimizing the migration of beryllium from beryllium work areas to other locations within or outside the workplace.

**1910.1024(f)(1)(i)(G)**—A list of engineering controls, work practices, and respiratory protection required by paragraph (f)(2) of this standard.

**1910.1024(f)(1)(ii)**—The employer *must review and evaluate the effectiveness of each **written exposure control plan** at least annually* and update it, as necessary, when. (*Reference paragraph (f)(1) for specific information*).

**1910.1024(f)(1)(i)(I)**—*Procedures for removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators.*

**1910.1024(f)(1)(ii)(A)**—Any change in production processes, materials, equipment, personnel, *work practices, or control methods results*, or can reasonably be expected to result, in new or additional airborne exposure to beryllium;

**1910.1024(f)(2)(iii)**—If airborne exposure exceeds the TWA PEL or STEL *after implementing the control(s) required by paragraph (f)(2)(i) of this standard*, the employer *must implement additional or enhanced engineering and work practice controls* to reduce airborne exposure to or below the exposure limit(s) exceeded.

**1910.1024(f)(2)(iv)**—Wherever the employer demonstrates that it is not feasible to reduce airborne exposure to or below the PELs by *the engineering and work practice controls required by paragraphs (f)(2)(i) and (f)(2)(iii) of this standard*, the employer *must implement and maintain engineering and work practice controls* to reduce airborne exposure to the lowest levels feasible and supplement these controls by using respiratory protection in accordance with *paragraph (g) of this standard*.

**1910.1024(g)(2)**—***Respiratory protection program***. Where this standard requires an employer to provide respiratory protection, the selection and use of such respiratory protection must be in accordance with the *Respiratory Protection standard (§ 1910.134)*.

**1910.1024(h)(1)**—***Provision and use***. The employer must provide at no cost, and ensure that each employee uses, appropriate personal protective clothing and equipment *in accordance with the **written exposure control plan** required under paragraph (f)(1) of this standard and OSHA's Personal Protective Equipment standards (subpart I of this part)*.

**1910.1024(j)(1)(i)**—The employer must maintain all surfaces in beryllium work areas as free as practicable of beryllium and in accordance with the ***written exposure control plan*** required under *paragraph (f)(1) and the cleaning methods required under paragraph (j)(2) of this standard*.

**1910.1024(j)(1)(ii)**—The employer must ensure that all spills and emergency releases of beryllium are cleaned up promptly and *in accordance with the **written exposure control plan** required under paragraph (f)(1) and the cleaning methods required under paragraph (j)(2) of this standard*.

**1910.1024(k)(3)(i)**—The employer must ensure that the ***PLHCP conducting the examination*** *advises the employee of the risks and benefits of participating in the **medical surveillance program** and the employee's right to opt out of any or all parts of the medical examination*.

**1910.1024(l)(4)**—*The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal from a publicly or **employer-funded compensation program**, or receives income from another employer made possible by virtue of the employee's removal*.

**1910.1024(m)(1)(iii)**—Employers must include beryllium in the ***hazard communication program*** established to comply with the HCS. Employers *must ensure that each employee has access to **labels** on containers of beryllium and to **safety data sheets**, and is trained* in accordance with the requirements of the HCS (§ 1910.1200) and *paragraph (m)(4) of this standard*.

## **Recordkeeping**

**1910.1024(d)(6)(ii)**—Whenever an *exposure assessment* indicates that airborne exposure is above the TWA PEL or STEL, the *employer must describe in the **written notification** the corrective action* being taken to reduce airborne exposure to or below the exposure limit(s) exceeded where feasible corrective action exists but had not been implemented when the monitoring was conducted.

**1910.1024(f)(1)(i)**—The employer *must establish, implement, and maintain a **written exposure control plan***, which must contain. (*Reference paragraph (f)(1) for specific information*).

**1910.1024(f)(1)(iii)**—The employer *must make a **copy of the **written exposure control plan**** accessible to each employee who is, or can reasonably be expected to be, exposed to airborne beryllium in accordance with OSHA's *Access to Employee Exposure and Medical Records (Records Access) standard (§ 1910.1024(e))*.*

**1910.1024(g)(2)—Respiratory protection program.** Where this standard requires an employer to provide respiratory protection, the selection and use of such respiratory protection must be in accordance with the *Respiratory Protection standard* (§ 1910.134).

**1910.1024(h)(1)—Provision and use.** The employer must provide at no cost, and ensure that each employee uses, appropriate personal protective clothing and equipment in accordance with the **written exposure control plan** required under paragraph (f)(1) of this standard and OSHA's Personal Protective Equipment standards (subpart I of this part).

**1910.1024(h)(3)(iii)—**The employer must inform in **writing** the persons or the business entities who launder, clean or repair the personal protective clothing or equipment required by this standard of the potentially harmful effects of airborne exposure to and dermal contact with beryllium and that the personal protective clothing and equipment must be handled in accordance with this standard.

**1910.1024(k)(4)—Information provided to the PLHCP.** The employer must ensure that the examining PLHCP (and the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (k)(7) of this standard) has a **copy of this standard** and must provide the following information, if known: (Reference paragraph (k)(4) for specific information.)

**1910.1024(j)(1)(i)—**The employer must maintain all surfaces in beryllium work areas as free as practicable of beryllium and in accordance with the **written exposure control plan** required under paragraph (f)(1) and the cleaning methods required under paragraph (j)(2) of this standard.

**1910.1024(j)(1)(ii)—**The employer must ensure that all spills and emergency releases of beryllium are cleaned up promptly and in accordance with the **written exposure control plan** required under paragraph (f)(1) and the cleaning methods required under paragraph (j)(2) of this standard.

**1910.1024(k)(3)(i)—**The employer must ensure that the **PLHCP** conducting the examination advises the employee of the risks and benefits of participating in the **medical surveillance program** and the employee's right to opt out of any or all parts of the medical examination.

**1910.1024(k)(3)(ii)(E)—**A standardized BeLPT or equivalent test, upon the first examination and at least every two years thereafter, unless the employee is confirmed positive. If the results of the BeLPT are other than normal, a followup BeLPT must be offered within 30 days, unless the employee has been confirmed positive. Samples must be analyzed in a laboratory certified under the **College of American Pathologists/ Clinical Laboratory Improvement Amendments (CLIA) guidelines** to perform the BeLPT.

**1910.1024(k)(4)(iv)—**Information from records of employment-related medical examinations previously provided to the employee, currently within the control of the employer, after obtaining **written consent** from the employee.

**1910.1024(k)(7)(ii)—**The employer must ensure that the employee receives a **written medical report** from the CBD diagnostic center that contains all the information required in paragraph (k)(5)(i), (ii), (iv), and (v) of this standard and that the **PLHCP** explains the **results** of the examination to the employee within 30 days of the examination.

**1910.1024(k)(7)(iii)—**The employer must obtain a **written medical opinion** from the CBD diagnostic center within 30 days of the medical examination. The **written medical opinion** must contain only the information in paragraph (k)(6)(i), as applicable, unless the employee provides **written authorization** to release additional information. If the employee provides **written authorization**, the **written opinion** must also contain the information from paragraphs (k)(6)(ii), (iv), and (v), if applicable.

**1910.1024(l)(4)—**The employer's obligation to provide medical removal protection benefits to a removed employee shall be reduced to the extent that the employee receives compensation for earnings lost during the period of removal from a publicly or **employer-funded compensation program**, or receives income from another employer made possible by virtue of the employee's removal.

**1910.1024(m)(1)(iii)—**Employers must include beryllium in the **hazard communication program** established to comply with the HCS. Employers must ensure that each employee has access to **labels** on containers of beryllium and to **safety data sheets**, and is trained in accordance with the requirements of the HCS (§ 1910.1200) and paragraph (m)(4) of this standard.

**1910.1024(m)(4)(ii)(I)—**The employee's right of access to records under the **Records Access standard** (§ 1910.1024).

**1910.1024(m)(4)(iv)—**Employee information. The employer must make a **copy of this standard** and its appendices readily **available** at no cost to each employee and designated employee representative(s).

**1910.1024(n)(1)(i)**—The employer *must make and maintain a record* of all exposure measurements taken to assess airborne exposure as prescribed in *paragraph (d)* of this standard.

**1910.1024(n)(1)(ii)**—This *record must include* at least the following information. (*Reference paragraph (n)(1)(ii) for specific information*).

**1910.1024(n)(1)(iii)**—The employer *must ensure that exposure records are maintained* and made *available* in accordance with the *Records Access standard* (§ 1910.1024).

**1910.1024(n)(2)(i)**—Where an employer uses *objective data* to satisfy the exposure assessment requirements under *paragraph (d)(2)* of this standard, the employer *must make and maintain a record of the objective data* relied upon.

**1910.1024(n)(2)(ii)**—This *record must include* at least the following information. (*Reference paragraph (n)(2)(ii) for specific information*).

**1910.1024(n)(3)(i)**—The employer *must make and maintain a record* for each employee covered by medical surveillance under *paragraph (k)* of this standard.

**1910.1024(n)(3)(ii)**—The *record must include the following information* about each employee. (*Reference paragraph (n)(3)(ii) for specific information*).

**1910.1024(n)(4)(i)**—At the *completion of any training* required by this standard, the employer *must prepare a record* that indicates the name, social security number, and job classification of each employee trained, the date the training was completed, and the topic of the training.

**1910.1024(n)(4)(ii)**—This *record must be maintained* for three years after the completion of training.

**1910.1024(n)(5)**—*Access to records*. Upon request, the employer *must make all records maintained* as a requirement of this standard available for examination and copying to the Assistant Secretary, the Director, each employee, and each employee's designated representative(s) in accordance the *Records Access standard* (§ 1910.1024).

**1910.1024(n)(6)**—*Transfer of records*. The employer *must comply with the requirements involving transfer of records set forth in the Records Access standard* (§ 1910.1024).

## Certification

**1910.1024(k)(3)(ii)(E)**—A standardized BeLPT or equivalent test, upon the first examination and at least every two years thereafter, unless the employee is confirmed positive. If the results of the BeLPT are other than normal, a followup BeLPT must be offered within 30 days, unless the employee has been confirmed positive. Samples must be analyzed in a laboratory *certified under the College of American Pathologists/ Clinical Laboratory Improvement Amendments (CLIA) guidelines* to perform the BeLPT.

## Training and Communications

**1910.1024(e)(2)(i)**—The employer *must identify each beryllium work area through signs or any other methods* that adequately *establish and inform each employee of the boundaries* of each beryllium work area.

**1910.1024(h)(3)(iii)**—The employer *must inform in writing the persons or the business entities who launder, clean or repair the personal protective clothing or equipment* required by this standard of the potentially harmful effects of airborne exposure to and dermal contact with beryllium and that the personal protective clothing and equipment must be handled in accordance with this standard.

**1910.1024(k)(4)**—*Information provided to the PLHCP*. The employer must ensure that the examining PLHCP (and the agreedupon CBD diagnostic center, if an evaluation is required under *paragraph (k)(7)* of this standard) *has a copy of this standard* and must provide the following information, if known: (*Reference paragraph (k)(4) for specific information*).

**1910.1024(m)(1)(iii)**—Employers must include beryllium in the *hazard communication program* established to comply with the HCS. Employers must ensure that each employee *has access to labels on containers of beryllium and to safety data sheets*, and *is trained in accordance* with the requirements of the HCS (§ 1910.1200) and *paragraph (m)(4) of this standard*.

**1910.1024(m)(4)(i)(A)**—The employer *must provide information and training in accordance with the HCS* (§ 1910.1200(h));

**1910.1024(m)(4)(i)(B)**—The employer *must provide initial training* to each employee by the time of initial assignment; and

**1910.1024(m)(4)(i)(C)**—The employer *must repeat the training* required under this standard *annually* for each employee.



**1910.1024(m)(4)(iii)**—When a workplace change (such as modification of equipment, tasks, or procedures) results in new or increased airborne exposure that exceeds, or can reasonably be expected to exceed, either the TWA PEL or the STEL, the employer *must provide additional training to those employees affected by the change in airborne exposure*.

**1910.1024(n)(4)(i)**—At the completion of any training required by this standard, the *employer must prepare a record that indicates the name, social security number, and job classification of each employee trained, the date the training was completed, and the topic of the training*.

**1910.1024(n)(4)(ii)**—This *record must be maintained* for three years after the completion of training.

### **Exposure Monitoring**

**1910.1024(d)(3)(v)**—Where the *most recent exposure monitoring indicates* that airborne exposure is at or above the action level but at or below the TWA PEL, the *employer must repeat such monitoring within six months of the most recent monitoring*.

**1910.1024(d)(3)(vi)**—Where the *most recent exposure monitoring indicates* that airborne exposure is above the TWA PEL, the employer must *repeat such monitoring within three months of the most recent 8-hour TWA exposure monitoring*.

**1910.1024(d)(3)(vii)**—Where the *most recent (noninitial) exposure monitoring indicates* that airborne exposure is below the action level, the employer must repeat such monitoring within six months of the most recent monitoring *until two consecutive measurements, taken 7 or more days apart, are below the action level, at which time the employer may discontinue 8-hour TWA exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard*.

**1910.1024(d)(3)(viii)**—Where the *most recent exposure monitoring indicates* that airborne exposure is above the STEL, the employer must repeat such monitoring within three months of the most recent short-term exposure monitoring *until two consecutive measurements, taken 7 or more days apart, are below the STEL, at which time the employer may discontinue short-term exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (d)(4) of this standard*.

**1910.1024(d)(7)(i)**—The employer must provide an opportunity to *observe any exposure monitoring* required by this standard to each employee whose airborne exposure is measured or represented by the monitoring and each employee's representative(s).

### **Medical Surveillance**

**1910.1024(k)(1)(i)**—The employer must make *medical surveillance required by this paragraph* available at no cost to the employee, and at a reasonable time and place, to each employee:

**1910.1024(k)(1)(i)(D)**—Whose *most recent written medical opinion* required by paragraph (k)(6) or (k)(7) of this standard recommends periodic medical surveillance.

**1910.1024(k)(3)(i)**—The employer must ensure that the *PLHCP conducting the examination advises* the employee of the risks and benefits of participating in the *medical surveillance program* and the employee's right to opt out of any or all parts of the medical examination.

**1910.1024(k)(5)(iv)**—If the employee is confirmed positive or diagnosed with CBD the *written report must also contain a recommendation for continued periodic medical surveillance*.

**1910.1024(k)(6)(iv)**—If the employee is confirmed positive or diagnosed with CBD and the employee provides *written authorization, the written opinion must also contain a recommendation* for continued periodic medical surveillance.

**1910.1024(m)(4)(ii)(F)**—The *purpose and a description of the medical surveillance program* required by paragraph (k) of this standard including risks and benefits of each test to be offered.

**1910.1024(n)(3)(i)**—The employer *must make and maintain a record for each employee covered by medical surveillance under paragraph (k)* of this standard.

### **Qualified Person**

**1910.1024(k)(1)(ii)**—The employer must ensure that all medical examinations and procedures required by this standard are performed by, or under the *direction of, a licensed physician*.

**1910.1024(k)(5)**—*Licensed physician's written medical report for the employee*. The employer must ensure that the *employee receives a written medical report from the licensed physician* within 45 days of the examination (including

any follow-up BeLPT required under *paragraph (k)(3)(ii)(E)* of this standard) and that the **PLHCP** explains the results of the examination to the employee. The **written medical report** must contain:

**1910.1024(k)(5)(i)**—A **statement** indicating the **results** of the medical examination, including the **licensed physician's opinion** as to whether the employee has

**1910.1024(k)(5)(iii)**—If the employee is confirmed positive or diagnosed with CBD or if the **licensed physician** otherwise deems it appropriate, the **written report** must also contain a referral for an evaluation at a CBD diagnostic center.

**1910.1024(k)(6)(i)**—The employer *must obtain a written medical opinion from the licensed physician within 45 days of the medical examination* (including any follow-up BeLPT required under *paragraph (k)(3)(ii)(E)* of this standard). The **written medical opinion** must contain only the following: (*Reference paragraph (k)(6)(i) for specific information*).

**1910.1024(k)(6)(iii)**—If the employee is confirmed positive or diagnosed with CBD or if the **licensed physician** otherwise deems it appropriate, and the employee provides **written authorization**, the **written opinion** must also contain a referral for an evaluation at a CBD diagnostic center.

**1910.1024(k)(7)(i)(A)**—The employer's **receipt** of a **physician's written medical opinion** to the employer that recommends referral to a CBD diagnostic center; or

**1910.1024(k)(7)(i)(B)**—The employee *presenting to the employer a physician's written medical report* indicating that the employee has been confirmed positive or diagnosed with CBD, or recommending referral to a CBD diagnostic center.

**1910.1024(n)(3)(ii)(B)**—A **copy** of all **licensed physicians' written medical opinions** for each employee.

### Signs, Markings and Tags

**1910.1024(e)(2)(i)**—The employer *must identify each beryllium work area through signs or any other methods* that adequately establish and inform each employee of the boundaries of each beryllium work area.

**1910.1024(m)(2)(i)**—**Posting**. The employer **must provide and display warning signs** at each approach to a regulated area so that each employee is able to read and understand the signs and take necessary protective steps before entering the area.

**1910.1024(m)(2)(ii)(A)**—The employer *must ensure that the warning signs* required by *paragraph (m)(2)(i)* of this standard are legible and readily visible.

## 1910.1025—LEAD

**Scope/Application:** *This section applies to all occupational exposure to lead except in construction and agriculture.*

**Exception:** *This standard does not apply to lead exposures in construction or agricultural operations.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—compliance program, annual review, respirator program, medical surveillance program, training program, hazard communication program
- Recordkeeping—records, retention requirements, safety data sheets
- Training and Communications—instructions, inform, training initially and annually
- Exposure Monitoring—initial, quarterly and semi-annual monitoring
- Medical Surveillance—program, initial, annual and “other” examinations, biological monitoring, information provided to the physician, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—posting

### Programs, Policies and Procedures

**1910.1025(e)(3)(i)**—Each employer *shall establish and implement a written compliance program* to reduce exposures to or below the permissible exposure limit, and interim levels if applicable, solely by means of *engineering and work practice controls in accordance with the implementation schedule* in *paragraph (e)(1)* [Method of Compliance].

**1910.1025(e)(3)(iv)**—**Written programs** must be revised and updated at least annually to reflect the current status of the **program**.

**1910.1025(f)(2)(i)**—The employer *must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1025(j)(1)(i)**—The employer shall institute a **medical surveillance program** for all employees who are or may be exposed at or above the action level for more than 30 days per year.

**1910.1025(l)(1)(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**. [Reference paragraph (l)(1) for specific information.]*

**1910.1025(m)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for lead.*

**1910.1025(m)(1)(iii)**—Employers shall include lead in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to **labels** on containers of lead and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and paragraph (l) [Training Program] of this section.

### **Recordkeeping**

**1910.1025(d)(5)**—*Negative initial determination.* Where a determination, conducted under paragraphs (d)(2) [Initial Determination] and (3) [Basis of Initial Determination] of this section is made that no employee is exposed to airborne concentrations of lead at or above the action level, the employer *shall make a **written record** of such **determination**.* The **record** shall include at least the information specified in paragraph (d)(3) [Basis of Initial Determination] of this section and shall also include the date of determination, location within the worksite, and the name and social security number of each employee monitored.

**1910.1025(d)(8)(ii)**—Whenever the **results** indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer *shall include in the **written notice** a **statement** that the permissible exposure limit was exceeded and a **description of the corrective action** taken or to be taken* to reduce exposure to or below the permissible exposure limit.

**1910.1025(e)(3)(i)**—Each employer *shall establish and implement a **written compliance program** to reduce exposures to or below the permissible exposure limit, and interim levels if applicable, solely by means of **engineering and work practice controls** in accordance with the implementation schedule in paragraph (e)(1) [Method of Compliance].*

**1910.1025(e)(3)(iv)**—***Written programs** must be revised and updated at least annually to reflect the current status of the **program**.*

**1910.1025(j)(3)(iii)(B)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple **physician** review mechanism upon the employee doing the following *within fifteen (15) days after **receipt** of the foregoing **notification**, or **receipt** of the initial **physician's written opinion**, whichever is later.* [Reference paragraph (j)(3) for specific information.]*

**1910.1025(m)(1)(iii)**—Employers shall include lead in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to **labels** on containers of lead and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and paragraph (l) [Training Program] of this section.

**1910.1025(n)(1)(i)**—The employer *shall establish and **maintain** an accurate **record** of all monitoring required in paragraph (d) [Exposure Monitoring] of this section. [Reference paragraph (n) for specific **record** information.]*

**1910.1025(n)(1)(iii)**—The employer *shall **maintain** these **monitoring records** for at least 40 years or for the duration of employment plus 20 years, whichever is longer. [Reference paragraph (n) for specific **record** information.]*

**1910.1025(n)(2)(i)**—The employer *shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance as required by paragraph (j) [Medical Surveillance] of this section. [Reference paragraph (n) for **specific record** information.]*

**1910.1025(n)(2)(iii)**—The employer *shall **keep**, or assure that the examining **physician** keeps, the following **medical records**:*

**1910.1025(n)(2)(iii)(A)**—A *copy of the medical examination results* including *medical and work history* required under *paragraph (j) [Medical Surveillance]* of this section.

**1910.1025(n)(2)(iii)(B)**—A *description of the laboratory procedures and a copy of any standards or guidelines* used to interpret the *test results* or references to that information.

**1910.1025(n)(2)(iii)(C)**—A *copy of the results of biological monitoring*.

**1910.1025(n)(2)(iv)**—The employer shall *maintain* or assure that the *physician maintains* those *medical records* for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

**1910.1025(n)(3)(i)**—The employer shall establish and *maintain* an accurate *record* for each employee removed from current exposure to lead pursuant to *paragraph (k) [Medical Removal Protection]* of this section.

**1910.1025(n)(3)(iii)**—The employer shall *maintain* each *medical removal record* for at least the duration of an employee's employment.

**1910.1025(n)(4)(i)**—The employer shall make *available* upon request all *records* required to be *maintained* by *paragraph (n) [Recordkeeping]* of this section to the Assistant Secretary and the Director for examination and *copying*.

**1910.1025(n)(4)(ii)**—*Environmental monitoring, medical removal, and medical records* required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020 (a)-(e) and (2)-(i) [*Access to Employee Exposure and Medical Records*]. *Medical removal records* shall be provided in the same manner as environmental monitoring *records*.

**1910.1025(n)(5)(i)**—Whenever the employer ceases to do business, the successor employer shall receive and retain all *records* required to be *maintained* by *paragraph (n) [Recordkeeping]* of this section.

**1910.1025(o)(2)(ii)(C)**—*Record the results obtained or receive copies of the results* when returned by the laboratory.

## **Training and Communications**

**1910.1025(d)(8)(i)**—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to affected employees.

**1910.1025(j)(3)(iii)(B)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial *physician* conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple *physician* review mechanism upon the employee doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial *physician's written opinion*, whichever is later. [*Reference paragraph (j)(3) for specific information.*]

**1910.1025(j)(3)(iv)(A)**—The employer shall provide an initial *physician* conducting a medical examination or consultation under this section with *information*. [*Reference paragraph (j)(3) for specific information.*]

**1910.1025(j)(3)(v)(B)**—The employer shall instruct each examining and consulting *physician*.

**1910.1025(l)(1)(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—*Substance Data Sheet for Occupational Exposure to Lead* and B—*Employee Standard Summary* of this regulation.

**1910.1025(l)(1)(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*. [*Reference paragraph (l)(1) for specific information.*]

**1910.1025(l)(1)(iii)**—The employer shall provide initial training by 180 days from the effective date for those employees covered by *paragraph (l)(1)(ii) [Employee Information and Training]* on the standard's effective date and prior to the time of initial job assignment for those employees subsequently covered by this paragraph.

**1910.1025(l)(1)(iv)**—The *training program* shall be repeated at least annually for each employee.

**1910.1025(m)(1)(iii)**—Employers shall include lead in the *hazard communication program* established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to *labels* on containers of lead and to *safety data sheets*, and is trained in accordance with the requirements of HCS and *paragraph (l) [Training Program]* of this section.

## Exposure Monitoring

**1910.1025(d)(2)**—*Initial determination.* Each employer who has a workplace or work operation covered by this standard shall determine if any employee may be exposed to lead at or above the action level.

**1910.1025(d)(3)(i)**—The employer shall monitor employee exposures and shall base initial determinations on the employee exposure monitoring results and any relevant considerations. [Reference paragraph (d)(3) for specific information.]

**1910.1025(d)(5)**—Negative initial determination. Where a determination, conducted under paragraphs (d)(2) and (3) [Exposure Monitoring] of this section is made that no employee is exposed to airborne concentrations of lead at or above the action level, the employer shall make a **written record** of such determination. The **record** shall include at least the information specified in paragraph (d)(3) [Exposure Monitoring] of this section and shall also include the *date of determination, location within the worksite, and the name and social security number* of each employee monitored.

**1910.1025(d)(6)(ii)**—If the initial determination or subsequent monitoring reveals employee exposure to be at or above the action level but below the permissible exposure limit the employer shall repeat monitoring in accordance with this paragraph at least every 6 months. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the action level at which time the employer may discontinue monitoring for that employee except as otherwise provided in paragraph (d)(7) [Exposure Monitoring] of this section.

**1910.1025(d)(6)(iii)**—If the initial monitoring reveals that employee exposure is above the permissible exposure limit the employer shall repeat monitoring quarterly. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are below the PEL but at or above the action level at which time the employer shall repeat monitoring for that employee at the frequency specified in paragraph (d)(6)(ii) [Frequency], except as otherwise provided in paragraph (d)(7) [Exposure Monitoring] of this section.

**1910.1025(d)(7)**—Additional monitoring. Whenever there has been a production, process, control or personnel change which may result in new or additional exposure to lead, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to lead, additional monitoring in accordance with this paragraph shall be conducted.

**1910.1025(d)(8)(i)**—The employer must, within 15 working days after the receipt of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting** the **results** in an appropriate location that is accessible to affected employees.

**1910.1025(d)(8)(ii)**—Whenever the **results** indicate that the representative employee exposure, without regard to respirators, exceeds the permissible exposure limit, the employer shall include in the **written notice a statement** that the permissible exposure limit was exceeded and a **description** of the corrective action taken or to be taken to reduce exposure to or below the permissible exposure limit.

## Medical Surveillance

**1910.1025(j)(1)(i)**—The employer shall institute a **medical surveillance program** for all employees who are or may be exposed at or above the action level for more than 30 days per year.

**1910.1025(j)(2)(i)**—*Blood lead and ZPP level sampling and analysis.* The employer shall make available biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels to each employee covered under paragraph (j)(1)(i) [Medical Surveillance] of this section on the following schedule:

**1910.1025(j)(2)(i)(A)**—At least every 6 months to each employee covered under paragraph (j)(1)(i) of this section.

**1910.1025(j)(2)(i)(B)**—At least every two months for each employee whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/100 g of whole blood. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/100 g of whole blood.

**1910.1025(j)(2)(i)(C)**—At least monthly during the removal period of each employee removed from exposure to lead due to an elevated blood lead level.

**1910.1025(j)(2)(ii)**—*Follow-up blood sampling tests.* Whenever the **results** of a blood lead level test indicate that an employee's blood lead level is at or above the numerical criterion for medical removal under paragraph (k)(1)(i)(A) [Medical Removal Protection] of this section, the employer shall provide a second (follow-up) blood sampling test within two weeks after the employer receives the **results** of the first blood sampling test.

**1910.1025(j)(3)(i)**—*Frequency.* The employer shall make available medical examinations and consultations to each employee covered under paragraph (j)(1)(i) [Medical Surveillance] of this section on the following schedule:

**1910.1025(j)(3)(i)(A)**—*At least annually* for each employee for whom a blood sampling test conducted at any time during the preceding 12 months indicated a blood lead level at or above 40 µg/100 g.

**1910.1025(j)(3)(i)(B)**—*Prior to assignment* for each employee being assigned for the first time to an area in which airborne concentrations of lead are at or above the action level.

**1910.1025(j)(3)(i)(C)**—*As soon as possible, upon notification by an employee either that the employee has developed signs or symptoms commonly associated with lead intoxication, that the employee desires medical advice concerning the effects of current or past exposure to lead on the employee’s ability to procreate a healthy child, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use.*

**1910.1025(j)(3)(i)(D)**—*As medically appropriate* for each employee either removed from exposure to lead due to a risk of sustaining material impairment to health, or otherwise limited pursuant to a final medical determination.

**1910.1025(j)(3)(iii)(B)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple **physician** review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician’s written opinion, whichever is later.* [Reference paragraph (j)(3) for specific information.]

**1910.1025(j)(3)(iv)(A)**—The employer shall provide an initial **physician** conducting a medical examination or consultation under this section with **information.** [Reference paragraph (j)(3) for specific information.]

#### **Qualified Person**

**1910.1025(j)(3)(iii)(B)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple **physician** review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician’s written opinion, whichever is later.*

**1910.1025(j)(3)(iv)(A)**—The employer shall provide an initial **physician** conducting a medical examination or consultation under this section with **information.**

#### **Signs, Markings and Tags**

**1910.1025(d)(8)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to affected employees.

**1910.1025(g)(2)(vii)(A)**—The employer shall ensure that **labels** of bags or containers of contaminated protective clothing and equipment include specific information. [Reference paragraph (g)(2)(vii)(A) for specific information.]

**1910.1025(m)(1)(iii)**—Employers shall include lead in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of lead and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l) [Training Program] of this section.

**1910.1025(m)(2)(i)**—The employer shall **post warning signs** in each work area where the PEL is exceeded. [Reference Reference paragraph (m)(2)(i) for specific information.]

## 1910.1026—CHROMIUM (VI)

**Scope/Application:** This standard applies to occupational exposures to chromium (VI) in all forms and compounds in general industry.

**Exception:** This standard does not apply to exposures that occur in the application of pesticides regulated by the Environmental Protection Agency or another Federal government agency (e.g., the treatment of wood with preservatives); exposures to portland cement; or where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 µg/m<sup>3</sup> as an 8-hour time-weighted average (TWA) under any expected conditions of use.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, respirator program, medical surveillance program, hazard communication program
- Recordkeeping—records, retention requirements, safety data sheets
- Training and Communications—initial training, notifications
- Exposure Monitoring—determination, initial, six months, and periodic monitoring, posted results
- Medical Surveillance—program, annual, emergency and termination examinations, written opinion, information provided to the physician
- Qualified Person—physician
- Signs, Markings and Tags—marked regulated areas, labels

### Programs, Policies and Procedures

**1910.1026(f)(1)(i)**—Except as permitted in *paragraph (f)(1)(ii) and paragraph (f)(1)(iii) [Engineering and Work Practice Controls]* of this section, the employer shall use *engineering and work practice controls* to reduce and maintain employee exposure to chromium (VI) to or below the PEL unless the employer can demonstrate that such controls are not feasible. Wherever feasible *engineering and work practice controls* are not sufficient to reduce employee exposure to or below the PEL, the employer shall use them to reduce employee exposure to the lowest levels achievable, and shall supplement them by the use of *respiratory protection that complies with the requirements of paragraph (g) [Respiratory Protection]* of this section.

**1910.1026(g)(2)**—**Respiratory protection program.** Where respirator use is required by this section, the employer shall institute a **respiratory protection program** in accordance with 1910.134 [*Respiratory Protection*], which covers each employee required to use a respirator.

**1910.1026(l)(1)(i)**—Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the *Hazard Communication Standard (HCS) (Sec. 1910.1200)* for chromium (VI).

**1910.1026(l)(1)(iii)**—Employers shall include chromium (VI) in the **hazard communication program** established to comply with the *HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has access to **labels** on containers of chromium (VI) and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (l)(2) [Employee Information and Training]* of this section.

### Recordkeeping

**1910.1026(d)(4)(i)**—Within 15 work days after making an exposure determination in accordance with *paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option]* of this section, the employer shall individually notify each affected employee in **writing** of the **results** of that determination or **post the results** in an appropriate location accessible to all affected employees.

**1910.1026(d)(4)(ii)**—Whenever the exposure determination indicates that employee exposure is above the PEL, the employer shall describe in the **written notification** the **corrective action** being taken to reduce employee exposure to or below the PEL.

**1910.1026(k)(2)(iii)**—Within 30 days after a **PLHCP's written medical opinion** recommends an additional examination.

**1910.1026(k)(4)**—**Information provided to the PLHCP.** The employer shall ensure that the examining PLHCP has a **copy** of this standard, and shall provide additional **information**. [*Reference paragraph (k)(4) for specific information.*]

**1910.1026(k)(5)(i)**—The employer shall obtain a **written medical opinion** from the **PLHCP**, within 30 days for each medical examination performed on each employee, [*Reference paragraph (k)(5) for specific information.*]

**1910.1026(k)(5)(i)(C)**—A *statement* that the **PLHCP** has explained to the employee the **results** of the medical examination, including any medical conditions related to chromium (VI) exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment.

**1910.1026(l)(1)(iii)**—Employers shall include chromium (VI) in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of chromium (VI) and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

**1910.1026(m)(1)(i)**—The employer shall **maintain** an accurate **record** of all **air monitoring** conducted to comply with the requirements of this section.

**1910.1026(m)(1)(iii)**—The employer shall ensure that **exposure records** are **maintained** and made **available** in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1026(m)(2)(i)**—Where the employer has relied on **historical monitoring data** to determine exposure to chromium (VI), the employer shall establish and **maintain** an accurate **record** of the **historical monitoring data** relied upon.

**1910.1026(m)(2)(iii)**—The employer shall ensure that **historical exposure records** are **maintained** and made **available** in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1026(m)(3)(i)**—The employer shall **maintain** an accurate **record** of all **objective data** relied upon to comply with the requirements of this section.

**1910.1026(m)(4)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee covered by medical surveillance under paragraph (k) [Medical Surveillance] of this section.

**1910.1026(m)(4)(iii)**—The employer shall ensure that **medical records** are **maintained** and made **available** in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1026(d)(4)(i)**—Within 15 work days after making an exposure determination in accordance with paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section, the employer shall individually notify each affected employee in **writing** of the **results** of that determination or **post the results** in an appropriate location accessible to all affected employees.

**1910.1026(k)(4)**—**Information** provided to the PLHCP. The employer shall ensure that the examining **PLHCP** has a **copy** of this **standard**, and shall provide additional **information**. [Reference paragraph (k)(4) for specific information.]

**1910.1026(l)(1)(iii)**—Employers shall include chromium (VI) in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of chromium (VI) and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

**1910.1026(l)(2)(i)**—The employer shall ensure that each employee can demonstrate knowledge.

### **Exposure Monitoring**

**1910.1026(d)(1)**—General. Each employer who has a workplace or work operation covered by this section shall determine the 8-hour TWA exposure for each employee exposed to chromium (VI). This determination shall be made in accordance with either paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section.

**1910.1026(d)(2)(i)**—The employer shall perform **initial monitoring** to determine the 8-hour TWA exposure for each employee on the basis of a sufficient number of personal breathing zone air samples to accurately characterize full shift exposure on each shift, for each job classification, in each work area. Where an employer does representative sampling instead of sampling all employees in order to meet this requirement, the employer shall sample the employee(s) expected to have the highest chromium (VI) exposures.

**1910.1026(d)(2)(iii)**—If monitoring reveals employee exposures to be at or above the action level, the employer shall perform **periodic monitoring** at least every six months.

**1910.1026(d)(2)(iv)**—If monitoring reveals employee exposures to be above the PEL, the employer shall perform **periodic monitoring** at least every three months.



**1910.1026(d)(2)(v)**—If periodic monitoring indicates that employee exposures are below the action level, and the result is *confirmed by the result of another monitoring taken at least seven days later*, the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

**1910.1026(d)(2)(vi)**—The employer *shall perform additional monitoring when there has been any change in the production process, raw materials, equipment, personnel, work practices, or control methods that may result in new or additional exposures to chromium (VI)*, or when the employer has any reason to believe that new or additional exposures have occurred.

**1910.1026(d)(4)(i)**—*Within 15 work days after making an exposure determination in accordance with paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section, the employer shall individually notify each affected employee in writing of the results of that determination or post the results in an appropriate location accessible to all affected employees.*

**1910.1026(d)(4)(ii)**—Whenever the exposure determination indicates that employee exposure is above the PEL, the employer *shall describe in the written notification the corrective action* being taken to reduce employee exposure to or below the PEL.

### Medical Surveillance

**1910.1026(k)(1)(i)**—The employer *shall make medical surveillance available* at no cost to the employee, and at a reasonable time and place, for all employees. *[Reference paragraph (k) for specific information.]*

**1910.1026(k)(2)**—*Frequency.* The employer shall provide a medical examination:

**1910.1026(k)(2)(i)**—*Within 30 days after initial assignment*, unless the employee has received a chromium (VI) related medical examination that meets the requirements of this paragraph within the last twelve months.

**1910.1026(k)(2)(ii)**—*Annually.*

**1910.1026(k)(2)(iii)**—*Within 30 days after a PLHCP's written medical opinion recommends an additional examination.*

**1910.1026(k)(2)(iv)**—*Whenever an employee shows signs or symptoms of the adverse health effects associated with chromium (VI) exposure.*

**1910.1026(k)(2)(v)**—*Within 30 days after exposure during an emergency which results in an uncontrolled release of chromium (VI).*

**1910.1026(k)(2)(vi)**—*At the termination of employment*, unless the last examination that satisfied the requirements of paragraph (k) *[Medical Surveillance]* of this section was less than six months prior to the date of termination.

**1910.1026(k)(4)**—**Information provided to the PLHCP.** The employer *shall ensure that the examining PLHCP has a copy of this standard, and shall provide additional information.* *[Reference paragraph (k)(4) for specific information.]*

**1910.1026(k)(5)(i)**—The employer *shall obtain a written medical opinion from the PLHCP, within 30 days* for each medical examination performed on each employee, *[Reference paragraph (k)(5) for specific information.]*

**1910.1026(k)(5)(i)(C)**—A **statement** that the **PLHCP** has explained to the employee the **results** of the medical examination, including any medical conditions related to chromium (VI) exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment.

### Qualified Person

**1910.1026(k)(2)(iii)**—*Within 30 days after a PLHCP's written medical opinion recommends an additional examination.*

**1910.1026(k)(4)**—**Information provided to the PLHCP.** The employer *shall ensure that the examining PLHCP has a copy of this standard, and shall provide additional information.* *[Reference paragraph (k)(4) for specific information.]*

**1910.1026(k)(5)(i)**—The employer *shall obtain a written medical opinion from the PLHCP, within 30 days* for each medical examination performed on each employee, *[Reference paragraph (k)(5) for specific information.]*

**1910.1026(k)(5)(i)(C)**—A **statement** that the **PLHCP** has explained to the employee the **results** of the medical examination, including any medical conditions related to chromium (VI) exposure that require further evaluation or treatment, and any special provisions for use of protective clothing or equipment.

## Signs, Markings and Tags

**1910.1026(d)(4)(i)**—Within 15 work days after making an exposure determination in accordance with paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section, the employer shall individually notify each affected employee in **writing** of the **results** of that determination or **post the results** in an appropriate location accessible to all affected employees.

**1910.1026(e)(1)**—Establishment. The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of chromium (VI) is, or can reasonably be expected to be, in excess of the PEL.

**1910.1026(e)(2)**—Demarcation. The employer shall ensure that regulated areas are demarcated from the rest of the workplace in a manner that adequately establishes and alerts employees of the boundaries of the regulated area.

**1910.1026(h)(2)(iv)**—The employer shall ensure that bags or containers of contaminated protective clothing or equipment that are removed from change rooms for laundering, cleaning, maintenance, or disposal are **labeled** in accordance with the requirements of the Hazard Communication Standard, Sec. 1910.1200.

**1910.1026(j)(3)(ii)**—Bags or containers of waste, scrap, debris, and any other materials contaminated with chromium (VI) that are consigned for disposal are **labeled** in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200.

**1910.1026(l)(1)(iii)**—Employers shall include chromium (VI) in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of chromium (VI) and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

## 1910.1027—CADMIUM

**Scope/Application:** This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, and in all industries covered by the Occupational Safety and Health Act, except the construction-related industries, which are covered under 29 CFR 1926.63 [Process Safety Management of Highly Hazardous Chemicals].

**Exception:** This standard does not apply to exposures in the construction industry which is covered by 29 CFR 1926.63 [Process Safety Management of Highly Hazardous Chemicals].

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls established, compliance program, respirator program, emergency action plan, medical surveillance program, hazard communication program
- Recordkeeping—records, retention requirements, safety data sheets
- Training and Communications—initial and annual training
- Exposure Monitoring—determination, initial and semi-annual monitoring, posted results
- Medical Surveillance—program, initial, annual, termination and “other” examinations, information provided to physician, hazard communication program
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas established, posted signs

### Programs, Policies and Procedures

**1910.1027(f)(1)(i)**—Except as specified in paragraphs (f)(1)(ii), (iii) and (iv) [Methods of Compliance] of this section the employer shall implement engineering and work practice controls to reduce and maintain employee exposure to cadmium at or below the PEL, except to the extent that the employer can demonstrate that such controls are not feasible.

**1910.1027(f)(1)(ii)**—Except as specified in paragraphs (f)(1)(iii) and (iv) [Methods of Compliance] of this section, in industries where a separate engineering control air limit (SECAL) has been specified for particular processes (See Table 1), the employer shall implement engineering and work practice controls to reduce and maintain employee exposure at or below the SECAL, except to the extent that the employer can demonstrate that such controls are not feasible.

**1910.1027(f)(2)(i)**—Where the PEL is exceeded, the employer shall establish and implement a **written compliance program** to reduce employee exposure to or below the PEL by means of engineering and work practice controls, as required by paragraph (f)(1) [Methods of Compliance] of this section. To the extent that engineering and work practice controls cannot reduce exposures to or below the PEL, the employer shall include in the **written compliance program** the use of appropriate respiratory protection to achieve compliance with the PEL.

**1910.1027(g)(2)(i)**—The employer *must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1027(h)**—Emergency situations. The employer *shall develop and implement a **written plan** for dealing with **emergency situations** involving substantial releases of airborne cadmium. The **plan** shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.*

**1910.1027(l)(1)(i)(A)**—Currently exposed—The employer *shall institute a **medical surveillance program** for all employees who are or may be exposed to cadmium at or above the action level unless the employer demonstrates that the employee is not, and will not be, exposed at or above the action level on 30 or more days per year (twelve consecutive months).*

**1910.1027(m)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for cadmium.*

**1910.1027(m)(1)(iii)**—Employers *shall include cadmium in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of cadmium and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (m)(4) [Employee Information and Training] of this section.*

### **Recordkeeping**

**1910.1027(d)(5)(i)**—The employer *must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.*

**1910.1027(d)(5)(ii)**—Wherever monitoring **results** indicate that employee exposure exceeds the PEL, the employer *shall include in the **written notice a statement** that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.*

**1910.1027(f)(2)(i)**—Where the PEL is exceeded, the employer *shall establish and implement a **written compliance program** to reduce employee exposure to or below the PEL by means of **engineering and work practice controls**, as required by **paragraph (f)(1) [Methods of Compliance]** of this section. To the extent that **engineering and work practice controls** cannot reduce exposures to or below the PEL, the **employer shall include in the **written compliance program** the use of appropriate respiratory protection to achieve compliance with the PEL.***

**1910.1027(h)**—Emergency situations. The employer *shall develop and implement a **written plan** for dealing with **emergency situations** involving substantial releases of airborne cadmium. The **plan** shall include provisions for the use of appropriate respirators and personal protective equipment. In addition, employees not essential to correcting the emergency situation shall be restricted from the area and normal operations halted in that area until the emergency is abated.*

**1910.1027(l)(10)(i)**—The employer *shall promptly obtain a **written medical opinion** from the examining **physician** for each medical examination performed on each employee. [Reference paragraph (l)(10) for specific information.]*

**1910.1027(m)(1)(iii)**—Employers *shall include cadmium in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of cadmium and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (m)(4) [Employee Information and Training] of this section.*

**1910.1027(n)(1)(i)**—The employer *shall establish and keep an accurate **record** of all air monitoring for cadmium in the workplace.*

**1910.1027(n)(1)(iii)**—The employer *shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

**1910.1027(n)(2)(ii)**—The employer *shall establish and **maintain a record** of the **objective data** for at least 30 years.*

**1910.1027(n)(3)(i)**—The employer *shall establish and **maintain an accurate record** for each employee covered by **medical surveillance** under paragraph (l)(1)(i) [Medical Surveillance] of this section.*

**1910.1027(n)(4)(ii)**—*Within 15 days after a request, the employer shall make an employee's **medical records** required to be kept by paragraph (n)(3) [Medical Surveillance] of this section **available** for examination and **copying** to the*

subject employee, to designated representatives, to anyone having the *specific written consent of the subject employee*, and after the employee's death or incapacitation, to the employee's family members.

**1910.1027(n)(5)**—*Transfer of records.* Whenever an employer ceases to do business and there is no successor employer to receive and **retain records** for the prescribed period or the employer intends to dispose of any **records** required to be preserved for at least 30 years, the employer shall comply with the requirements concerning transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1027(d)(5)(i)**—The employer *must*, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1027(d)(5)(ii)**—Wherever monitoring **results** indicate that employee exposure exceeds the PEL, the employer *shall include in the written notice a statement* that the PEL has been exceeded and a description of the *corrective action being taken* by the employer to reduce employee exposure to or below the PEL.

**1910.1027(l)(9)**—**Information provided to the physician:** The employer *shall provide information to the examining physician.* [Reference paragraph (l) for specific information.]

**1910.1027(l)(15)(i)**—The employer *shall provide a copy of the physician's written medical opinion* to the examined employee *within two weeks after receipt* thereof.

**1910.1027(l)(15)(ii)**—The employer *shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results* within two weeks after receipt thereof.

**1910.1027(m)(1)(iii)**—Employers *shall include cadmium in the hazard communication program established to comply with the HCS (Sec. 1910.1200).* Employers shall ensure that each employee has *access to labels on containers of cadmium and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (m)(4) [Employee Information and Training]* of this section.

**1910.1027(m)(4)(i)**—The employer *shall train each employee* who is potentially exposed to cadmium in accordance with the requirements of this section. The employer *shall institute a training program, ensure employee participation in the program, and maintain a record* of the contents of such **program**.

**1910.1027(m)(4)(ii)**—*Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter.* [Reference paragraph (m)(4) for specific training information.]

### **Medical Surveillance**

**1910.1027(l)(1)(i)(A)**—**Currently exposed**—The employer *shall institute a medical surveillance program* for all employees who are or may be exposed to cadmium at or above the action level unless the employer demonstrates that the employee is not, and will not be, exposed at or above the action level on 30 or more days per year (twelve consecutive months)

**1910.1027(l)(2)(i)**—The employer *shall provide an initial (preplacement) examination* to all employees covered by the **medical surveillance program** required in *paragraph (l)(1)(i) [Medical Surveillance]* of this section. The examination shall be provided to those employees *within 30 days after initial assignment to a job with exposure to cadmium or no later than 90 days after the effective date of this section, whichever date is later.*

**1910.1027(l)(4)(i)**—**Periodic medical surveillance.** For each employee who is covered under *paragraph (l)(1)(i)(A) [Medical Surveillance]*, the employer *shall provide at least the minimum level of periodic medical surveillance, which consists of periodic medical examinations and periodic biological monitoring. A periodic medical examination shall be provided within one year after the initial examination required by paragraph (l)(2) [Initial Examination] and thereafter at least biennially. Biological sampling shall be provided at least annually, either as part of a periodic medical examination or separately as periodic biological monitoring.*

**1910.1027(l)(4)(iii)**—*Periodic biological monitoring shall be provided in accordance with paragraph (l)(2)(ii)(B) [Medical Surveillance].*

**1910.1027(l)(5)(i)**—If the **results** of a medical examination carried out in accordance with this section indicate any laboratory or clinical finding consistent with cadmium toxicity that does not require employer action under *paragraphs*

(l)(2), (3) or (4) [Medical Surveillance] of this section, the employer, *within 30 days, shall reassess the employee's occupational exposure to cadmium and take corrective action until the **physician** determines they are no longer necessary.*

**1910.1027(l)(6)(i)**—To determine an employee's fitness for respirator use, the employer shall provide a medical examination that includes the elements specified in *paragraph (l)(6)(A)-(D) [Examination for Respirator Use]*. This examination *shall be provided prior to the employee's being assigned to a job that requires the use of a respirator or no later than 90 days after this section goes into effect, whichever date is later, to any employee without a medical examination within the preceding 12 months that satisfies the requirements of this paragraph.*

**1910.1027(l)(7)(i)**—In addition to the medical surveillance required in *paragraphs (l)(2)-(6) [Medical Surveillance]* of this section, the employer *shall provide a medical examination as soon as possible to any employee who may have been acutely exposed to cadmium because of an emergency.*

**1910.1027(l)(8)(i)**—*At termination of employment, the employer shall provide a medical examination in accordance with paragraph (l)(4)(ii) [Periodic Medical Surveillance] of this section, including a chest X-ray, to any employee to whom at any prior time the employer was required to provide medical surveillance under paragraphs (l)(1)(i) or (l)(7) [Medical Surveillance] of this section. However, if the last examination satisfied the requirements of paragraph (l)(4)(ii) [Periodic Medical Surveillance] of this standard and was less than six months prior to the date of termination, no further examination is required unless otherwise specified in paragraphs (l)(3) [Biological Monitoring] or (l)(5) [Actions Triggered by Medical Examinations].*

**1910.1027(l)(9)**—**Information provided to the physician:** *The employer shall provide information to the examining physician. [Note to paragraph (l): Reference paragraph (l) for specific information.]*

**1910.1027(l)(10)(i)**—The employer *shall promptly obtain a written, medical opinion from the examining physician for each medical examination performed on each employee. [Note to paragraph (l): Reference paragraph (l) for specific information.]*

**1910.1027(l)(10)(i)(E)**—*A statement that the physician has clearly and carefully explained to the employee the results of the medical examination, including all biological monitoring results and any medical conditions related to cadmium exposure that require further evaluation or treatment, and any limitation on the employee's diet or use of medications.*

**1910.1027(l)(11)(v)**—However, when in the examining **physician's opinion** continued exposure to cadmium will not pose an increased risk to the employee's health and there are special circumstances that make continued medical removal an inappropriate remedy, the **physician** shall fully discuss these matters with the employee, and then in a **written determination** may return a worker to his/her former job status despite what would otherwise be unacceptably high biological **monitoring results**. Thereafter, the returned employee *shall continue to be provided with medical surveillance as if he/she were still on medical removal until the employee's levels of CdU fall to or below 3 µg/g Cr, CdB falls to or below 5 µg/lwb, and B(2)-M falls to or below 300 µg/g Cr.*

**1910.1027(l)(11)(i)(D)**—For any employee who is medically removed under the provisions of *paragraph (l)(11)(i) [Medical Removal Protection]* of this section, the employer shall provide follow-up *biological monitoring in accordance with (l)(2)(ii)(B) [Biological Monitoring] at least every three months and follow-up medical examinations semi-annually at least every six months until in a written medical opinion the examining physician determines that either the employee may be returned to his/her former job status as specified under paragraph (l)(11)(iv)-(v) [Medical Removal Protection] or the employee must be permanently removed from excess cadmium exposure.*

**1910.1027(l)(12)(iii)(A)**—The employer shall make available to the employee a medical examination pursuant to this section in order to *obtain a final medical determination as to whether the employee may be returned to his/her former job status or must be permanently removed from excess cadmium exposure.*

**1910.1027(l)(15)(i)**—The employer *shall provide a copy of the physician's written medical opinion to the examined employee within two weeks after receipt thereof.*

**1910.1027(l)(15)(ii)**—The employer *shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results within two weeks after receipt thereof.*

**1910.1027(l)(15)(iii)**—*Within 30 days after a request by an employee, the employer shall provide the employee with the information the employer is required to provide the examining physician under paragraph (l)(9) [Information Provided to a Physician] of this section.*

## Exposure Monitoring

**1910.1027(d)(1)(i)**—Each employer who has a workplace or work operation covered by this section *shall determine if any employee may be exposed to cadmium* at or above the action level.

**1910.1027(d)(2)(i)**—*Initial monitoring.* Except as provided for in paragraphs (d)(2)(ii) and (d)(2)(iii) [Exposure Monitoring] of this section, the employer *shall monitor employee exposures and shall base initial determinations on the monitoring results.*

**1910.1027(d)(3)(i)**—If the initial monitoring or periodic monitoring reveals employee exposures to be at or above the action level, the employer *shall monitor at a frequency and pattern needed to represent the levels of exposure of employees and where exposures are above the PEL to assure the adequacy of respiratory selection and the effectiveness of engineering and work practice controls.* However, such *exposure monitoring shall be performed at least every six months.* The employer, at a minimum, *shall continue these semi-annual measurements unless and until the conditions set out in paragraph (d)(3)(ii) [Exposure Monitoring] are met.*

**1910.1027(d)(3)(ii)**—If the initial monitoring or the periodic monitoring indicates that employee exposures are below the action level *and that result is confirmed by the results of another monitoring taken at least seven days later,* the employer may discontinue the monitoring for those employees whose exposures are represented by such monitoring.

**1910.1027(d)(4)**—*Additional Monitoring.* The employer also *shall institute the exposure monitoring required under paragraphs (d)(2)(i) and (d)(3) [Exposure Monitoring] of this section whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer has any reason to suspect that any other change might result in such further exposure.*

**1910.1027(d)(5)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1027(d)(5)(ii)**—Wherever monitoring *results* indicate that employee exposure exceeds the PEL, the employer *shall include in the written notice a statement* that the PEL has been exceeded and a description of the corrective action being taken by the employer to reduce employee exposure to or below the PEL.

**1910.1027(l)(15)(ii)**—The employer *shall provide the employee with a copy of the employee's biological monitoring results and an explanation sheet explaining the results* within two weeks after receipt thereof.

## Qualified Person

**1910.1027(l)(9)**—*Information provided to the physician:* The employer *shall provide information to the examining physician.*

**1910.1027(l)(10)(i)**—The employer *shall promptly obtain a written, medical opinion* from the *examining physician* for each medical examination performed on each employee.

**1910.1027(l)(10)(i)(E)**—A *statement that the physician has clearly and carefully explained* to the employee the *results* of the medical examination, including all *biological monitoring results* and any medical conditions related to cadmium exposure that require further *evaluation* or treatment, and any limitation on the employee's diet or use of medications.

**1910.1027(l)(11)(v)**—However, when in the *examining physician's opinion* continued exposure to cadmium will not pose an increased risk to the employee's health and there are special circumstances that make continued medical removal an inappropriate remedy, the *physician* shall fully discuss these matters with the employee, and then in a *written determination* may return a worker to his/her former job status despite what would otherwise be unacceptably high *biological monitoring results.* Thereafter, the returned employee *shall continue to be provided with medical surveillance* as if he/she were still on medical removal until the employee's levels of CdU fall to or below 3 µg/g Cr, CdB falls to or below 5 µg/lwb, and B(2)-M falls to or below 300 µg/g Cr.

## Signs, Markings and Tags

**1910.1027(d)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1027(e)(1)**—Establishment. The employer *shall establish a regulated area* wherever an employee's exposure to airborne concentrations of cadmium is, or can reasonably be expected to be in excess of the permissible exposure limit (PEL).

**1910.1027(e)(2)**—*Demarcation*. Regulated areas *shall be demarcated* from the rest of the workplace in any manner that adequately establishes and alerts employees of the boundaries of the regulated area.

**1910.1027(k)(7)**—Waste, scrap, debris, bags, containers, personal protective equipment, and clothing contaminated with cadmium and consigned for disposal shall be collected and disposed of in sealed impermeable bags or other closed, impermeable containers. These *bags and containers shall be labeled in accordance with paragraph (m) [Communication of Cadmium Hazards]* of this section.

**1910.1027(m)(1)(iii)**—Employers *shall include cadmium in the hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has *access to labels on containers of cadmium and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (m)(4) [Employee Information and Training]* of this section.

**1910.1027(m)(2)(i)**—*Warning signs shall be provided and displayed* in regulated areas. In addition, *warning signs* shall be *posted* at all approaches to regulated areas so that an employee may read the *signs* and take necessary protective steps before entering the area.

**1910.1027(m)(3)(i)**—Shipping and storage containers containing cadmium, cadmium compounds, or cadmium contaminated clothing, equipment, waste, scrap, or debris *shall bear appropriate warning labels, as specified in paragraph (m)(1) [Hazard Communication]* of this section.

## 1910.1028—BENZENE

**Scope/Application:** *This section applies to all occupational exposures to benzene.*

**Exception:** *This standard does not apply to the storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities; Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid; containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene; oil and gas drilling, production and servicing operations; coke oven batteries; the cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) [Methods of Compliance], paragraph (e)(1) [Exposure Monitoring—General], and paragraph (e)(6) [Accuracy of Monitoring].*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—compliance program, respirator program, medical surveillance program, training program, hazard communication program
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—program initial and annual training
- Exposure Monitoring—determination, periodic monitoring, posted results
- Medical Surveillance—program, initial, annual and “other” examinations, written opinion
- Qualified Person—physician
- Signs, Markings and Tags—regulated area established, post signs

### Programs, Policies and Procedures

**1910.1028(f)(2)(i)**—When any exposures are over the PEL, the employer *shall establish and implement a written program* to reduce employee exposure to or below the PEL primarily by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section.

**1910.1028(f)(2)(ii)**—The **written program** shall include a schedule for development and implementation of the engineering and work practice controls. These **plans** shall be reviewed and revised as appropriate based on the most recent **exposure monitoring data**, to reflect the current status of the **program**.

**1910.1028(g)(2)(i)**—The employer *must implement a **respiratory protection program*** in accordance with *Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1) and (2)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1028(i)(1)(i)**—The employer *shall make available a **medical surveillance program*** for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

**1910.1028(i)(3)(iii)**—For persons required to use respirators for at least 30 days a year, a pulmonary function test *shall be performed every three (3) years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.*

**1910.1028(j)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for benzene.

**1910.1028(j)(1)(iii)**—Employers *shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (j)(3) [Information and Training]* of this section.

**1910.1028(j)(3)(ii)**—The **training program** shall be in accordance with the *requirements of 29 CFR 1910.1200(h)(1) and (2) [Hazard Communication]* and shall include specific information on benzene for each category of information included in that section.

## **Recordkeeping**

**1910.1028(f)(2)(i)**—When any exposures are over the PEL, the employer *shall establish and implement a **written program*** to reduce employee exposure to or below the PEL primarily by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section.

**1910.1028(f)(2)(ii)**—The **written program** shall include a schedule for development and implementation of the engineering and work practice controls. These **plans** shall be reviewed and revised as appropriate based on the most recent exposure monitoring data, to reflect the current status of the **program**.

**1910.1028(i)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. *[Reference paragraph (i)(6) for specific information.]*

**1910.1028(i)(7)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining **physician's written opinion** within 15 days of the examination.*

**1910.1028(j)(1)(iii)**—Employers *shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (j)(3) [Information and Training]* of this section.

**1910.1028(k)(1)(i)**—The employer *shall establish and **maintain** an accurate **record** of all measurements* required by *paragraph (e) [Monitoring]* of this section, in accordance with *29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.

**1910.1028(k)(2)(i)**—The employer *shall establish and **maintain** an accurate **record*** for each employee subject to *medical surveillance* required by *paragraph (i) [Medical Surveillance]* of this section, in accordance with *29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.

**1910.1028(k)(2)(iii)**—The employer *shall **maintain** this **record** for at least the duration of employment plus 30 years*, in accordance with *29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.



**1910.1028(k)(4)**—*Transfer of records.* The employer shall comply with the requirements involving transfer of **records** as set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1028(i)(1)(iii)**—The employer shall assure that persons other than **licensed physicians** who administer the pulmonary function testing required by this section shall complete a **training course in spirometry** sponsored by an appropriate **governmental, academic or professional institution**.

**1910.1028(i)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [Reference paragraph (i)(6) for specific information.]

**1910.1028(i)(7)(i)**—For each examination under this section, the employer shall obtain and provide the employee with a copy of the examining **physician's written opinion** within 15 days of the examination.

**1910.1028(i)(8)(ii)**—Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the **physician** in consultation with the hematologist/internist. This **decision** shall be communicated in **writing** to the employer and employee. In the case of removal, the **physician** shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

**1910.1028(i)(8)(iv)**—Whenever an employee is temporarily removed from benzene exposure pursuant to paragraph (i)(8)(i) or (i)(8)(ii) [Medical Removal Plan] of this section, the employer shall transfer the employee to a comparable job for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible, but in no event higher than the action level. The employer shall maintain the employee's current wage rate, seniority and other benefits. If there is no such job available, the employer shall provide medical removal protection benefits until such a job becomes available or for 6 months, whichever comes first.

**1910.1028(i)(8)(v)**—Whenever an employee is removed permanently from benzene exposure based on a physician's recommendation pursuant to paragraph (i)(8)(iii) [Medical Removal Plan] of this section, the employee shall be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (or can be trained for in a short period) and where benzene exposures are as low as possible but in no event higher than the action level. The employer shall assure that such employee suffers no reduction in current wage rate, seniority or other benefits as a result of the transfer.

**1910.1028(j)(1)(iii)**—Employers shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

**1910.1028(j)(3)(i)**—The employer shall provide employees with information and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with information and training at least annually thereafter. [Reference paragraph (j)(3) for specific information.]

### **Exposure Monitoring**

**1910.1028(e)(1)(i)**—Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene.

**1910.1028(e)(2)(ii)**—The initial monitoring required under paragraph (e)(2)(i) [Initial Monitoring] of this section shall be completed by 60 days after the effective date of this standard or within 30 days of the introduction of benzene into the workplace. Where the employer has monitored within one year prior to the effective date of this standard and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring **results** to satisfy the requirements of paragraph (e)(2)(i) [Initial Monitoring] of this section.

**1910.1028(e)(3)(i)**—If the monitoring required by paragraph (e)(2)(i) [Initial Monitoring] of this section reveals employee exposure at or above the action level but at or below the TWA, the employer shall repeat such monitoring for each such employee at least every year.

**1910.1028(e)(3)(ii)**—If the monitoring required by *paragraph (e)(2)(i) [Initial Monitoring]* of this section reveals employee exposure above the TWA, the employer *shall repeat such monitoring for each such employee at least every six (6) months*.

**1910.1028(e)(3)(iv)**—*Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.*

**1910.1028(e)(5)(i)**—The employer *shall institute the exposure monitoring required under paragraphs (e)(2) [Initial Monitoring] and (e)(3) [Periodic Monitoring and Monitoring Frequency] of this section when there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene, or when the employer has any reason to suspect a change which may result in new or additional exposures.*

**1910.1028(e)(5)(ii)**—*Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, the employer shall monitor (using area or personal sampling) after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.*

**1910.1028(e)(7)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.*

### **Medical Surveillance**

**1910.1028(i)(1)(i)**—The employer *shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.*

**1910.1028(i)(3)(i)**—The employer shall provide each employee covered under *paragraph (i)(1)(i) [Medical Surveillance]* of this section with a *medical examination annually* following the previous examination.

**1910.1028(i)(3)(iii)**—For persons required to use respirators for at least 30 days a year, *a pulmonary function test shall be performed every three (3) years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.*

**1910.1028(i)(4)(i)**—In addition to the surveillance required by *paragraph (i)(1)(i) [Medical Surveillance]*, if an employee is exposed to benzene in an emergency situation, the employer *shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours.* The urine specific gravity shall be corrected to 1.024.

**1910.1028(i)(5)(i)**—Where the *results* of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count *shall be repeated within 2 weeks.*

**1910.1028(i)(6)**—***Information provided to the physician.*** *The employer shall provide information to the examining physician. [Reference paragraph (i)(6) for specific information.]*

**1910.1028(i)(7)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days of the examination.*

**1910.1028(i)(8)(ii)**—*Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This decision shall be communicated in writing to the employer and employee. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.*

### **Qualified Person**

**1910.1028(i)(6)**—***Information provided to the physician.*** *The employer shall provide information to the examining physician.*

**1910.1028(i)(7)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician’s written opinion within 15 days* of the examination.

**1910.1028(i)(8)(ii)**—*Following the examination and evaluation by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This decision shall be communicated in writing to the employer and employee. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.*

### Signs, Markings and Tags

**1910.1028(d)(1)**—The employer *shall establish a regulated area* wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

**1910.1028(j)(2)(i)**—The employer *shall post signs* at entrances to regulated areas.

**1910.1028(j)(2)(iii)**—The employer *shall ensure that labels or other appropriate forms of warning are provided for containers of benzene within the workplace. There is no requirement to label pipes. The labels shall comply with the requirements of paragraph (j)(1) [Hazard Communication] of this section and Sec. 1910.1200(f) [Labels and Other Forms of Warning].*

## 1910.1029—COKE OVEN EMISSIONS

**Scope/Application:** *This section applies to the control of employee exposure to coke oven emissions, except that this section shall not apply to working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.*

**Exception:** *This standard does not apply to the working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—written work practice controls, inspection program, respirator program, medical surveillance program, hazard communication program
- Inspections and Tests—inspection program, system, corrective action, signs cleaned
- Recordkeeping—retention requirements, safety data sheets
- Training and Communications—inform launderers, instruct physician, initial and annual training
- Exposure Monitoring—monitoring every 3 months, after new process or change, posted results
- Medical Surveillance—program, initial, annual, and “other” examinations
- Qualified Person—physician
- Signs, Markings and Tags—labels, posted, regulated areas

### Programs, Policies and Procedures

**1910.1029(f)(1)(i)(a)**—The employer *shall institute the engineering and work practice controls listed in paragraphs (f)(2), (f)(3) and (f)(4) [Priority of Compliance Methods] of this section in existing coke oven batteries at the earliest possible time, but not later than January 20, 1980, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1029(f)(1)(ii)(a)**—The employer *shall institute the best available engineering and work practice controls on all new or rehabilitated coke oven batteries to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the*

employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of *paragraph (g) [Respiratory Protection]* of this section.

**1910.1029(f)(1)(iii)(a)**—The employer *shall institute engineering and work practice controls on all beehive ovens at the earliest possible time to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1029(f)(3)(i)(b)**—*Establishment and implementation of a detailed **written charging procedure, designed** and operated to eliminate emissions during charging for each battery.*

**1910.1029(f)(3)(i)(c)**—*Establishment and implementation of a detailed **written charging procedure, designed** and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.*

**1910.1029(f)(3)(ii)(d)**—An **inspection system and corrective action program** to control door emissions to the maximum extent possible.

**1910.1029(f)(3)(iv)**—*Maintenance and repair. The employer shall operate existing coke oven batteries pursuant to a detailed **written procedure** of maintenance and repair established and implemented for the effective control of coke oven emissions consisting of specific elements. [Reference paragraph (f)(3) for specific information.]*

**1910.1029(f)(6)(i)**—Each employer *shall establish and implement a **written program** to reduce exposures solely by means of the engineering and work practice controls required in paragraph (f) [Priority of Compliance Methods] of this section.*

**1910.1029(f)(6)(iii)**—If, after implementing all controls required by *paragraph (f)(2)–(f)(4) [Priority of Compliance Methods—Controls]* of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery the permissible exposure limit is still exceeded, the employer *shall develop a detailed **written program** and schedule for the implementation of any additional engineering controls and work practices necessary to reduce exposure to or below the permissible exposure limit.*

**1910.1029(f)(6)(iv)**—*Written plans for such **programs** shall be submitted, upon request, to the Secretary and the Director, and shall be **available** at the worksite for examination and **copying** by the Secretary, the Director, and the authorized employee representative. The **plans** required under *paragraph (f)(6) [Compliance Program]* of this section shall be revised and updated at least annually to reflect the current status of the **program**.*

**1910.1029(g)(2)**—**Respirator program.** *The employer must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

**1910.1029(j)(1)(i)**—Each employer *shall institute a **medical surveillance program** for all employees who are employed in a regulated area at least 30 days per year.*

**1910.1029(k)(1)(i)**—The employer *shall train each employee who is employed in a regulated area in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**.*

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program** established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200). The employer *shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [Employee Information and Training] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.*

## **Inspections and Tests**

**1910.1029(f)(3)(i)(a)(2)**—*Inspection and cleaning of goosenecks and standpipes prior to each charge to a specified minimum diameter sufficient to effectively move the evolved gases from the oven to the collector mains.*

**1910.1029(f)(3)(i)(a)(3)**—*Inspection* for roof carbon build-up *prior to each charge* and removal of roof carbon as necessary to provide an adequate gas channel so that the gases are effectively moved from the oven into the collector mains.

**1910.1029(f)(3)(i)(a)(4)**—*Inspection* of the steam aspiration system *prior to each charge* so that sufficient pressure and volume is maintained to effectively move the gases from the oven to the collector mains.

**1910.1029(f)(3)(i)(a)(5)**—*Inspection* of steam nozzles and liquor sprays *prior to each charge* and cleaning as necessary so that the steam nozzles and liquor sprays are clean.

**1910.1029(f)(3)(i)(a)(6)**—*Inspection* of standpipe caps *prior to each charge* and cleaning and luting or both as necessary so that the gases are effectively moved from the oven to the collector mains.

**1910.1029(f)(3)(i)(a)(7)**—*Inspection* of charging holes and lids for cracks, warpage and other defects *prior to each charge* and removal of carbon to prevent emissions, and application of luting material to standpipe and charging hole lids where necessary to obtain a proper seal.

**1910.1029(f)(3)(ii)(d)**—An ***inspection system and corrective action program*** to control door emissions to the maximum extent possible.

**1910.1029(f)(3)(iii)(b)(4)**—*Inspection, adjustment and correction* of heating flue temperatures and defective flues *at least weekly* and after any green push, so as to prevent green pushes.

**1910.1029(f)(3)(iv)(a)**—*Regular inspection* of all controls, including goosenecks, standpipes, standpipe caps, charging hold lids and castings, jumper pipes and air seals for cracks, misalignment or other defects and prompt implementation of the necessary repairs as soon as possible.

**1910.1029(f)(3)(iv)(c)**—*Regular inspection* of the damper system, aspiration system and collector main for cracks or leakage, and prompt implementation of the necessary repairs.

**1910.1029(f)(3)(iv)(d)**—*Regular inspection* of the heating system and prompt implementation of the necessary repairs.

**1910.1029(f)(3)(iv)(f)**—*Regular inspection* and patching of oven brickwork.

### **Recordkeeping**

**1910.1029(e)(3)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1029(f)(3)(i)(b)**—*Establishment and implementation of a detailed written charging procedure, designed* and operated to eliminate emissions during charging for each battery.

**1910.1029(f)(3)(i)(c)**—*Establishment and implementation of a detailed written charging procedure, designed* and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.

**1910.1029(f)(6)(i)**—Each employer *shall establish and implement a written program* to reduce exposures solely by means of the *engineering and work practice controls* required in *paragraph (f) [Priority of Compliance Methods]* of this section.

**1910.1029(f)(6)(iii)**—If, after implementing all controls required by *paragraph (f)(2)–(f)(4) [Priority of Compliance Methods—Controls]* of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery the permissible exposure limit is still exceeded, the employer *shall develop a detailed written program and schedule for the implementation of any additional engineering controls and work practices* necessary to reduce exposure to or below the permissible exposure limit.

**1910.1029(f)(6)(iv)**—*Written plans for such programs shall be submitted, upon request, to the Secretary and the Director, and shall be available at the worksite for examination and copying by the Secretary, the Director, and the authorized employee representative. The plans required under paragraph (f)(6) [Compliance Program] of this section shall be revised and updated at least annually to reflect the current status of the program.*

**1910.1029(j)(1)(iii)**—The employer *shall inform any employee* who refuses any required medical examination of the possible health consequences of such refusal and *shall obtain a signed statement from the employee* indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(4)**—**Information provided to the physician.** The employer shall **provide information to the examining physician.** [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(i)**—The employer shall obtain a **written opinion** from the examining **physician.** [Reference paragraph (j)(5)(i) for specific information.]

**1910.1029(j)(5)(ii)**—The employer shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy of the written opinion** to the affected employee.

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program** established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200). The employer shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [Employee Information and Training] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.

**1910.1029(m)(1)**—Exposure measurements. The employer shall establish and **maintain** an accurate **record** of all **measurements** taken to monitor employee exposure to coke oven emissions required in paragraph (e) of this section. [Reference paragraph (m)(1) for specific information.]

**1910.1029(m)(1)(ii)**—The employer shall **maintain this record** for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

**1910.1029(m)(2)**—Medical surveillance. The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance as required by paragraph (j) [Medical Surveillance] of this section. [Reference paragraph (m)(2)(i) for specific information.]

**1910.1029(m)(2)(iii)**—The employer shall **maintain medical records** required under paragraph (m)(2) [Recordkeeping] of this section for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

**1910.1029(m)(4)(i)**—Whenever the employer ceases to do business, the successor employer shall receive and **retain** all **records** required to be **maintained** by paragraph (m) [Recordkeeping] of this section.

**1910.1029(m)(4)(ii)**—The employer shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

## **Training and Communications**

**1910.1029(e)(3)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any **monitoring** performed under this section, **notify each affected employee of these results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.

**1910.1029(h)(2)(vi)**—The employer shall **inform any person who cleans or launders protective clothing** required by this section, of the potentially harmful effects of exposure to coke oven emissions.

**1910.1029(j)(1)(iii)**—The employer shall **inform any employee** who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a **signed statement** from the employee indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(4)**—**Information provided to the physician.** The employer shall **provide information to the examining physician.** [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(ii)**—The employer shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy of the written opinion** to the affected employee.

**1910.1029(k)(1)(i)**—The employer shall **train each employee** who is employed in a regulated area in accordance with the requirements of this section. The employer shall **institute a training program** and ensure employee participation in the **program.**

**1910.1029(k)(1)(ii)**—The **training program** shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or **at the time of initial assignment to a regulated area.** [Reference paragraph (k)(1)(iv) for specific information.]

**1910.1029(k)(1)(iii)**—The **training program** shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program** established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200). The employer shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [Employee Information and Training] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.

### Exposure Monitoring

**1910.1029(e)(1)(i)**—Each employer who has a place of employment where coke oven emissions are present shall monitor employees employed in the regulated area to measure their exposure to coke oven emissions.

**1910.1029(e)(1)(iv)**—The employer shall repeat the monitoring and measurements required by this paragraph (e)(1) [Monitoring Program] at least every three months.

**1910.1029(e)(2)**—Redetermination. Whenever there has been a production, process, or control change which may result in new or additional exposure to coke oven emissions, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements required by paragraph (e)(1) [Monitoring Program] of this section for those employees affected by such change or increase.

**1910.1029(e)(3)(i)**—The employer must, within 15 working days after the receipt of the **results** of any **monitoring** performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting** the **results** in an appropriate location that is accessible to employees.

### Medical Surveillance

**1910.1029(j)(1)(i)**—Each employer shall institute a **medical surveillance program** for all employees who are employed in a regulated area at least 30 days per year.

**1910.1029(j)(1)(ii)**—This **program** shall provide each employee covered under paragraph (j)(1)(i) [Medical Surveillance] of this section with an opportunity for medical examinations in accordance with this paragraph (j) [Medical Surveillance]. [Reference paragraph (j)(1) for specific information.]

**1910.1029(j)(1)(iii)**—The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a **signed statement** from the employee indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(2)**—Initial examinations. At the time of initial assignment to a regulated area or upon the institution of the **medical surveillance program**, the employer shall provide a medical examination for employees covered under paragraph (j)(1)(i) [Medical Surveillance] of this section [Reference paragraph (j)(2) for specific information.]

**1910.1029(j)(3)(i)**—The employer shall provide the examinations specified in paragraphs (j)(2)(i)-(vi) [Initial Examinations] of this section at least annually for employees covered under paragraph (j)(1)(i) [Medical Surveillance] of this section.

**1910.1029(j)(3)(ii)**—The employer must provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually for employees 45 years of age or older or with five (5) or more years employment in the regulated area.

**1910.1029(j)(3)(iii)**—Whenever an employee who is 45 years of age or older or with five (5) or more years employment in a regulated area transfers or is transferred from employment in a regulated area, the employer must continue to provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually as long as that employee is employed by the same employer or a successor employer.

**1910.1029(j)(3)(iv)**—Whenever an employee has not taken the examinations specified in paragraphs (j)(3)(i)-(iii) [Periodic Examinations] of this section with the six (6) months preceding the termination of employment the employer shall provide such examinations to the employee upon termination of employment.

**1910.1029(j)(4)**—Information provided to the **physician**. The employer shall **provide information** to the examining **physician**. [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. [Reference paragraph (j)(5)(i) for specific information.]

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy** of the **written opinion** to the affected employee.

#### **Qualified Person**

**1910.1029(j)(4)**—**Information provided** to the **physician**. The employer shall **provide information** to the examining **physician**. [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. [Reference paragraph (j)(5)(i) for specific information.]

#### **Signs, Markings and Tags**

**1910.1029(d)(1)**—The employer shall establish **regulated areas** and shall limit access to them to authorized persons.

**1910.1029(l)(2)(i)**—The employer shall **post signs** in the regulated area bearing the legends. [Reference paragraph (l)(2)(i) for specific information.]

**1910.1029(l)(2)(iv)**—The employer shall ensure that **signs** required by this paragraph (l)(2) [Signs] are illuminated and cleaned as necessary so that the legend is readily visible.

**1910.1029(l)(3)(i)**—The employer shall ensure that **labels** of containers of contaminated protective clothing and equipment include specific information. [Reference paragraph (l)(3)(i) for specific information.]

### **1910.1030—BLOODBORNE PATHOGENS**

**Scope/Application:** This section applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b) of this section.

#### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—work controls, exposure control program, gloving policy, written schedules, hepatitis B vaccinations
- Recordkeeping—retention requirements, sharps injury log
- Training and Communications—initial and annual training
- Exposure Monitoring—exposure control program, exposure determination
- Medical Surveillance—evaluations after exposure, information provided to the physician, written opinions
- Qualified Person—healthcare professional
- Signs, Markings and Tags—labels, posted signs

#### **Programs, Policies and Procedures**

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section shall establish a **written Exposure Control Plan** designed to eliminate or minimize employee exposure. [Reference paragraph (c)(1) for specific information.]

**1910.1030(c)(1)(iv)**—The **Exposure Control Plan** shall be reviewed and updated at least annually and whenever necessary to reflect new or *modified tasks and procedures* which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

**1910.1030(d)(2)**—*Engineering and work practice controls* shall be used to eliminate or minimize employee exposure. *Where occupational exposure remains after institution of these controls*, personal protective equipment shall also be used.

**1910.1030(d)(3)(ix)(D)**—*If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:*

**1910.1030(d)(3)(ix)(D)(1)**—*Periodically reevaluate this policy.*

**1910.1030(d)(4)(ii)**—General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate **written schedule** for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and *tasks or procedures* being performed in the area.



**1910.1030(f)(1)(i)**—The employer *shall make available the hepatitis B vaccine and vaccination series* to all employees who have occupational exposure, and post-exposure *evaluation* and follow-up to all employees who have had an exposure incident.

**1910.1030(f)(2)(i)**—*Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) [Information and Training] and within 10 working days of initial assignment* to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

**1910.1030(f)(2)(iv)**—The employer shall assure that employees *who decline to accept hepatitis B vaccination offered by the employer sign the statement in appendix A [Hepatitis B Vaccine Declination]*.

**1910.1030(g)(2)(i)**—The employer *shall train each employee* with occupational exposure in accordance with the requirements of this section. Such *training* must be provided at no cost to the employee and during working hours. The employer *shall institute a training program and ensure employee participation in the program. [Reference paragraph (h)(1) for specific information.]*

### **Recordkeeping**

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall establish a written Exposure Control Plan* designed to eliminate or minimize employee exposure. *[Reference paragraph (c)(1) for specific information.]*

**1910.1030(c)(2)(i)**—Each employer who has an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall prepare an exposure determination.*

**1910.1030(d)(4)(ii)**—General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer *shall determine and implement an appropriate written schedule* for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

**1910.1030(f)(2)(iv)**—The employer shall assure that employees *who decline to accept hepatitis B vaccination offered by the employer sign the statement in appendix A [Hepatitis B Vaccine Declination]*.

**1910.1030(f)(5)**—**Healthcare Professional's Written Opinion.** The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional's written opinion within 15 days* of the completion of the evaluation.

**1910.1030(f)(6)**—**Medical Recordkeeping.** *Medical records* required by this standard *shall be maintained in accordance with paragraph (h)(1) [Medical Records]* of this section.

**1910.1030(h)(1)(i)**—The employer *shall establish and maintain an accurate record* for each employee with occupational exposure, in accordance with 29 CFR 1910.1020 *[Access to Employee Exposure and Medical Records]*.

**1910.1030(h)(1)(iv)**—The employer *shall maintain the records* required by *paragraph (h) [Medical Records]* for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020 *[Access to Employee Exposure and Medical Records]*.

**1910.1030(h)(4)**—**Transfer of Records.** The employer shall comply with the requirements involving *transfer of records set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.

**1910.1030(h)(5)(i)**—The employer *shall establish and maintain a sharps injury log* for the recording of percutaneous injuries from contaminated sharps. The information in the *sharps injury log* shall be *recorded* and maintained in such manner as to protect the confidentiality of the injured employee.

**1910.1030(h)(5)(iii)**—The *sharps injury log* shall be *maintained* for the period required by 29 CFR 1904.33 *[Recordkeeping—Retention and Updating]*.

### **Training and Communications**

**1910.1030(f)(4)(i)**—The employer *shall ensure* that the *healthcare professional* responsible for the employee's Hepatitis B vaccination *is provided a copy of this regulation.*

**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*. [Reference paragraph (f)(4) for specific information.]

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days* of the completion of the evaluation.

**1910.1030(g)(2)(i)**—The employer *shall train each employee* with occupational exposure in accordance with the requirements of this section. Such *training* must be provided at no cost to the employee and during working hours. The employer *shall institute a training program and ensure employee participation in the program*. [Reference paragraph (h)(1) for specific information.]

**1910.1030(g)(2)(ii)(A)**—*At the time of initial assignment* to tasks where occupational exposure may take place.

**1910.1030(g)(2)(ii)(B)**—*At least annually thereafter*.

**1910.1030(g)(2)(v)**—Employers *shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures* affect the employee’s occupational exposure. The additional training may be limited to addressing the new exposures created.

### Exposure Monitoring

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall establish a written Exposure Control Plan* designed to eliminate or minimize employee exposure. [Reference paragraph (c)(1) for specific information.]

**1910.1030(c)(1)(iv)**—The **Exposure Control Plan** *shall be reviewed and updated at least annually* and whenever necessary to reflect new or *modified tasks and procedures* which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

**1910.1030(c)(2)(i)**—Each employer who has an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall prepare an exposure determination*.

### Medical Surveillance

**1910.1030(f)(3)**—**Post-exposure Evaluation and Follow-up**. Following a **report** of an exposure incident, the employer *shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, and additional elements*.

**1910.1030(f)(4)(i)**—The employer *shall ensure* that the **healthcare professional** responsible for the employee’s Hepatitis B vaccination is *provided a copy of this regulation*.

**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*. [Reference paragraph (f)(4) for specific information.]

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days* of the completion of the evaluation.

### Qualified Person

**1910.1030(f)(4)(i)**—The employer *shall ensure* that the **healthcare professional** responsible for the employee’s Hepatitis B vaccination is *provided a copy of this regulation*.

**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*.

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days* of the completion of the evaluation.

### Signs, Markings and Tags

**1910.1030(d)(2)(xiv)(A)**—A readily observable **label** in accordance with *paragraph (g)(1)(i)(H) [Labels]* *shall be attached* to the equipment stating which portions remain contaminated.

**1910.1030(d)(4)(iii)(B)(1)(iii)**—**Labeled or color-coded** in accordance with *paragraph (g)(1)(i) [Labels]* this standard (containers).

**1910.1030(g)(1)(i)(A)**—Warning *labels* shall be **affixed** to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in *paragraph (g)(1)(i)(E), (F) and (G) [Labels and Signs]*.

**1910.1030(g)(1)(i)(e)**—Red bags or red containers *may be substituted for labels*.

**1910.1030(g)(1)(ii)(A)**—The employer shall **post signs** at the entrance to work areas specified in *paragraph (e), HIV and HBV Research Laboratory and Production Facilities*.

*Note: The following pertains to HIV and HBV research laboratories.*

#### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—written procedures, written biosafety manual
- Inspections and Tests—routine checks of vacuum lines
- Recordkeeping—certification
- Certification—biological safety cabinets certified annually
- Training and Communications—initial and additional training
- Signs, Marking and Tags—posted signs

#### **Programs, Policies and Procedures**

**1910.1030(e)(2)(ii)(C)**—Access to the work area shall be limited to authorized persons. *Written policies and procedures shall be established* whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with *all entry and exit procedures shall be allowed* to enter the work areas and animal rooms.

**1910.1030(e)(2)(ii)(M)**—A *biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually* or more often if necessary. Personnel *shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them*.

#### **Inspections and Tests**

**1910.1030(e)(2)(ii)(I)**—Vacuum lines shall be protected with liquid disinfectant traps and high-efficiency particulate air (HEPA) filters or filters of equivalent or superior efficiency and *which are checked routinely and maintained or replaced as necessary*.

#### **Recordkeeping**

**1910.1030(e)(2)(iii)(B)**—*Biological safety cabinets shall be certified* when installed, whenever they are moved and *at least annually*.

**1910.1030(e)(2)(ii)(C)**—Access to the work area shall be limited to authorized persons. *Written policies and procedures shall be established* whereby only persons who have been advised of the potential biohazard, who meet any specific entry requirements, and who comply with *all entry and exit procedures shall be allowed* to enter the work areas and animal rooms.

**1910.1030(e)(2)(ii)(M)**—A *biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually* or more often if necessary. Personnel *shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them*.

#### **Certification**

**1910.1030(e)(2)(iii)(B)**—*Biological safety cabinets shall be certified* when installed, whenever they are moved and *at least annually*.

#### **Training and Communications**

**1910.1030(e)(2)(ii)(K)**—All spills shall be immediately contained and cleaned up *by appropriate professional staff or others properly trained* and equipped to work with potentially concentrated infectious materials.

**1910.1030(e)(2)(ii)(M)**—A *biosafety manual shall be prepared or adopted and periodically reviewed and updated at least annually* or more often if necessary. Personnel *shall be advised of potential hazards, shall be required to read instructions on practices and procedures, and shall be required to follow them*.

**1910.1030(e)(5)**—*Training Requirements*. Additional training requirements for employees in HIV and HBV research laboratories and HIV and HBV production facilities are specified in *paragraph (g)(2)(ix) [Additional Initial Training]*.

**1910.1030(g)(2)(ix)**—*Additional Initial Training for Employees in HIV and HBV Laboratories and Production Facilities.* Employees in HIV or HBV research laboratories and HIV or HBV production facilities shall receive initial training in addition to the above training requirements.

### Signs, Markings and Tags

**1910.1030(e)(2)(ii)(D)**—When other potentially infectious materials or infected animals are present in the work area or containment module, a **hazard warning sign** incorporating the universal biohazard symbol shall be posted on all access doors. The **hazard warning sign** shall comply with *paragraph (g)(1)(ii) [Signs]* of this standard.

## 1910.1043—COTTON DUST

**Scope/Application:** *This section, in its entirety, applies to the control of employee exposure to cotton dust in all workplaces where employees engage in yarn manufacturing, engage in slashing and weaving operations, or work in waste houses for textile operations.*

**Exception:** *This standard does not apply to the handling or processing of woven or knitted materials; to maritime operations covered by 29 CFR Parts 1915 and 1918; to harvesting or ginning of cotton; or to the construction industry.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—compliance program, respirator program, work controls, medical surveillance program, training program
- Recordkeeping—records, retention requirements
- Training and Communications—program, initial and annual training
- Exposure Monitoring—initial and annual monitoring, posted results
- Medical Surveillance—program, initial, annual and “other” examinations
- Qualified Person—physician
- Signs, Markings and Tags—posting opinions, warning signs

### Programs, Policies and Procedures

**1910.1043(d)(2)**—*Initial monitoring.* Each employer who has a place of employment within the scope of *paragraph (a)(1), (a)(4), or (a)(5) [Scope and Application]* of this section shall conduct monitoring by obtaining measurements which are representative of the exposure of all employees to airborne concentrations of lint-free respirable cotton dust over an eight-hour period. The **sampling program** shall include at least one determination during each shift for each work area.

**1910.1043(e)(1)**—*Engineering and work practice controls.* The employer shall institute engineering and work practice controls to reduce and maintain employee exposure to cotton dust at or below the permissible exposure limit specified in *paragraph (c) [Permissible Exposure Limits and Action Levels]* of this section, except to the extent that the employer can establish that such controls are not feasible.

**1910.1043(e)(3)(i)**—**Compliance Program**—Where the most recent exposure monitoring data indicates that any employee is exposed to cotton dust levels greater than the permissible exposure limit, the employer shall establish and implement a **written program** sufficient to reduce exposures to or below the permissible exposure limit solely by means of *engineering controls and work practices* as required by *paragraph (e)(1) [Engineering and Work Practice Controls]* of this section.

**1910.1043(e)(3)(vi)**—The **written program** required under *paragraph (e)(3) [Compliance Program]* of this section shall be revised and updated when necessary to reflect the current status of the **program** and current exposure levels.

**1910.1043(f)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with *Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1043(g)**—*Work practices.* Each employer shall, regardless of the level of employee exposure, immediately establish and implement a **written program** of work practices which shall minimize cotton dust exposure.

**1910.1043(h)(1)(i)**—Each employer covered by the standard shall institute a **program of medical surveillance** for all employees exposed to cotton dust. [*Reference paragraph (h)(1) for specific information.*]

### Recordkeeping

**1910.1043(d)(1)(iv)**—*OSHA will issue a **written opinion** stating that an instrument is equivalent to a vertical elutriator cotton dust sampler if:*

**1910.1043(d)(1)(iv)(A)**—*A manufacturer or employer requests an **opinion in writing** and supplies specific information (provided in the standard).*

**1910.1043(d)(4)(i)**—*The employer **must**, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually **in writing** or by **posting** the **results** in an appropriate location that is accessible to employees.*

**1910.1043(e)(3)(vi)**—*The **written program** required under paragraph (e)(3) [Compliance Program] of this section shall be revised and updated when necessary to reflect the current status of the **program** and current exposure levels.*

**1910.1043(g)**—*Work practices. Each employer shall, regardless of the level of employee exposure, **immediately establish** and **implement** a **written program** of work practices which shall minimize cotton dust exposure.*

**1910.1043(h)(4)**—***Information provided to the physician.** The employer shall **provide information** to the examination **physician**. [Reference paragraph (h)(4) of this section].*

**1910.1043(h)(5)(i)**—*The employer shall **obtain** and **furnish** the employee with a **copy** of a **written opinion** from the examining **physician** containing the information in this section.*

**1910.1043(i)(2)(i)**—*Each employer shall **post** a **copy** of this **section** with its **appendices** in a public location at the workplace, and shall, upon request, make **copies available** to employees.*

**1910.1043(k)(1)(i)**—*The employer shall **establish** and **maintain** an accurate **record** of all measurements required by paragraph (d) [Exposure Monitoring] and Measurement of this section.*

**1910.1043(k)(1)(iii)**—*The employer shall **maintain** this **record** for at least 20 years.*

**1910.1043(k)(2)(i)**—*The employer shall **establish** and **maintain** an accurate **medical record** for each employee subject to medical surveillance required by paragraph (h) [Medical Surveillance] of this section.*

**1910.1043(k)(2)(iii)**—*The employer shall **maintain** this **record** for at least 20 years.*

**1910.1043(k)(4)(i)**—*Whenever the employer ceases to do business, the successor employer shall **receive** and **retain** all **records** required to be **maintained** by paragraph (k) [Recordkeeping] of this section.*

**1910.1043(k)(4)(ii)**—*The employer shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) Access to Employee Exposure and Medical Records.*

### **Training and Communications**

**1910.1043(d)(4)(i)**—*The employer **must**, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually **in writing** or by **posting** the **results** in an appropriate location that is accessible to employees.*

**1910.1043(h)(4)**—***Information provided to the physician.** The employer shall **provide information** to the examination **physician** [Reference paragraph (h)(4) of this section.]*

**1910.1043(h)(5)(i)**—*The employer shall **obtain** and **furnish** the employee with a **copy** of a **written opinion** from the examining **physician** containing the information in this section.*

**1910.1043(i)(1)(i)**—*The employer shall **train** each employee exposed to cotton dust in accordance with the requirements of this section. The employer shall **institute** a **training program** and **ensure** employee participation in the **program**. [Reference paragraph (i)(1) for specific information.]*

**1910.1043(i)(1)(ii)**—*The **training program** shall be provided prior to initial assignment and shall be repeated annually for each employee exposed to cotton dust, when job assignments or work processes change and when employee performance indicates a need for retraining.*

## Exposure Monitoring

**1910.1043(d)(2)**—*Initial monitoring.* Each employer who has a place of employment within the scope of *paragraph (a)(1), (a)(4), or (a)(5) [Scope and Application]* of this section shall *conduct monitoring* by obtaining measurements which are representative of the exposure of all employees to airborne concentrations of lint-free respirable cotton dust over an eight-hour period. The **sampling program** shall include at least one determination during each shift for each work area.

**1910.1043(d)(3)(i)**—If the initial monitoring required by *paragraph (d)(2) [Initial Monitoring]* of this section or any subsequent monitoring reveals employee exposure to be at or below the permissible exposure limit, the employer shall *repeat the monitoring for those employees at least annually.*

**1910.1043(d)(3)(ii)**—If the initial monitoring required by *paragraph (d)(2) [Initial Monitoring]* of this section or any subsequent monitoring reveals employee exposure to be above the PEL, the employer shall *repeat the monitoring for those employees at least every six months.*

**1910.1043(d)(3)(iii)**—*Whenever there has been a production, process, or control change which may result in new or additional exposure to cotton dust, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements for those employees affected by the change or increase.*

**1910.1043(d)(4)(i)**—The employer must, *within 15 working days after the receipt of the results* of any monitoring performed under this section, notify each affected employee of these **results** either individually *in writing or by posting the results* in an appropriate location that is accessible to employees.

## Medical Surveillance

**1910.1043(d)(1)(iv)**—*OSHA will issue a written opinion* stating that an instrument is equivalent to a vertical elutriator cotton dust sampler if:

**1910.1043(d)(1)(iv)(A)**—*A manufacturer or employer requests an opinion in writing* and supplies specific information (provided in the standard).

**1910.1043(h)(1)(i)**—Each employer covered by the standard shall *institute a program of medical surveillance for all employees exposed to cotton dust.* [Reference *paragraph (h)(1)* for specific information.]

**1910.1043(h)(2)**—*Initial examinations.* The employer shall provide medical surveillance to each employee who is or may be exposed to cotton dust. *For new employees, this examination shall be provided prior to initial assignment.*

**1910.1043(h)(3)(i)**—The employer shall *provide at least annual medical surveillance* for all employees exposed to cotton dust above the action level in yarn manufacturing, slashing and weaving, cotton washing and waste house operations. The employer shall *provide medical surveillance at least every two years* for all employees exposed to cotton dust at or below the action level, for all employees exposed to cotton dust from washed cotton (except from washed cotton defined in *paragraph (n)(3) [Medical and Dyed Cotton]* of this section), and for all employees exposed to cotton dust in cottonseed processing and waste processing operations. Periodic medical surveillance shall include at least an update of the *medical history, standardized questionnaire* (App. B-111), Schilling byssinosis grade, and the pulmonary function measurements in *paragraph (h)(2)(iii) [Initial Examinations]* of this section.

**1910.1043(h)(3)(ii)**—*Medical surveillance as required in paragraph (h)(3)(i) [Periodic Examinations] of this section shall be provided every six months* for all employees in categories listed in this section.

**1910.1043(h)(4)**—*Information provided to the physician.* The employer shall *provide information* to the examination *physician.* [Reference *paragraph (h)(4)* of this section].

**1910.1043(h)(5)(i)**—The employer shall *obtain and furnish the employee with a copy of a written opinion* from the examining *physician* containing the information in this section.

**1910.1043(i)(1)(i)**—The employer shall *train each employee* exposed to cotton dust in accordance with the requirements of this section. The employer shall *institute a training program and ensure employee participation in the program.* [Reference *paragraph (i)(1)* for specific information.]

## Qualified Person

**1910.1043(h)(4)**—*Information provided to the physician.* The employer shall *provide information* to the examination *physician.* [Reference *paragraph (h)(4)* of this section].

**1910.1043(h)(5)(i)**—The employer *shall obtain and furnish the employee with a copy of a written opinion* from the examining *physician* containing the information in this section.

### Signs, Markings and Tags

**1910.1043(d)(4)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, notify each affected employee of these *results* either individually *in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1043(i)(2)(i)**—Each employer *shall post a copy of this section with its appendices* in a public location at the workplace, and shall, upon request, make *copies available* to employees.

**1910.1043(j)(1)**—*Signs.* The employer *shall post the following warning sign in each work area* where the permissible exposure limit for cotton dust is exceeded.

## 1910.1044—1,2-DIBROMO-3-CHLOROPROPANE

**Scope/Application:** *This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP).*

**Exception:** *This standard does not apply to: exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or the storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquid.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—initial training
- Exposure Monitoring—initially, every 6 months, emergency, and quarterly monitoring, posted results
- Medical Surveillance—program, initial and annual examinations
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, posted signs, labels

### Programs, Policies and Procedures

**1910.1044(g)(1)**—Priority of compliance methods. The employer *shall institute engineering and work practice controls* to reduce and maintain employee exposures to DBCP at or below the permissible exposure limit, except to the extent that the employer establishes that such controls are not feasible. Where *feasible engineering and work practice controls* are not sufficient to reduce employee exposures to within the permissible exposure limit, the employer shall none-the-less use them to reduce exposures to the lowest level achievable by these controls, and shall supplement them by use of respiratory protection.

**1910.1044(g)(2)(i)**—The employer *shall establish and implement a written program* to reduce employee exposures to DBCP to or below the permissible exposure limit solely by means of *engineering and work practice controls* as required by *paragraph (g)(1) [Methods of Compliance]* of this section.

**1910.1044(h)(2)**—**Respirator program.** The employer *must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m),* which covers each employee required by this section to use a respirator.

**1910.1044(i)(1)(i)**—A *written plan for emergency situations shall be developed* for each workplace in which DBCP is present.

**1910.1044(m)(1)(i)**—The employer *shall make available a medical surveillance program* for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. [*Reference paragraph (m) for specific information.*]

**1910.1044(n)(1)(i)**—The employer *shall train each employee* who may be exposed to DBCP in accordance with the requirements of this section. The employer *shall institute a training program and ensure employee participation in the program.*

**1910.1044(o)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for DBCP.

**1910.1044(o)(1)(iii)**—Employers shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (n) [Employee Information and Training]* of this section.

### **Recordkeeping**

**1910.1044(g)(2)(i)**—The employer shall establish and implement a **written program** to reduce employee exposures to DBCP to or below the permissible exposure limit solely by means of *engineering and work practice controls* as required by *paragraph (g)(1) [Methods of Compliance]* of this section.

**1910.1044(i)(1)(i)**—A **written plan** for **emergency situations** shall be developed for each workplace in which DBCP is present.

**1910.1044(o)(1)(iii)**—Employers shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (n) [Employee Information and Training]* of this section

**1910.1044(p)(1)(i)**—The employer shall establish and **maintain** an **accurate record** of all **monitoring** required by *paragraph (f) [Exposure Monitoring]* of this section.

**1910.1044(p)(1)(iii)**—The employer shall **maintain this record** for at least 40 years or the duration of employment plus 20 years, whichever is longer.

**1910.1044(p)(2)(i)**—The employer shall establish and **maintain** an **accurate record** for each employee subject to medical surveillance required by *paragraph (m) [Medical Surveillance]* of this section.

**1910.1044(p)(2)(iii)**—The employer shall **maintain this record** for at least 40 years or the duration of employment plus 20 years, whichever is longer.

**1910.1044(p)(4)(i)**—If the employer ceases to do business, the *successor employer* shall receive and **retain all records** required to be **maintained** by *paragraph (p) [Recordkeeping]* of this section for the prescribed period.

**1910.1044(p)(4)(ii)**—The employer shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) *[Access to Employee Exposure and Medical Records]*.

### **Training and Communications**

**1910.1044(f)(5)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, *notify each employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1044(m)(4)**—**Information provided to the physician.** The employer shall provide the following **information** to the examining **physician**. *[Reference paragraph (m)(4) for specific information.]*

**1910.1044(m)(5)(i)**—For each examination under this section, the employer shall **obtain** and provide the employee with a **written opinion** from the examining **physician**.

**1910.1044(m)(5)(ii)**—The employer shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.

**1910.1044(n)(1)(i)**—The employer shall train each employee who may be exposed to DBCP in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**.

**1910.1044(o)(1)(iii)**—Employers shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (n) [Employee Information and Training]* of this section.

### **Exposure Monitoring**

**1910.1044(f)(2)**—*Initial.* Each employer who has a place of employment in which DBCP is present, shall monitor each workplace and work operation to accurately determine the airborne concentrations of DBCP to which employees may be exposed.



**1910.1044(f)(3)(i)**—If the monitoring required by this section reveals employee exposures to be at or below the permissible exposure limit, the employer *must repeat these measurements at least every 6 months*.

**1910.1044(f)(3)(ii)**—If the monitoring required by this section reveals employee exposures to be in excess of the permissible exposure limit, the employer *must repeat these measurements for each such employee at least quarterly*. The employer *must continue quarterly monitoring until at least two consecutive measurements, taken at least seven (7) days apart, are at or below the permissible exposure limit*. Thereafter the employer must monitor at least every 6 months.

**1910.1044(f)(4)**—*Additional*. Whenever there has been a production, process, control, or personnel change which may result in any new or additional exposure to DBCP, or whenever the employer has any reason to suspect new or additional exposures to DBCP, the employer shall monitor the employees potentially affected by such change for the purpose of redetermining their exposure.

**1910.1044(f)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1044(i)(6)(i)**—*Following an emergency*, the employer shall conduct monitoring which complies with paragraph (f) [Exposure Monitoring] of this section.

**1910.1044(p)(1)(i)**—The employer shall establish and *maintain* an accurate *record* of all monitoring required by paragraph (f) [Exposure Monitoring] of this section.

### Medical Surveillance

**1910.1044(i)(5)**—*Medical surveillance*. For any employee exposed to DBCP in an emergency situation, the employer shall provide medical surveillance in accordance with paragraph (m)(6) [Emergency Situations] of this section.

**1910.1044(m)(1)(i)**—The employer shall make available a **medical surveillance program** for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. [Reference paragraph (m) for specific information.]

**1910.1044(m)(2)**—*Frequency and content*. At the time of initial assignment, and annually thereafter, the employer shall provide a medical examination for employees who work in regulated areas.

**1910.1044(m)(4)**—**Information provided to the physician**. The employer shall provide the following **information** to the examining **physician**. [Reference paragraph (m)(4) for specific information.]

**1910.1044(m)(5)(i)**—For each examination under this section, the employer shall *obtain and provide the employee with a written opinion* from the examining **physician**.

**1910.1044(m)(6)**—Emergency situations. If the employee is exposed to DBCP in an emergency situation, the employer shall provide the employee with a sperm count test as soon as practicable, or, if the employee has been vasectomized or is unable to produce a semen specimen, the hormone tests contained in paragraph (m)(2)(iii) [Medical Surveillance] of this section. The employer shall provide these same tests three months later.

### Qualified Person

**1910.1044(m)(4)**—**Information provided to the physician**. The employer shall provide the following **information** to the examining **physician**. [Reference paragraph (m)(4) for specific information.]

**1910.1044(m)(5)(i)**—For each examination under this section, the employer shall **obtain and provide the employee with a written opinion** from the examining **physician**.

**1910.1044(m)(5)(ii)**—The employer shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.

### Signs, Markings and Tags

**1910.1044(e)(1)**—The employer shall establish, within each place of employment, regulated areas wherever DBCP concentrations are in excess of the permissible exposure limit.

**1910.1044(j)(2)(v)**—Containers of DBCP-contaminated protective devices or work clothing which are to be taken out of change rooms or the workplace for cleaning, maintenance or disposal shall bear **labels** with the following information: CONTAMINATED WITH 1,2-Dibromo-3-chloropropane (DBCP), MAY CAUSE CANCER.

**1910.1044(k)(1)(iii)(b)**—Portable vacuum units used to collect DBCP may not be used for other cleaning purposes and shall be **labeled** as prescribed by paragraph (j)(2)(v) of this section.

**1910.1044(o)(2)(i)**—The employer shall **post signs** to clearly indicate all regulated areas.

**1910.1044(o)(3)(ii)**—The employer shall ensure that the precautionary **labels** required by this paragraph (o)(3) [Labels] are readily visible and legible.

## 1910.1045—ACRYLONITRILE

**Scope/Application:** This section applies to occupational exposure to acrylonitrile.

**Exception:** This standard does not apply to exposures which result solely from the processing, use, and handling of the following materials: ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers; materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight (8)-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and solid materials made from and/or containing AN which will not be heated above 170 °F during handling, use, or processing.

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Inspections and Tests—signs cleaned
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—training program, initial and annual training
- Exposure Monitoring—initially, every 6 months, and quarterly monitoring, posted results
- Medical Surveillance—program, initial, annual, termination and “other” examinations
- Qualified Person—physician
- Signs, Markings and Tags—posted signs, labels

### Programs, Policies and Procedures

**1910.1045(g)(1)(i)**—By November 2, 1980, the employer shall institute engineering and work practice controls to reduce and maintain employee exposures to AN, to or below the permissible exposure limits, except to the extent that the employer establishes that such controls are not feasible.

**1910.1045(g)(2)(i)**—The employer shall establish and implement a **written program** to reduce employee exposures to or below the permissible exposure limits solely by means of engineering and work practice controls, as required by paragraph (g)(1) [Engineering and Work Practice Controls] of this section. [Reference paragraph (g) for specific information.]

**1910.1045(g)(2)(v)**—The **plans** required by this paragraph must be revised and updated at least annually to reflect the current status of the **program**.

**1910.1045(h)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1910.1045(i)(1)(i)**—A **written plan for emergency situations** shall be developed for each workplace where liquid AN is present. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1045(n)(1)(i)**—The employer shall institute a **program of medical surveillance** for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph. [Reference paragraph (n)(1) for specific information.]

**1910.1045(o)(1)(i)**—The employer shall train each employee exposed to AN above the action level, each employee whose exposures are maintained below the action level by engineering and work practice controls, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**. [Reference paragraph (o)(1)(i) for specific information.]

**1910.1045(p)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for AN and AN-based materials not exempted under paragraph (a)(2) of this section.*

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of AN and AN-based materials and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

### **Inspections and Tests**

**1910.1045(p)(2)(ii)**—The employer *shall ensure that signs required by this paragraph (p)(2) [Signs] are illuminated and cleaned* as necessary so that the legend is readily visible.

### **Recordkeeping**

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1045(g)(2)(i)**—The employer *shall establish and implement a written program* to reduce employee exposures to or below the permissible exposure limits solely by means of *engineering and work practice controls*, as required by paragraph (g)(1) [Engineering and Work Practice Controls] of this section. [Reference paragraph (g) for specific information.]

**1910.1045(i)(1)(i)**—A **written plan for emergency situations** shall be developed for each workplace where liquid AN is present. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1045(n)(5)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [Reference paragraph (n)(5) for specific information.]

**1910.1045(n)(6)(iii)**—The employer shall provide a **copy of the written opinion** to the affected employee.

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of AN and AN-based materials and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

**1910.1045(q)(1)(i)**—Where the processing, use, and handling of materials made from or containing AN are exempted pursuant to paragraph (a)(2)(ii) [Scope] of this section, the employer shall establish and **maintain an accurate record** of objective data reasonably relied upon in support of the exemption.

**1910.1045(q)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1045(q)(2)(i)**—The employer shall establish and **maintain an accurate record** of all monitoring required by paragraph (e) [Exposure Monitoring] of this section.

**1910.1045(q)(2)(iii)**—The employer shall **maintain this record** for at least forty (40) years, or for the duration of employment plus twenty (20) years, whichever is longer.

**1910.1045(q)(3)(i)**—The employer shall establish and **maintain an accurate record** for each employee subject to medical surveillance as required by paragraph (n) [Medical Surveillance] of this section.

**1910.1045(q)(3)(iii)**—The employer shall assure that this **record** be **maintained** for at least forty (40) years, or for the duration of employment plus twenty (20) years, whichever is longer.

**1910.1045(q)(5)(i)**—Whenever the employer ceases to do business, the successor employer shall receive and **retain all records** required to be **maintained** by this section for the prescribed period.

**1910.1045(q)(5)(ii)**—The employer shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

## Training and Communications

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1045(j)(2)(v)**—The employer *shall inform any person who launders or cleans protective clothing or equipment* of the potentially harmful effects of exposure to AN.

**1910.1045(n)(5)**—*Information provided to the physician. The employer shall provide information to the examining physician. [Reference paragraph (n)(5) for specific information.]*

**1910.1045(n)(6)(ii)**—The employer *shall instruct the physician* not to reveal in the *written opinion* specific findings or diagnoses unrelated to occupational exposure to AN.

**1910.1045(n)(6)(iii)**—The employer *shall provide a copy of the written opinion* to the affected employee.

**1910.1045(o)(1)(i)**—The employer *shall train each employee* exposed to AN above the action level, each employee whose exposures are maintained below the action level by *engineering and work practice controls*, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer *shall institute a training program* and ensure employee participation in the *program*. [Reference paragraph (o)(1)(ii) for specific information.]

**1910.1045(o)(1)(ii)**—*Training shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter.*

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the *hazard communication program* established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of AN and AN-based materials and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

## Exposure Monitoring

**1910.1045(e)(2)**—*Initial monitoring.* Each employer who has a place of employment in which AN is present *shall monitor each such workplace and work operation* to accurately determine the airborne concentrations of AN to which employees may be exposed.

**1910.1045(e)(3)(ii)**—If the monitoring required by this section reveals employee exposure to be at or above the action level but at or below the permissible exposure limits, the employer *must repeat such monitoring for each such employee at least every 6 months. The employer must continue these measurements every 6 months* until at least two consecutive measurements taken at *least seven (7) days a part*, are below the action level, and thereafter the employer may discontinue monitoring for that employee.

**1910.1045(e)(3)(iii)**—If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer must repeat these determinations for each such employee *at least quarterly. The employer must continue these quarterly measurements until* at least two consecutive measurements, taken at *least seven (7) days apart*, are at or below the permissible exposure limits, and thereafter the employer *must monitor at least every 6 months.*

**1910.1045(e)(4)**—*Additional monitoring.* Whenever there has been a production, process, control, or personnel change which may result in new or additional exposures to AN, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to AN, *additional monitoring which complies with this paragraph shall be conducted.*

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

## Medical Surveillance

**1910.1045(n)(1)(i)**—The employer *shall institute a **program of medical surveillance*** for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer *shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph. [Reference Reference paragraph (n) for specific information.]*

**1910.1045(n)(2)**—*Initial examinations. At the time of initial assignment, or upon institution of the **medical surveillance program**, the employer shall provide each affected employee an opportunity for a medical examination.*

**1910.1045(n)(3)(i)**—The employer *shall provide the examinations specified in paragraph (n)(2) [Initial Examinations] of this section at least annually* for all employees specified in paragraph (n)(1) [Medical Surveillance] of this section.

**1910.1045(n)(3)(ii)**—If an employee has not had the examination specified in paragraph (n)(2) [Initial Examinations] of this section within 6 months preceding termination of employment, the employer *shall make such examination available to the employee prior to such termination.*

**1910.1045(n)(4)**—*Additional examinations.* If the employee for any reason develops signs or symptoms which may be associated with exposure to AN, the employer *shall provide an appropriate examination and emergency medical treatment.*

**1910.1045(n)(5)**—*Information provided to the **physician.*** The employer *shall provide **information** to the examining **physician.** [Reference paragraph (n)(5) for specific information.]*

**1910.1045(n)(6)(i)**—The employer *shall obtain a **written opinion*** from the examining **physician.**

**1910.1045(n)(6)(iii)**—The employer *shall provide a **copy of the written opinion*** to the affected employee.

## Qualified Person

**1910.1045(n)(5)**—*Information provided to the **physician.*** The employer *shall **provide information** to the examining **physician.***

**1910.1045(n)(6)(iii)**—The employer *shall provide a **copy of the written opinion*** to the affected employee.

**1910.1045(n)(6)(ii)**—The employer *shall instruct the **physician*** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure to AN.

## Signs, Markings and Tags

**1910.1045(f)(2)**—Regulated areas *shall be **demarcated*** and segregated from the rest of the workplace, in any manner that minimizes the number of persons who will be exposed to AN.

**1910.1045(h)(2)(ii)(B)**—A **label** *must be **attached*** to the cartridge or canister to indicate the date and time at which it is first installed on the respirator.

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to **labels** on containers of AN and AN-based materials and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

**1910.1045(p)(2)(i)**—The employer *shall **post signs** to clearly indicate* all workplaces where AN concentrations exceed the permissible exposure limits. [Reference paragraph (p)(2)(i) for specific information.]

**1910.1045(p)(3)(i)**—The employer *shall ensure that **precautionary labels** are in compliance with paragraph (p)(1)(i) [Hazard Communication] of this section and are **affixed** to all containers* of liquid AN and AN-based materials not exempted under paragraph (a)(2) of this section. The employer *shall ensure that the **labels** remain **affixed*** when the materials are sold, distributed, or otherwise leave the employer's workplace.

## 1910.1047—ETHYLENE OXIDE

**Scope/Application:** *This section applies to occupational exposure to ethylene oxide.*

**Exception:** *This standard does not apply to the processing, use, or handling of products containing EtO where objective data are reasonably relied upon that demonstrate that the product is not capable of releasing EtO in airborne concentrations at or above the action level under the expected conditions of processing, use, or handling that will cause the greatest possible release.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—initial and annual training, training program, hazard communication program
- Exposure Monitoring—determination, monitoring, posted results
- Medical Surveillance—program, initial and annual examinations, written opinion
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, labels

### Programs, Policies and Procedures

**1910.1047(f)(1)(i)**—The employer *shall institute engineering controls and work practices* to reduce and maintain employee exposure to or below the TWA and to or below the excursion limit, except to the extent that such controls are not feasible.

**1910.1047(f)(2)(i)**—Where the TWA or excursion limit is exceeded, the employer *shall establish and implement a written program* to reduce employee exposure to or below the TWA and to or below the excursion limit by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section, and by the use of respiratory protection where required or permitted under this section.

**1910.1047(f)(2)(iii)**—*Written plans for a program required in paragraph (f)(2) [Compliance Program] shall be developed and furnished upon request for examination and copying to the Assistant Secretary, the Director, affected employees and designated employee representatives. Such plans shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.*

**1910.1047(g)(2)**—**Respirator program.** *The employer must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(i)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

**1910.1047(h)(1)(i)**—A *written plan for emergency situations shall be developed* for each workplace where there is a possibility of an emergency. Appropriate portions of the *plan* shall be implemented in the event of an emergency.

**1910.1047(h)(1)(iii)**—The *plan shall include the elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, "Emergency action plans" and "Fire prevention plans," respectively.*

**1910.1047(i)(1)(i)(A)**—The employer *shall institute a medical surveillance program* for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least 30 days a year.

**1910.1047(j)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for EtO.*

**1910.1047(j)(1)(iii)**—Employers *shall include EtO in the hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of EtO and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.*

### Recordkeeping

**1910.1047(d)(1)(iii)**—Where the employer can *document* that exposure levels are equivalent for similar operations in different work shifts, the employer need only determine *representative employee exposure* for that operation during one shift.

**1910.1047(f)(2)(i)**—Where the TWA or excursion limit is exceeded, the employer *shall establish and implement a written program* to reduce employee exposure to or below the TWA and to or below the excursion limit by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section, and by the use of respiratory protection where required or permitted under this section.

**1910.1047(f)(2)(iii)**—*Written plans for a program required in paragraph (f)(2) [Compliance Program] shall be developed and furnished upon request for examination and copying to the Assistant Secretary, the Director, affected employees and designated employee representatives. Such plans shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.*

**1910.1047(h)(1)(i)**—A *written plan for emergency situations shall be developed for each workplace where there is a possibility of an emergency. Appropriate portions of the plan shall be implemented in the event of an emergency.*

**1910.1047(h)(1)(iii)**—The *plan shall include the elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, "Emergency action plans" and "Fire prevention plans," respectively.*

**1910.1047(i)(3)**—*Information provided to the physician. The employer shall provide information to the examining physician as specified in the standard.*

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the *hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of EtO and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.*

**1910.1047(k)(1)(i)**—Where the processing, use, or handling of products made from or containing EtO are exempted from other requirements of this section under *paragraph (a)(2) [Scope] of this section, or where objective data have been relied on in lieu of initial monitoring under paragraph (d)(2)(ii) [Initial Monitoring] of this section, the employer shall establish and maintain an accurate record of objective data reasonably relied upon in support of the exemption.*

**1910.1047(k)(1)(iii)**—The employer shall *maintain this record for the duration of the employer's reliance upon such objective data.*

**1910.1047(k)(2)(i)**—The employer shall *keep an accurate record of all measurements taken to monitor employee exposure to EtO as prescribed in paragraph (d) [Exposure Monitoring] of this section.*

**1910.1047(k)(2)(iii)**—The employer shall *maintain this record for at least thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

**1910.1047(k)(3)(i)**—The employer shall *establish and maintain an accurate record for each employee subject to medical surveillance by paragraph (i)(1)(i) [Employees Covered] of this section, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

**1910.1047(k)(3)(iii)**—The employer shall *ensure that this record is maintained for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

**1910.1047(k)(5)**—*Transfer of records. The employer shall comply with the requirements concerning transfer of records set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].*

## **Training and Communications**

**1910.1047(d)(7)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.*

**1910.1047(i)(3)**—*Information provided to the physician. The employer shall provide information to the examining physician as specified in the standard. [Reference paragraph (i)(3) for specific information.]*

**1910.1047(i)(4)(ii)**—The employer shall *instruct the physician not to reveal in the written opinion given to the employer specific findings or diagnoses unrelated to occupational exposure to EtO.*

**1910.1047(i)(4)(iii)**—The employer shall *provide a copy of the physician's written opinion to the affected employee within 15 days from its receipt.*

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the *hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of EtO and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.*

**1910.1047(j)(3)(i)**—The employer *shall provide employees* who are potentially exposed to EtO at or above the action level or above the excursion limit *with **information** and training on EtO at the time of initial assignment and at least annually thereafter.* [Reference paragraph (j)(3)(i) for specific information.]

## **Exposure Monitoring**

**1910.1047(d)(1)(i)**—*Determinations of employee exposure shall be made* from breathing zone air samples that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.

**1910.1047(d)(1)(iii)**—Where the *employer can **document** that **exposure levels** are equivalent* for similar operations in different work shifts, the employer need only determine representative employee exposure for that operation during one shift.

**1910.1047(d)(2)(i)**—Each employer who has a workplace or work operation covered by this standard, except as provided for in *paragraph (a)(2) [Scope] or (d)(2)(ii) [Initial Monitoring]* of this section, *shall perform initial monitoring* to determine accurately the airborne concentrations of EtO to which employees may be exposed.

**1910.1047(d)(3)(i)**—If the monitoring required by *paragraph (d)(2) [Initial Monitoring]* of this section reveals employee exposure at or above the action level but at or below the 8-hour TWA, the employer *shall repeat such monitoring for each such employee at least every 6 months.*

**1910.1047(d)(3)(ii)**—If the monitoring required by *paragraph (d)(2)(i) [Initial Monitoring]* of this section reveals employee exposure above the 8-hour TWA, the employer *shall repeat such monitoring for each such employee at least every 3 months.*

**1910.1047(d)(3)(iii)**—The employer *may alter the monitoring schedule from quarterly to semiannually* for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee's exposure has decreased to or below the 8-hour TWA.

**1910.1047(d)(3)(iv)**—If the monitoring required by *paragraph (d)(2)(i) [Initial Monitoring]* of this section reveals employee exposure above the 15 minute excursion limit, the employer *shall repeat such monitoring for each such employee at least every 3 months, and more often as necessary* to evaluate exposure the employee's short-term exposures.

**1910.1047(d)(5)**—*Additional monitoring.* Notwithstanding the provisions of *paragraph (d)(4) [Termination of Monitoring]* of this section, the employer shall institute the exposure monitoring required under *paragraphs (d)(2)(i) [Initial Monitoring]* and *(d)(3) [Monitoring Frequency]* of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to EtO or when the employer *has any reason to suspect that a change may result in new or additional exposures.*

**1910.1047(d)(7)(i)**—The employer *must, within 15 working days after the **receipt** of the **results*** of any monitoring performed under this section, *notify each affected employee of these **results** either individually in **writing** or by **posting** the **results*** in an appropriate location that is accessible to employees.

## **Medical Surveillance**

**1910.1047(i)(1)(i)(A)**—The employer *shall institute a **medical surveillance program*** for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least 30 days a year.

**1910.1047(i)(2)(i)**—*Frequency.* The employer *shall make available medical examinations and consultations* to each employee covered under *paragraph (i)(1)(i) [Medical Surveillance]* of this section on the *following schedules:*

**1910.1047(i)(2)(i)(A)**—*Prior to assignment* of the employee to an area where exposure may be at or above the action level for at least 30 days a year.

**1910.1047(i)(2)(i)(B)**—*At least annually* each employee exposed at or above the action level for at least 30 days in the past year.

**1910.1047(i)(2)(i)(C)**—*At termination of employment or reassignment* to an area where exposure to EtO is not at or above the action level for at least 30 days a year.

**1910.1047(i)(2)(i)(D)**—*As medically appropriate for any employee exposed during an emergency.*

**1910.1047(i)(2)(i)(E)**—*As soon as possible, upon notification by an employee either (1) that the employee has developed signs or symptoms* indicating possible overexposure to EtO, or (2) that the employee desires medical advice concerning the effects of current or past exposure to EtO on the employee's ability to produce a healthy child.



**1910.1047(i)(2)(i)(F)**—If the examining *physician* determines that any of the examinations should *be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies recommended by the physician.*

**1910.1047(i)(3)**—*Information provided to the physician. The employer shall provide information to the examining physician as specified in the standard. [Reference paragraph (i)(3) for specific information.]*

**1910.1047(i)(4)(i)**—The employer shall obtain a *written opinion* from the examining *physician*. This *written opinion* shall contain the *results* of the medical examination. *[Reference paragraph (i)(4)(i) for specific information.]*

**1910.1047(i)(4)(iii)**—The employer shall provide a *copy* of the *physician's written opinion* to the affected employee within 15 days from its *receipt*.

### Qualified Person

**1910.1047(i)(2)(i)(F)**—If the examining *physician* determines that any of the examinations should *be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies recommended by the physician.*

**1910.1047(i)(3)**—*Information provided to the physician. The employer shall provide information to the examining physician as specified in the standard.*

**1910.1047(i)(4)(i)**—The employer shall obtain a *written opinion* from the examining *physician*. This *written opinion* shall contain the *results* of the medical examination.

**1910.1047(i)(4)(iii)**—The employer shall provide a *copy* of the *physician's written opinion* to the affected employee within 15 days from its *receipt*.

**1910.1047(i)(4)(ii)**—The employer shall instruct the *physician* not to reveal in the *written opinion* given to the employer specific findings or diagnoses unrelated to occupational exposure to EtO.

### Signs, Markings and Tags

**1910.1047(e)(1)**—The employer shall establish a *regulated area* wherever occupational exposures to airborne concentrations of EtO may exceed the TWA or wherever the EtO concentration exceeds or can reasonably be expected to exceed the excursion limit.

**1910.1047(e)(3)**—*Regulated areas shall be demarcated* in any manner that minimizes the number of employees within the regulated area.

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the *hazard communication program* established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to *labels* on containers of EtO and to *safety data sheets*, and is trained in accordance with the requirements of HCS and paragraph (j)(3) *[Information and Training]* of this section.

**1910.1047(j)(2)(i)(A)**—The employer shall *post and maintain legible signs* demarcating regulated areas and entrances or access ways to regulated areas that bear a legend. *[Reference paragraph (j)(2)(i)(A) for specific information.]*

**1910.1047(j)(2)(ii)(A)**—The employer shall ensure that *labels* are *affixed* to all containers of EtO whose contents are capable of causing employee exposure at or above the action level or whose contents may reasonably be foreseen to cause employee exposure above the excursion limit, and that the *labels remain affixed* when the containers of EtO leave the workplace. For the purposes of this *paragraph (j)(2)(ii) [Labels]*, reaction vessels, storage tanks, and pipes or piping systems are not considered to be containers.

## 1910.1048—FORMALDEHYDE

**Scope/Application:** *This section applies to occupational exposure to formaldehyde, its solutions, and materials that release formaldehyde.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, respirator program, housekeeping program, medical surveillance program, hazard communication program, training program, preventive maintenance
- Inspections and Tests—pulmonary function tests
- Recordkeeping—retention requirements

- Training and Communications—training program, initial and annual training
- Exposure Monitoring—periodic monitoring, posted results
- Medical Surveillance—questionnaires, initial and annual examinations
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, posted signs, labels

### Programs, Policies and Procedures

**1910.1048(f)(1)**—*Engineering controls and work practices.* The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

**1910.1048(g)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with § 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1910.1048(g)(2)(ii)(A)**—*Replace the cartridge after three (3) hours of use or at the end of the workshift,* whichever occurs first, unless the cartridge contains a **NIOSH-approved end-of-service-life indicator (ESLI)** to show when breakthrough occurs.

**1910.1048(g)(2)(ii)(B)**—Unless the canister contains a **NIOSH-approved ESLI** to show when breakthrough occurs, *replace canisters used in atmospheres up to 7.5 ppm (10xPEL) every four (4) hours and industrial-sized canisters used in atmospheres up to 75 ppm (100xPEL) every two (2) hours, or at the end of the workshift,* whichever occurs first.

**1910.1048(l)(4)(ii)**—Laboratory examinations for respirator wearers *consisting of baseline and annual pulmonary function tests.* As a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), and forced expiratory flow (FEF).

**1910.1048(j)**—Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a **program to detect leaks and spills, including regular visual inspections.**

**1910.1048(j)(1)**—*Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.*

**1910.1048(k)**—Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer shall assure appropriate procedures are adopted to minimize injury and loss of life. *Appropriate procedures shall be implemented in the event of an emergency.*

**1910.1048(l)(1)(i)**—The employer shall institute **medical surveillance programs** for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. *[Reference paragraph (l) for specific information.]*

**1910.1048(m)(1)(i)**—Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for formaldehyde.

**1910.1048(m)(1)(iii)**—Employers shall include formaldehyde in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers of formaldehyde and to safety data sheets,** and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training] of this section.

**1910.1048(m)(4)(i)**—Any employer who uses formaldehyde-containing materials listed in paragraph (m)(1)(i) [Hazard Communication] shall comply with the requirements of 29 CFR 1910.1200(g) [Safety Data Sheets] with regard to the development and updating of **safety data sheets.**

**1910.1048(m)(4)(ii)**—Manufacturers, importers, and distributors of formaldehyde-containing materials listed in paragraph (m)(1)(i) [Hazard Communication] shall assure that **safety data sheets** and updated information are provided to all employers purchasing such materials at the time of the initial shipment and at the time of the first shipment after a **safety data sheet** is updated.

**1910.1048(m)(5)**—**Written hazard communication program.** The employer shall develop, implement, and maintain at the workplace, a **written hazard communication program** for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for **labels and other forms of warning and safety data sheets,** and paragraph (n) [Employee Information and Training] for employee information and training, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2) [Hazard Communication].

**1910.1048(n)(1)**—Participation. The employer *shall assure that all employees who are assigned to workplaces* where there is exposure to formaldehyde *participate in a **training program***, except that where the employer can show, using **objective data**, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training. [*Reference paragraph (n)(3) for specific information.*]

### Inspections and Tests

**1910.1048(j)**—Housekeeping. For operations involving formaldehyde liquids or gas, the employer *shall conduct a **program** to detect **leaks and spills**, including regular visual inspections.*

**1910.1048(j)(1)**—Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

### Recordkeeping

**1910.1048(d)(1)(iv)**—Representative samples for each job classification in each work area *shall be taken for each shift* unless the employer *can **document with objective data*** that exposure levels for a given job classification are equivalent for different work shifts.

**1910.1048(d)(6)**—Employee notification of monitoring **results**. The employer must, within 15 working days after the receipt of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by posting the **results** in an appropriate location that is accessible to employees. If employee exposure is above the PEL, affected employees shall be provided with a **description** of the corrective actions being taken by the employer to decrease exposure.

**1910.1048(l)(6)**—**Information provided to the physician**. The employer shall **provide information** to the examining **physician** (specifically listed in standard). [*Reference paragraph (l)(6) for specific information.*]

**1910.1048(l)(9)(ii)**—The employer *shall promptly notify an employee of the right to seek a **second medical opinion** after each occasion* that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(m)(1)(iii)**—Employers *shall include formaldehyde in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has **access to labels** on containers of formaldehyde and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (n) [*Employee Information and Training*] of this section.

**1910.1048(m)(5)**—**Written hazard communication program**. The employer shall develop, implement, and **maintain** at the workplace, a **written hazard communication program** for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for **labels** and **other forms of warning** and **safety data sheets**, and paragraph (n) [*Employee Information and Training*] for employee information and training, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2) [*Hazard Communication*].

**1910.1048(o)(1)**—**Exposure measurements**. The employer shall establish and **maintain an accurate record** of all **measurements** taken to monitor employee exposure to formaldehyde.

**1910.1048(o)(2)**—**Exposure determinations**. Where the employer has determined that no monitoring is required under this standard, the employer shall **maintain a record** of the **objective data** relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.

**1910.1048(o)(3)**—**Medical surveillance**. The employer shall establish and **maintain an accurate record** for each employee subject to medical surveillance under this standard.

**1910.1048(o)(4)(i)**—The employer shall establish and **maintain accurate records** for employees subject to negative pressure respirator fit testing required by this standard.

**1910.1048(o)(5)**—**Record retention**. The employer shall **retain records** required by this standard for at least the following periods:

**1910.1048(o)(5)(i)**—**Exposure records** and determinations shall be kept for at least 30 years.

**1910.1048(o)(5)(ii)**—**Medical records** shall be kept for the duration of employment plus 30 years.

**1910.1048(o)(5)(iii)**—**Respirator fit testing records** shall be kept until replaced by a more recent record.

## Training and Communications

**1910.1048(e)(3)**—An employer at a multiemployer worksite who establishes a regulated area *shall communicate the access restrictions and locations* of these areas to other employers with work operations at that worksite.

**1910.1048(h)(2)(iii)**—The employer *shall assure that only persons trained to recognize the hazards* of formaldehyde remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.

**1910.1048(h)(2)(vi)**—The employer *shall inform* any person who launders, cleans, or repairs such clothing or equipment of formaldehyde's potentially harmful effects and of *procedures* to safely handle the clothing and equipment.

**1910.1048(j)(4)**—Formaldehyde-contaminated waste and debris resulting from leaks or spills shall be placed for disposal in sealed containers *bearing a label warning* of formaldehyde's presence and of the hazards associated with formaldehyde. The employer *shall ensure that the labels are in accordance with paragraph (m) [Hazard Communication]* of this section.

**1910.1048(l)(6)**—**Information provided to the physician.** *The employer shall provide information to the examining physician (specifically listed in standard). [Reference paragraph (l)(6) for specific information.]*

**1910.1048(l)(9)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion* that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(m)(1)(iii)**—Employers *shall include formaldehyde in the hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has *access to labels on containers of formaldehyde and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training]* of this section.

**1910.1048(n)(1)**—Participation. The employer *shall assure that all employees who are assigned to workplaces* where there is exposure to formaldehyde *participate in a training program*, except that where the employer can show, using **objective data**, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide *training*. [Reference paragraph (n)(3) for specific information.]

**1910.1048(n)(2)**—Frequency. *Employers shall provide such information and training to employees at the time of initial assignment, and whenever a new exposure to formaldehyde is introduced into the work area. The training shall be repeated at least annually.*

## Exposure Monitoring

**1910.1048(d)(1)(i)**—Each employer who has a workplace covered by this standard *shall monitor employees* to determine their exposure to formaldehyde.

**1910.1048(d)(1)(iv)**—Representative samples for each job classification in each work area *shall be taken for each shift* unless the employer *can document with objective data* that exposure levels for a given job classification are equivalent for different work shifts.

**1910.1048(d)(2)(i)**—Unless the employer chooses to measure the exposure of each employee potentially exposed to formaldehyde, the employer *shall develop a representative sampling strategy and measure sufficient exposures within each job classification for each workshift to correctly* characterize and not underestimate the exposure of any employee within each exposure group.

**1910.1048(d)(2)(ii)**—The *initial monitoring process shall be repeated each time there is a change in production, equipment, process, personnel, or control measures* which may result in new or additional exposure to formaldehyde.

**1910.1048(d)(2)(iii)**—If the employer receives reports of signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure, the employer *shall promptly monitor* the affected employee's exposure.

**1910.1048(d)(3)(i)**—The employer *shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring* to be exposed at or above the action level or at or above the STEL.

**1910.1048(d)(3)(ii)**—If the last monitoring **results** reveal employee exposure at or above the action level, the employer *shall repeat monitoring of the employees at least every 6 months*.

**1910.1048(d)(3)(iii)**—If the last monitoring **results** reveal employee exposure at or above the STEL, the employer *shall repeat monitoring of the employees at least once a year under worst conditions*.

**1910.1048(d)(6)**—*Employee notification of monitoring results.* The employer must, within 15 working days after the receipt of the **results** of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees. If employee exposure is above the PEL, affected employees shall be provided with a *description of the corrective actions* being taken by the employer to decrease exposure.

### Medical Surveillance

**1910.1048(l)(1)(i)**—The employer shall institute **medical surveillance programs** for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. [Reference paragraph (l) for specific information.]

**1910.1048(l)(3)**—**Medical disease questionnaire.** The employer shall make the following medical surveillance available to employees *prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter.* The employer shall also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

**1910.1048(l)(3)(i)**—*Administration of a medical disease questionnaire, such as in appendix D,* which is designed to elicit information on work history, smoking history, any evidence of eye, nose, or throat irritation; chronic airway problems or hyperreactive airway disease: allergic skin conditions or dermatitis; and upper or lower respiratory problems.

**1910.1048(l)(4)**—*Medical examinations.* Medical examinations shall be given to any employee who the **physician** feels, based on information in the **medical disease questionnaire**, may be at increased risk from exposure to formaldehyde and *at the time of initial assignment and at least annually thereafter* to all employees required to wear a respirator to reduce exposure to formaldehyde.

**1910.1048(l)(5)**—*Examinations for employees exposed in an emergency.* The employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

**1910.1048(l)(3)(ii)**—*A determination by the physician,* based on *evaluation* of the **medical disease questionnaire**, of whether a medical examination is necessary for employees not required to wear respirators to reduce exposure to formaldehyde.

**1910.1048(l)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician** (specifically listed in standard). [Reference paragraph (l)(6) for specific information.]

**1910.1048(l)(7)(i)**—For each examination required under this standard, the employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the **medical examination** except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

**1910.1048(l)(9)(ii)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(l)(9)(iii)**—The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the notification* of the right to seek a second **medical opinion**, or *receipt of the initial physician's written opinion*, whichever is later.

### Qualified Person

**1910.1048(l)(3)(ii)**—*A determination by the physician,* based on *evaluation* of the **medical disease questionnaire**, of whether a medical examination is necessary for employees not required to wear respirators to reduce exposure to formaldehyde.

**1910.1048(l)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician** (specifically listed in standard).

**1910.1048(l)(7)(i)**—For each examination required under this standard, the employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

**1910.1048(l)(9)(ii)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(l)(9)(iii)**—The employer may condition its participation in, and payment for, the multiple *physician* review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the notification* of the right to seek a second medical opinion, *or receipt of the initial physician’s written opinion, whichever is later*.

### Signs, Markings and Tags

**1910.1048(e)(1)(i)**—The employer *shall establish regulated areas* where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and *post* all entrances and accessways with *signs*. [Reference paragraph (e)(1)(i) for specific information.]

**1910.1048(h)(2)(ii)(A)**—*Signs*. Storage areas for contaminated clothing and equipment shall have *signs* bearing a legend. [Reference paragraph (h)(2)(ii)(A) for specific information.]

**1910.1048(h)(2)(ii)(B)**—*Labels*. The employer *shall ensure containers for contaminated clothing and equipment are labeled* consistent with the Hazard Communication Standard, Sec. 1910.1200. [Reference paragraph (h)(2)(ii)(B) for specific information.]

**1910.1048(m)(1)(iii)**—Employers *shall include formaldehyde in the hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has *access to labels on containers of formaldehyde and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training]* of this section.

**1910.1048(m)(3)(i)**—The employer *shall assure that hazard warning labels* complying with the requirements of 29 CFR 1910.1200(f) [Labels and Other Forms of Warning] are *affixed to all containers of materials listed in paragraph (m)(1)(i) [Hazard Communication]*, except to the extent that 29 CFR 1910.1200(f) [Labels and Other Forms of Warning] is inconsistent with this paragraph.

## 1910.1050—METHYLENEDIANILINE

**Scope/Application:** *This section applies to occupational exposure to Methylenedianiline.*

**Exception:** *This standard does not apply to the processing, use, and handling of products containing MDA where initial monitoring indicates that the product is not capable of releasing MDA in excess of the action level under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no “dermal exposure to MDA” can occur; does not apply to the processing, use, and handling of products containing MDA where objective data are reasonably relied upon which demonstrate the product is not capable of releasing MDA under the expected conditions of processing, use, and handling which will cause the greatest possible release; and where no “dermal exposure to MDA” can occur; does not apply to the storage, transportation, distribution or sale of MDA in intact containers sealed in such a manner as to contain the MDA dusts, vapors, or liquids; does not apply to the construction industry (Exposure to MDA in the construction industry is covered by 29 CFR 1926.60); does not apply to materials in any form which contain less than 0.1 percent MDA by weight or volume; does not apply to “finished articles containing MDA.”*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency plan, fire prevention plan, compliance program, training program, respirator program, work controls, medical surveillance program, housekeeping program, hazard communication program
- Inspections and Tests—visual inspections, corrective actions, documentation
- Recordkeeping—records, retention requirements, safety data sheets
- Training and Communications—inform launderers, initial and annual training, SDS
- Exposure Monitoring—determinations, monitoring initially, every 6 months, and quarterly, posted results
- Medical Surveillance—program, initial, annual, emergency and “other” examinations, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—marked regulated areas, labels, posted results

### Programs, Policies and Procedures

**1910.1050(d)(1)(i)**—A *written plan for emergency situations shall be developed* for each workplace where there is a possibility of an emergency. Appropriate portions of the *plan* shall be implemented in the event of an emergency.

**1910.1050(d)(1)(iii)**—The *plan* shall specifically include provisions for alerting and evacuating affected employees as well as the *elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, “Emergency action plans” and “Fire prevention plans,”* respectively.

**1910.1050(g)(1)(i)**—The employer *shall institute engineering controls and work practices* to reduce and maintain employee exposure to MDA at or below the PELs except to the extent that the employer can establish that these controls are not feasible or where the provisions of *paragraphs (g)(1)(ii) or (h)(1)(i) through (iv) [Methods of Compliance]* of this section apply.

**1910.1050(g)(2)(i)**—The employer *shall establish and implement a written program* to reduce **employee exposure** to or below the PELs by means of *engineering and work practice* controls, as required by *paragraph (g)(1) [Methods of Compliance]* of this section, and by use of respiratory protection where permitted under this section. The **program** shall include a schedule for periodic maintenance (e.g., leak detection) and *shall include the written plan for emergency situations as specified in paragraph (d) [Emergency Situations]* of this section.

**1910.1050(g)(2)(ii)**—Upon request this **written program** shall be furnished for examination and **copying** to the Assistant Secretary, the Director, affected employees, and designated employee representatives. The employer *shall review and, as necessary, update such plans at least once every 12 months* to make certain they reflect the current status of the **program**.

**1910.1050(h)(2)**—**Respirator program**. The employer *must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each respirator.

**1910.1050(k)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for MDA.

**1910.1050(k)(1)(iii)**—Employers *shall include MDA in the hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers *shall ensure that each employee has access to labels on containers of MDA and to safety data sheets, and is trained* in accordance with the requirements of HCS and *paragraph (k)(4) [Information and Training]* of this section.

**1910.1050(l)(2)**—The employer *shall institute a program* for detecting **MDA leaks, spills, and discharges**, including *regular visual inspections* of operations involving liquid or solid MDA.

**1910.1050(m)(1)(i)**—The employer *shall make available a medical surveillance program* for employees exposed to MDA. *[Reference paragraph (m) for specific information.]*

## Inspections and Tests

**1910.1050(e)(8)**—*Visual monitoring. The employer shall make routine inspections* of employee hands, face and forearms potentially exposed to MDA. Other potential dermal exposures reported by the employee must be referred to the appropriate medical personnel for observation. If the employer determines that the employee has been exposed to MDA the employer *shall*:

**1910.1050(e)(8)(i)**—*Determine the source* of exposure.

**1910.1050(e)(8)(ii)**—*Implement protective measures* to correct the hazard.

**1910.1050(e)(8)(iii)**—**Maintain records** of the corrective actions in accordance with *paragraph (n) [Recordkeeping]* of this section.

## Recordkeeping

**1910.1050(a)(8)**—Where products containing MDA are exempted under *paragraphs (a)(2) through (a)(7) [Scope]* of this section, the employer *shall maintain records of the initial monitoring results or objective data* supporting that exemption and the basis for the employer's *reliance on the data, as provided in the recordkeeping provision of paragraph (n) [Recordkeeping]* of this section.

**1910.1050(d)(1)(i)**—A **written plan for emergency situations** *shall be developed* for each workplace where there is a possibility of an emergency. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1050(d)(1)(iii)**—The **plan** shall specifically include provisions for alerting and evacuating affected employees as well as the *elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, "Emergency action plans" and "Fire prevention plans,"* respectively.

**1910.1050(e)(7)(i)**—The employer *shall, within 15 working days after the receipt of the results* of any monitoring performed under this standard, *notify each employee of these results, in writing, either individually or by posting of results* in an appropriate location that is accessible to affected employees.

**1910.1050(e)(8)(iii)**—*Maintain records of the corrective actions* in accordance with *paragraph (n) [Recordkeeping]* of this section.

**1910.1050(g)(2)(i)**—The employer *shall establish and implement a written program* to reduce employee exposure to or below the PELs by means of *engineering and work practice controls*, as required by *paragraph (g)(1) [Methods of Compliance]* of this section, and by use of respiratory protection where permitted under this section. The **program** shall include a schedule for periodic maintenance (e.g., leak detection) and *shall include the written plan for emergency situations as specified in paragraph (d) [Emergency Situations]* of this section.

**1910.1050(k)(3)**—**Safety data sheets (SDS)**. In meeting the obligation to *provide safety data sheets*, employers shall make appropriate use of the information found in *Appendices A and B to Sec. 1910.1050*.

**1910.1050(k)(5)(i)**—The employer *shall make readily available to all affected employees, without cost, all written materials relating to the employee training program, including a copy* of this regulation.

**1910.1050(k)(5)(ii)**—The employer shall provide to the Assistant Secretary and the Director, upon request, *all information and training materials* relating to the **employee information and training program**.

**1910.1050(m)(6)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician* conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple **physician** review mechanism upon the employee *doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician's written opinion*, whichever is later.

**1910.1050(m)(8)(i)**—For each examination under this section, the employer *shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt*.

**1910.1050(n)(1)(i)**—Where as a result of the *initial monitoring* the processing, use, or handling of products made from or containing MDA are exempted from other requirements of this section under *paragraph (a)(2) [Scope]* of this section, the employer *shall establish and maintain an accurate record of monitoring relied on in support of the exemption*.

**1910.1050(n)(1)(iii)**—The employer *shall maintain this record for the duration of the employer's reliance upon such objective data*.

**1910.1050(n)(2)(i)**—Where the processing, use, or handling of products made from or containing MDA are exempted from other requirements of this section under *paragraph (a) [Scope]* of this section, the employer *shall establish and maintain an accurate record of objective data* relied upon in support of the exemption.

**1910.1050(n)(2)(iii)**—The employer *shall maintain this record for the duration of the employer's reliance upon such objective data*.

**1910.1050(n)(3)(i)**—The employer *shall establish and maintain an accurate record of all measurements required by paragraph (e) [Exposure Monitoring]* of this section, in accordance with 29 CFR 1910.1020 *[Access to Employee Exposure and Medical Records]*.

**1910.1050(n)(3)(iii)**—The employer *shall maintain this record for at least 30 years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

**1910.1050(n)(4)(i)**—The employer *shall establish and maintain an accurate record* for each employee subject to medical surveillance required by *paragraph (m) [Medical Surveillance]* of this section, in accordance with 29 CFR 1910.1020 *[Access to Employee Exposure and Medical Records]*.

**1910.1050(n)(4)(iv)**—The employer *shall maintain this record for at least the duration of employment plus 30 years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

**1910.1050(n)(5)(i)**—The employer *shall establish and maintain an accurate record* for each employee removed from current exposure to MDA pursuant to *paragraph (m) [Medical Surveillance]* of this section.

**1910.1050(n)(5)(iii)**—The employer *shall maintain each medical removal record for at least the duration of an employee's employment plus 30 years*.

**1910.1050(n)(7)**—Transfer of **records**. The employer *shall comply with the requirements involving transfer of records set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.



## Training and Communications

**1910.1050(e)(7)(i)**—The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results, in writing, either individually or by posting of results in an appropriate location that is accessible to affected employees.

**1910.1050(i)(3)(iv)**—Any employer who gives MDA-contaminated clothing to another person for laundering shall inform such person of the requirement to prevent the release of MDA.

**1910.1050(k)(4)(i)**—The employer shall provide employees with information and training on MDA, in accordance with 29 CFR 1910.1200(h) [Employee Information and Training], at the time of initial assignment and at least annually thereafter.

**1910.1050(m)(6)(ii)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician's written opinion, whichever is later.

**1910.1050(m)(8)(i)**—For each examination under this section, the employer shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt.

## Exposure Monitoring

**1910.1050(e)(1)(i)**—Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's exposure to airborne MDA over an eight (8) hour period. Determination of employee exposure to the STEL shall be made from breathing zone air samples collected over a 15 minute sampling period.

**1910.1050(e)(2)**—Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall perform initial monitoring to determine accurately the airborne concentrations of MDA to which employees may be exposed.

**1910.1050(e)(3)(i)**—If the monitoring required by paragraph (e)(2) [Initial Monitoring] of this section reveals employee exposure at or above the action level, but at or below the PELs, the employer shall repeat such representative monitoring for each such employee at least every six (6) months.

**1910.1050(e)(3)(ii)**—If the monitoring required by paragraph (e)(2) [Initial Monitoring] of this section reveals employee exposure above the PELs, the employer shall repeat such monitoring for each such employee at least every three (3) months.

**1910.1050(e)(5)**—Additional monitoring. The employer shall institute the exposure monitoring required under paragraph (e)(2) [Initial Monitoring] and (e)(3) [Periodic Monitoring and Monitoring Frequency] of this section when there has been a change in production process, chemicals present, control equipment, personnel, or work practices which may result in new or additional exposures to MDA, or when the employer has any reason to suspect a change which may result in new or additional exposures.

**1910.1050(e)(7)(i)**—The employer shall, within 15 working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results, in writing, either individually or by posting of results in an appropriate location that is accessible to affected employees.

## Medical Surveillance

**1910.1050(m)(1)(i)**—The employer shall make available a medical surveillance program for employees exposed to MDA. [Reference paragraph (m) for specific information.]

**1910.1050(m)(2)(i)**—Within 150 days of the effective date of this standard, or before the time of initial assignment, the employer shall provide each employee covered by paragraph (m)(1)(i) [Medical Surveillance] with a medical examination.

**1910.1050(m)(3)(i)**—The employer shall provide each employee covered by this section with a medical examination at least annually following the initial examination.

**1910.1050(m)(4)**—Emergency examinations. If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation as addressed in paragraph (d) of this section, the employer shall provide medical examinations in accordance with paragraphs (m)(3)(i) and (ii) [Periodic Examinations] of this section. If

the **results** of liver function testing indicate an abnormality, the employee shall be removed in accordance with *paragraph (m)(9) [Medical Removal]* of this section. Repeat liver function *tests* shall be conducted on the advice of the **physician**. If the **results** of the tests are normal, *tests must be repeated two to three weeks from the initial testing*. If the **results** of the second set of tests are normal and on the advice of the **physician**, no additional *testing* is required.

**1910.1050(m)(5)**—*Additional examinations*. Where the employee *develops signs and symptoms* associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including a liver function test. Repeat liver function *tests* shall be conducted on the advice of the **physician**. If the **results** of the *tests* are normal, *tests must be repeated two to three weeks from the initial testing*. If the **results** of the second set of tests are normal and, on the advice of the **physician**, no additional testing is required.

**1910.1050(m)(6)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician* conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the *multiple physician* review mechanism upon the employee *doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician's written opinion*, whichever is later.

**1910.1050(m)(8)(i)**—For each examination under this section, the employer *shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt*.

### Qualified Person

**1910.1050(m)(5)**—*Additional examinations*. Where the employee *develops signs and symptoms* associated with exposure to MDA, the employer shall provide the employee with an additional medical examination including a liver function test. Repeat liver function *tests* shall be conducted on the advice of the **physician**. If the **results** of the *tests* are normal, *tests must be repeated two to three weeks from the initial testing*. If the **results** of the second set of tests are normal and, on the advice of the **physician**, no additional testing is required.

**1910.1050(m)(6)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician* conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, the *multiple physician* review mechanism upon the employee *doing the following within fifteen (15) days after receipt of the foregoing notification, or receipt of the initial physician's written opinion*, whichever is later.

**1910.1050(m)(8)(i)**—For each examination under this section, the employer *shall obtain, and provide the employee with a copy of, the examining physician's written opinion within 15 days of its receipt*.

### Signs, Markings and Tags

**1910.1050(e)(7)(i)**—The employer *shall, within 15 working days after the receipt of the results of any monitoring performed under this standard, notify each employee of these results, in writing, either individually or by posting of results* in an appropriate location that is accessible to affected employees.

**1910.1050(f)(1)(i)**—Airborne exposures. The employer *shall establish regulated areas* where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.

**1910.1050(f)(1)(ii)**—Dermal exposures. Where employees are subject to dermal exposure to MDA the employer *shall establish those work areas* as regulated areas.

**1910.1050(f)(2)**—*Demarcation*. *Regulated areas shall be demarcated* from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

**1910.1050(k)(2)(i)(A)**—The employer shall *post and maintain legible signs* demarcating regulated areas and entrances or access ways to regulated areas that bear a legend. *[Reference paragraph (k)(2)(i)(A) for specific information.]*

## 1910.1051—1,3-BUTADIENE

**Scope/Application:** *This section applies to occupational exposure to 1,3-Butadiene.*

**Exception:** *This standard does not apply to the processing, use, or handling of products containing BD or to other work operations and streams in which BD is present where objective data are reasonably relied upon that demonstrate the work operation or the product or the group of products or operations to which it belongs may not reasonably be foreseen to*

release BD in airborne concentrations at or above the action level or in excess of the STEL under the expected conditions of processing, use, or handling that will cause the greatest possible release or in any plausible accident; does not apply to work operations, products or streams where the only exposure to BD is from liquid mixtures containing 0.1% or less of BD by volume or the vapors released from such liquids, unless objective data become available that show that airborne concentrations generated by such mixtures can exceed the action level or STEL under reasonably predictable conditions of processing, use or handling that will cause the greatest possible release; does not apply to the storage, transportation, distribution or sale of BD or liquid mixtures in intact containers or in transportation pipelines sealed in such a manner as to fully contain BD vapors or liquid.

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, compliance program, exposure goal program, respirator program, emergency plan, medical surveillance program, training program, hazard communication program
- Recordkeeping—records, retention requirements
- Training and Communications—communicate hazards, training program
- Exposure Monitoring—determination documentation, initial, every 6 months, and quarterly monitoring, posted results
- Medical Surveillance—programs, initial, annual, termination and “other” examinations, information provided to the physician, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas marked, labels

## Programs, Policies and Procedures

**1910.1051(f)(1)(i)**—The employer *shall institute engineering controls and work practices* to reduce and maintain employee exposure to or below the PELs, except to the extent that the employer can establish that these controls are not feasible or where *paragraph (h)(1)(i) [Respiratory Protection]* of this section applies.

**1910.1051(f)(2)(i)**—**Compliance Program**—Where any exposures are over the PELs, the employer *shall establish and implement a written plan* to reduce **employee exposure** to or below the PELs primarily by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section, and by the use of respiratory protection where required or permitted under this section. No **compliance plan** is required if all exposures are under the PELs. [*Reference paragraph (f)(2) for specific information.*]

**1910.1051(g)(1)**—For those operations and job classifications where employee exposures are greater than the action level, in addition to compliance with the PELs, the employer *shall have an exposure goal program* that is intended to limit employee exposures to below the action level during normal operations. [*Reference paragraph (g) for specific information.*]

**1910.1051(g)(2)**—**Written plans for the exposure goal program** *shall be furnished upon request* for examination and **copying** to the Assistant Secretary, the Director, affected employees and designated employee representatives.

**1910.1051(g)(3)**—*Such plans shall be updated as necessary to reflect significant changes* in the status of the exposure goal program.

**1910.1051(h)(2)(i)**—The employer *must implement a respiratory protection program* in accordance with *Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(B)(1), and (2)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1051(j)**—**Emergency situations. Written plan.** *A written plan for emergency situations shall be developed, or an existing plan shall be modified, to contain the applicable elements specified in 29 CFR 1910.38 and 29 CFR 1910.39, “Emergency action plans” and “Fire prevention plans,” respectively, and in 29 CFR 1910.120, “Hazardous Waste Operations and Emergency Response,”* for each workplace where there is the possibility of an emergency.

**1910.1051(k)(1)**—Employees covered. The employer *shall institute a medical screening and surveillance program as specified in this paragraph.* [*Reference paragraph (k) for specific information.*]

**1910.1051(k)(3)(i)**—For each employee covered under *paragraphs (k)(1)(i) and (ii) [Medical Surveillance]* of this section, a **health questionnaire** and complete blood count with differential and platelet count (CBC) every year, and a physical examination as specified below:

**1910.1051(k)(3)(iii)**—*For each employee who must wear a respirator, physical ability to perform the work and use the respirator must be determined as required by 29 CFR 1910.134 [Respiratory Protection].*

**1910.1051(l)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for BD.*

**1910.1051(l)(1)(iii)**—Employers shall include BD in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of BD and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

### **Recordkeeping**

**1910.1051(a)(3)**—Where products or processes containing BD are exempted under paragraph (a)(2) [Scope] of this section, the employer shall **maintain records of the objective data** supporting that exemption and the basis for the employer's reliance on the data, as provided in paragraph (m)(1) [Recordkeeping] of this section.

**1910.1051(d)(1)(iv)**—Except for the initial monitoring required under paragraph (d)(2) [Initial Monitoring] of this section, where the employer can **document that exposure levels** are equivalent for similar operations on different work shifts, the employer need only determine representative employee exposure for that operation from the shift during which the highest exposure is expected.

**1910.1051(d)(7)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1051(d)(7)(ii)**—The employer *shall, within 15 business days after receipt of any monitoring* performed under this section indicating the 8-hour TWA or STEL has been exceeded, *provide the affected employees, in writing, with information on the corrective action* being taken by the employer to reduce employee exposure to or below the 8-hour TWA or STEL and the schedule for completion of this action.

**1910.1051(f)(2)(i)**—**Compliance Program**—Where any exposures are over the PELs, the employer *shall establish and implement a written plan* to reduce **employee exposure** to or below the PELs primarily by means of *engineering and work practice controls*, as required by paragraph (f)(1) [Engineering and Work Practice Controls] of this section, and by the use of respiratory protection where required or permitted under this section. No **compliance plan** is required if all exposures are under the PELs. [Reference paragraph (f)(2) for specific information.]

**1910.1051(g)(2)**—**Written plans for the exposure goal program** shall be furnished upon request for examination and **copying** to the Assistant Secretary, the Director, affected employees and designated employee representatives.

**1910.1051(j)**—**Emergency situations. Written plan.** *A written plan for emergency situations shall be developed, or an existing plan shall be modified, to contain the applicable elements specified in 29 CFR 1910.38 and 29 CFR 1910.39, "Emergency action plans" and "Fire prevention plans," respectively, and in 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response," for each workplace where there is the possibility of an emergency.*

**1910.1051(k)(4)(i)(A)**—*A baseline health questionnaire that includes a comprehensive occupational and health history and is updated annually.* Particular emphasis shall be placed on the hematopoietic and reticuloendothelial systems, including exposure to chemicals, in addition to BD, that may have an adverse effect on these systems, the presence of signs and symptoms that might be related to disorders of these systems, and any other information determined by the examining **physician** or other **licensed health care professional** to be necessary to evaluate whether the employee is at increased risk of material impairment of health from BD exposure. **Health questionnaires** shall consist of the sample forms in Appendix C [Medical Surveillance and Screening] to this section, or be equivalent to those samples.

**1910.1051(k)(6)**—**Information provided to the physician or other licensed health care professional.** *The employer shall provide information to the examining physician or other licensed health care professional involved in the evaluation. [Reference (k)(6) for specific information.]*

**1910.1051(k)(7)(i)**—For each medical evaluation required by this section, the employer shall ensure that the **physician or other licensed health care professional produces a written opinion and provides a copy to the employer and the employee within 15 business days of the evaluation.**

**1910.1051(l)(1)(iii)**—Employers shall include BD in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of BD and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

**1910.1051(l)(2)(i)**—The employer shall provide all employees exposed to BD with **information** and training in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, and 29 CFR 1926.59.

**1910.1051(l)(2)(ii)**—The employer shall train each employee who is potentially exposed to BD at or above the action level or the STEL in accordance with the requirements of this section. The employer shall institute a **training program**, ensure employee participation in the **program**, and **maintain a record of the contents of such program**. [Reference paragraph (l)(2)(iv) for specific information.]

**1910.1051(m)(1)(i)**—Where the processing, use, or handling of products or streams made from or containing BD are exempted from other requirements of this section under paragraph (a)(2) [Scope] of this section, or where objective data have been relied on in lieu of initial monitoring under paragraph (d)(2)(ii) [Exposure Monitoring] of this section, the employer shall establish and **maintain a record of the objective data** reasonably relied upon in support of the exemption.

**1910.1051(m)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1051(m)(2)(i)**—The employer shall establish and **maintain an accurate record** of all measurements taken to monitor **employee exposure** to BD as prescribed in paragraph (d) [Exposure Monitoring] of this section.

**1910.1051(m)(2)(iii)**—The employer shall **maintain this record** for at least 30 years in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1051(m)(4)(i)**—The employer shall establish and **maintain an accurate record** for each employee subject to **medical screening** and surveillance under this section.

**1910.1051(m)(4)(iii)**—**Medical screening and surveillance records** shall be **maintained** for each employee for the duration of employment plus 30 years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1051(m)(6)**—**Transfer of records**. The employer shall transfer **medical and exposure records** as set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1051(d)(7)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, **notify each affected employee of these results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.

**1910.1051(d)(7)(ii)**—The employer shall, within 15 business days after **receipt** of any monitoring performed under this section indicating the 8-hour TWA or STEL has been exceeded, **provide the affected employees, in writing, with information on the corrective action** being taken by the employer to reduce employee exposure to or below the 8-hour TWA or STEL and the schedule for completion of this action.

**1910.1051(e)(4)**—An employer at a multi-employer worksite who establishes a regulated area shall communicate the access restrictions and locations of these areas to other employers with work operations at that worksite whose employees may have access to these areas.

**1910.1051(k)(6)**—**Information provided to the physician or other licensed health care professional**. The employer shall provide **information** to the examining **physician** or other **licensed health care professional** involved in the evaluation. [Reference (k)(6) for specific information.]

**1910.1051(k)(7)(i)**—For each medical evaluation required by this section, the employer shall ensure that the **physician** or other **licensed health care professional** produces a **written opinion** and provides a **copy** to the employer and the employee within 15 business days of the evaluation.

**1910.1051(l)(1)(iii)**—Employers shall include BD in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of BD and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l)(2) [Employee Information and Training] of this section.

**1910.1051(l)(2)(i)**—The employer shall provide all employees exposed to BD with **information** and training in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, and 29 CFR 1926.59.

**1910.1051(l)(2)(ii)**—The employer *shall train each employee* who is potentially exposed to BD at or above the action level or the STEL in accordance with the requirements of this section. The employer *shall institute a **training program***, ensure employee participation in the **program**, and **maintain a record of the contents of such program**. [Reference paragraph (l)(2)(iv) for specific information.]

**1910.1051(l)(2)(iii)**—*Training shall be provided prior to or at the time of initial assignment* to a job potentially involving exposure to BD at or above the action level or STEL and *at least annually thereafter*.

### **Exposure Monitoring**

**1910.1051(d)(1)(i)**—*Determinations of employee exposure shall be made from breathing zone air samples* that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.

**1910.1051(d)(1)(iv)**—Except for the initial monitoring required under paragraph (d)(2) [Initial Monitoring] of this section, where the employer can **document** that exposure levels are equivalent for similar operations on different work shifts, the employer need only determine representative employee exposure for that operation from the shift during which the highest exposure is expected.

**1910.1051(d)(2)(i)**—Each employer who has a workplace or work operation covered by this section, *shall perform initial monitoring to determine accurately the airborne concentrations of BD to which employees may be exposed, or shall rely on **objective data*** pursuant to paragraph (a)(2)(i) [Scope] of this section to fulfill this requirement. The *initial monitoring* required under this paragraph shall be completed within 60 days of the introduction of BD into the workplace.

**1910.1051(d)(3)(i)**—If the initial monitoring required by paragraph (d)(2) [Scope] of this section reveals employee exposure to be at or above the action level but at or below both the 8-hour TWA limit and the STEL, the employer *shall repeat the representative monitoring required by paragraph (d)(1) [Exposure Monitoring] of this section every twelve months*.

**1910.1051(d)(3)(ii)**—If the initial monitoring required by paragraph (d)(2) [Initial Monitoring] of this section reveals employee exposure to be above the 8-hour TWA limit, the employer *shall repeat the representative monitoring required by paragraph (d)(1)(ii) [Exposure Monitoring] of this section at least every three months* until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, *after which such monitoring must occur at least every six months*.

**1910.1051(d)(3)(iii)**—If the initial monitoring required by paragraph (d)(2) [Initial Monitoring] of this section reveals employee exposure to be above the STEL, the employer *shall repeat the representative monitoring required by paragraph (d)(1)(iii) [Exposure Monitoring] of this section at least every three months* until the employer has collected two samples per quarter (each at least 7 days apart) within a two-year period, *after which such monitoring must occur at least every six months*.

**1910.1051(d)(3)(iv)**—The employer *may alter the monitoring schedule from every six months to annually* for any required representative monitoring for which two consecutive measurements taken at least 7 days apart indicate that employee exposure has decreased to or below the 8-hour TWA, but is at or above the action level.

**1910.1051(d)(5)(i)**—The employer *shall institute the exposure monitoring required under paragraph (d) [Exposure Monitoring] of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to BD or when the employer has any reason to suspect that a change may result in new or additional exposures*.

**1910.1051(d)(5)(ii)**—*Whenever spills, leaks, ruptures or other breakdowns occur* that may lead to employee exposure above the 8-hr TWA limit or above the STEL, the employer *shall monitor* [using leak source, such as direct reading instruments, area or personal monitoring], after the cleanup of the spill or repair of the leak, rupture or other breakdown, to ensure that exposures have returned to the level that existed prior to the incident.

**1910.1051(d)(7)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in **writing** or by **posting the results*** in an appropriate location that is accessible to employees.

**1910.1051(d)(7)(ii)**—The employer *shall, within 15 business days after receipt of any monitoring performed under this section indicating the 8-hour TWA or STEL has been exceeded, provide the affected employees, in **writing**, with information on the corrective action* being taken by the employer to reduce employee exposure to or below the 8-hour TWA or STEL and the *schedule for completion* of this action.

## Medical Surveillance

**1910.1051(k)(1)**—Employees covered. The employer *shall institute a **medical screening and surveillance program** as specified in this paragraph. [Reference paragraph (k) for specific information.]*

**1910.1051(k)(3)(i)**—For each employee covered under *paragraphs (k)(1)(i) and (ii) [Medical Screening and Surveillance] of this section, a **health questionnaire** and complete blood count with differential and platelet count (CBC) every year, and a physical examination as specified below:*

**1910.1051(k)(3)(i)(A)**—*An **initial physical examination** that meets the requirements of this rule, if **twelve months or more** have elapsed since the last physical examination conducted as part of a **medical screening program** for BD exposure.*

**1910.1051(k)(3)(i)(B)**—*Before assumption of duties by the employee in a job with BD exposure.*

**1910.1051(k)(3)(i)(C)**—*Every 3 years after the initial physical examination.*

**1910.1051(k)(3)(i)(D)**—*At the discretion of the **physician** or other **licensed health care professional** reviewing the **annual health questionnaire** and CBC.*

**1910.1051(k)(3)(i)(E)**—*At the time of employee reassignment to an area where exposure to BD is below the action level, if the employee's past exposure history does not meet the criteria of paragraph (j)(1)(ii) of this section for continued coverage in the **screening and surveillance program**, and if **twelve months or more** have elapsed since the last physical examination.*

**1910.1051(k)(3)(i)(F)**—*At termination of employment if **twelve months or more** have elapsed since the last physical examination.*

**1910.1051(k)(3)(ii)**—*Following an emergency situation, medical screening shall be conducted as quickly as possible, but not later than 48 hours after the exposure.*

**1910.1051(k)(3)(iii)**—*For each employee who must wear a respirator, physical ability to perform the work and use the respirator must be determined as required by 29 CFR 1910.134 [Respiratory Protection].*

**1910.1051(k)(4)(i)(A)**—*A **baseline health questionnaire** that includes a comprehensive occupational and health history and is updated annually. Particular emphasis shall be placed on the hematopoietic and reticuloendothelial systems, including exposure to chemicals, in addition to BD, that may have an adverse effect on these systems, the presence of signs and symptoms that might be related to disorders of these systems, and any other information determined by the examining **physician or other licensed health care professional** to be necessary to evaluate whether the employee is at increased risk of material impairment of health from BD exposure. **Health questionnaires** shall consist of the sample forms in Appendix C [Medical Surveillance and Screening] to this section, or be equivalent to those samples.*

**1910.1051(k)(4)(ii)**—*Medical screening for employees exposed to BD in an emergency situation shall focus on the acute effects of BD exposure and at a minimum include: A CBC within 48 hours of the exposure and then monthly for three months; and a physical examination if the employee **reports** irritation of the eyes, nose throat, lungs, or skin, blurred vision, coughing, drowsiness, nausea, or headache. Continued employee participation in the **medical screening and surveillance program**, beyond these minimum requirements, shall be at the discretion of the **physician** or other **licensed health care professional**.*

**1910.1051(k)(6)**—*Information provided to the **physician or other licensed health care professional**. The employer shall provide information to the examining **physician or other licensed health care professional** involved in the evaluation. [Reference (k)(6) for specific information.]*

**1910.1051(k)(7)(i)**—*For each medical evaluation required by this section, the employer shall ensure that the **physician** or other **licensed health care professional** produces a **written opinion** and provides a **copy** to the employer and the employee within 15 business days of the evaluation.*

## Qualified Person

**1910.1051(k)(6)**—*Information provided to the **physician or other licensed health care professional**. The employer shall provide information to the examining **physician or other licensed health care professional** involved in the evaluation. [Reference (k)(6) for specific information.]*

**1910.1051(k)(7)(i)**—*For each medical evaluation required by this section, the employer shall ensure that the **physician** or other **licensed health care professional** produces a **written opinion** and provides a **copy** to the employer and the employee within 15 business days of the evaluation.*

## Signs, Markings and Tags

**1910.1051(e)(1)**—The employer *shall establish a regulated area* wherever occupational exposures to airborne concentrations of BD exceed or can reasonably be expected to exceed the permissible exposure limits, either the 8-hr TWA or the STEL.

**1910.1051(h)(2)(iv)**—A *label must be attached to each filter element* to indicate the date and time it is first installed on the respirator.

## 1910.1052—METHYLENE CHLORIDE

**Scope/Application:** *This section applies to occupational exposure to methylene chloride.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, respirator program, action plan, hazard communications program
- Recordkeeping—retention requirements, records
- Training and Communications—initial and annual training, instruct physician
- Exposure Monitoring—initial and periodic monitoring, posted results
- Medical Surveillance—initial and periodic examinations, written opinion
- Qualified Person—physician
- Signs, Markings and Tags—marked regulated areas

### Programs, Policies and Procedures

**1910.1052(f)(1)**—*Engineering and work practice controls. The employer shall institute and maintain the effectiveness of engineering controls and work practices to reduce employee exposure to or below the PELs except to the extent that the employer can demonstrate that such controls are not feasible. Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-TWA PEL or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1052(f)(3)(i)**—The employer *shall implement procedures* to detect leaks of MC in the workplace. In work areas where spills may occur, the employer shall make provisions to contain any spills and to safely dispose of any MC-contaminated waste materials.

**1910.1052(g)(2)(i)**—The employer *must implement a respiratory protection program in accordance with 1910.134 (b) through (m) (except (d)(1)(iii))*, which covers each employee required by this section to use a respirator.

**1910.1052(g)(4)**—*Medical evaluation. Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer must:*

**1910.1052(g)(4)(i)**—Have a *physician or other licensed health-care professional (PLHCP) evaluate the employee's ability to use such respiratory protection.*

**1910.1052(g)(4)(ii)**—*Ensure that the PLHCP provides their findings in a written opinion to the employee and the employer.*

**1910.1052(k)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for MC.*

**1910.1052(k)(1)(iii)**—Employers shall *include MC in the hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of MC and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (l) [Employee Information and Training] of this section.*

### Recordkeeping

**1910.1052(d)(2)(i)**—Where *objective data* demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The *objective data* shall represent the highest MC exposures likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer *shall document the objective data exemption* as specified in *paragraph (m) [Recordkeeping]* of this section.



**1910.1052(g)(4)(ii)**—Ensure that the **PLHCP** provides their findings in a **written opinion** to the employee and the employer.

**1910.1052(j)(8)**—**Information provided to the physician or other licensed health care professional.** The employer shall **provide information** [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]

**1910.1052(j)(9)(ii)**—The employer shall instruct the **physician or other licensed health care professional** not to reveal to the employer, orally or in the **written opinion**, any specific **records**, findings, and diagnoses that have no bearing on occupational exposure to MC.

**1910.1052(k)(1)(iii)**—Employers shall include MC in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of MC and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l) [Employee Information and Training] of this section.

**1910.1052(m)(1)(i)**—Where an employer seeks to demonstrate that *initial monitoring* is unnecessary through reasonable reliance on objective data showing that any materials in the workplace containing MC will not release MC at levels which exceed the action level or the STEL under foreseeable conditions of exposure, the employer shall establish and **maintain an accurate record** of the **objective data** relied upon in support of the exemption.

**1910.1052(m)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1052(m)(2)(i)**—The employer shall establish and keep an accurate **record** of all measurements taken to **monitor employee exposure** to MC as prescribed in paragraph (d) [Exposure Monitoring] of this section.

**1910.1052(m)(2)(iv)**—The employer shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1052(m)(3)(i)**—The employer shall establish and **maintain an accurate record** for each employee subject to medical surveillance under paragraph (j) [Medical Surveillance] of this section.

**1910.1052(m)(3)(iii)**—The employer shall ensure that this **record is maintained** for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1052(m)(5)**—**Transfer of records.** The employer shall comply with the requirements concerning transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1052(e)(7)**—An employer at a multi-employer worksite who establishes a regulated area shall **communicate the access restrictions and locations** of these areas to all other employers with work operations at that worksite.

**1910.1052(f)(3)(ii)**—The employer shall ensure that all incidental leaks are repaired and that incidental spills are cleaned promptly by employees who use the appropriate personal protective equipment and *are trained in proper methods of cleanup*.

**1910.1052(j)(8)**—**Information provided to the physician or other licensed health care professional.** The employer shall **provide information** [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]

**1910.1052(j)(9)(ii)**—The employer shall instruct the **physician or other licensed health care professional** not to reveal to the employer, orally or in the **written opinion**, any specific **records**, findings, and diagnoses that have no bearing on occupational exposure to MC.

**1910.1052(k)**—**Hazard communication.** The employer shall communicate the following hazards associated with MC on **labels and in safety data sheets** in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, or 29 CFR 1926.59, as appropriate: cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.

**1910.1052(l)(1)**—The employer shall **provide information and training** for each affected employee prior to or at the time of initial assignment to a job involving potential exposure to MC.

**1910.1052(i)(4)**—The employer *shall train each affected employee* as required under the *Hazard Communication standard at 29 CFR 1910.1200, 29 CFR 1915.1200, or 29 CFR 1926.59*, as appropriate.

**1910.1052(i)(5)**—The employer *shall re-train each affected employee as necessary* to ensure that each employee exposed above the action level or the STEL maintains the requisite understanding of the principles of safe use and handling of MC in the workplace.

**1910.1052(i)(6)**—*Whenever there are workplace changes, such as modifications of tasks or procedures or the institution of new tasks or procedures*, which increase employee exposure, and where those exposures exceed or can reasonably be expected to exceed the action level, the employer *shall update the training as necessary* to ensure that each affected employee has the requisite proficiency.

**1910.1052(i)(7)**—An employer whose employees are exposed to MC at a multi-employer worksite *shall notify the other employers with work operations at that site* in accordance with the requirements of the *Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, or 29 CFR 1926.59*, as appropriate.

### **Exposure Monitoring**

**1910.1052(d)(2)**—*Initial determination.* Each employer whose employees are exposed to MC *shall perform initial exposure monitoring* to determine each affected employee's exposure.

**1910.1052(d)(2)(i)**—Where *objective data* demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The *objective data* shall represent the highest MC exposures likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer *shall document the objective data* exemption as specified in *paragraph (m) [Recordkeeping]* of this section.

**1910.1052(d)(3)**—*Periodic monitoring.* Where the initial determination shows employee exposures at or above the action level or above the STEL, the employer *shall establish an exposure monitoring program for periodic monitoring of employee exposure to MC in accordance with Table 1.*

**1910.1052(d)(4)(i)**—The employer *shall perform exposure monitoring when a change* in workplace conditions indicates that employee exposure may have increased. Examples of situations that may require additional monitoring include changes in production, process, control equipment, or work practices, or a leak, rupture, or other breakdown.

**1910.1052(d)(5)(i)**—The employer *shall, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results in writing, either individually or by posting of results* in an appropriate location that is accessible to affected employees.

### **Medical Surveillance**

**1910.1052(g)(4)**—*Medical evaluation.* Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer *must*:

**1910.1052(g)(4)(i)**—Have a *physician or other licensed health-care professional (PLHCP) evaluate the employee's ability to use such respiratory protection.*

**1910.1052(j)(1)**—Affected employees. The employer *shall make medical surveillance available* for employees who are or may be exposed to MC.

**1910.1052(j)(4)(i)**—*Initial surveillance.* The employer *shall provide initial medical surveillance under the schedule provided by paragraph (m)(2)(iii) [Medical Surveillance]* of this section, *or before the time of initial assignment* of the employee, whichever is later. The employer need not provide the initial surveillance if *medical records* show that an affected employee has been provided with medical surveillance that complies with this section *within 12 months* before April 10, 1997.

**1910.1052(j)(4)(ii)**—*Periodic medical surveillance.* The employer *shall update the medical and work history for each affected employee annually.* The employer *shall provide periodic physical examinations*, including appropriate laboratory surveillance, as follows:

**1910.1052(j)(4)(ii)(A)**—*For employees 45 years of age or older, within 12 months of the initial surveillance or any subsequent medical surveillance.*

**1910.1052(j)(4)(ii)(B)**—*For employees younger than 45 years of age, within 36 months of the initial surveillance or any subsequent medical surveillance.*

**1910.1052(j)(4)(iii)**—*Termination of employment or reassignment.* When an employee leaves the employer’s workplace, or is reassigned to an area where exposure to MC is consistently at or below the action level and STEL, medical surveillance *shall be made available if six months or more have elapsed* since the last medical surveillance.

**1910.1052(j)(4)(iv)**—*Additional surveillance.* The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the **written medical opinion**. (For example, the **physician** or other **licensed health care professional** may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the **results** of the *annual medical and work history*.)

**1910.1052(j)(8)**—*Information provided to the physician or other licensed health care professional.* The employer shall provide **information** [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]

**1910.1052(j)(9)(i)**—For each physical examination required by this section, the employer shall ensure that the **physician or other licensed health care professional** provides to the employer and to the affected employee a **written opinion** regarding the **results** of that examination within 15 days of completion of the *evaluation* of medical and laboratory findings, but not more than 30 days after the examination. The **written medical opinion** shall be limited to specific information. [Reference Reference paragraph (j)(9) for specific information.]

**1910.1052(j)(14)(ii)**—If the employee *does not agree with the opinion* of the employer-selected **PLHCP**, notifies the employer of that fact, and takes steps to *make an appointment with a second PLHCP within 15 days of receiving a copy of the written opinion of the initial PLHCP*, the employer shall pay for the **PLHCP** chosen by the employee to perform specific tests. [Reference paragraph (j)(14) for specific information.]

### Qualified Person

**1910.1052(g)(4)(i)**—Have a **physician or other licensed health-care professional (PLHCP)** evaluate the employee’s ability to use such respiratory protection.

**1910.1052(g)(4)(ii)**—Ensure that the **PLHCP** provides their findings in a **written opinion** to the employee and the employer.

**1910.1052(j)(4)(iv)**—*Additional surveillance.* The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the **written medical opinion**. (For example, the **physician or other licensed health care professional** may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the **results** of the *annual medical and work history*.)

**1910.1052(j)(8)**—*Information provided to the physician or other licensed health care professional.* The employer shall provide **information** [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects.

**1910.1052(j)(9)(i)**—For each physical examination required by this section, the employer shall ensure that the **physician or other licensed health care professional** provides to the employer and to the affected employee a **written opinion** regarding the **results** of that examination within 15 days of completion of the *evaluation* of medical and laboratory findings, but not more than 30 days after the examination. The **written medical opinion** shall be limited to specific information.

**1910.1052(j)(14)(ii)**—If the employee *does not agree with the opinion* of the employer-selected **PLHCP**, notifies the employer of that fact, and takes steps to *make an appointment with a second PLHCP within 15 days of receiving a copy of the written opinion of the initial PLHCP*, the employer shall pay for the **PLHCP** chosen by the employee to perform specific tests.

### Signs, Markings and Tags

**1910.1052(e)(1)**—The employer shall establish a regulated area wherever an employee’s exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

**1910.1052(e)(6)**—The employer shall demarcate regulated areas from the rest of the workplace in any manner that adequately establishes and alerts employees to the boundaries of the area and minimizes the number of authorized employees exposed to MC within the regulated area.

## 1910.1053—RESPIRABLE CRYSTALLINE SILICA

**Scope/Application:** *This section applies to occupational exposure to respirable crystalline silica.*

**Exception:** *This standard does not apply to Construction work as defined in 29 CFR 1910.12(b) (occupational exposures to respirable crystalline silica in construction work are covered under 29 CFR 1926.1153); agricultural operations covered under 29 CFR part 1928; and exposures that result from the processing of sorptive clays. This section does not apply where the employer has objective data demonstrating that employee exposure to respirable crystalline silica will remain below 25 micrograms per cubic meter of air (25 µg/m<sup>3</sup>) as an 8-hour time-weighted average (TWA) under any foreseeable conditions. This section does not apply if the employer complies with 29 CFR 1926.1153 and the task performed is indistinguishable from a construction task listed on Table 1 in paragraph (c) of 29 CFR 1926.1153; and the task will not be performed regularly in the same environment and conditions.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—work controls, exposure control plan, respirator program, emergency plan, medical surveillance program, hazard communication program
- Recordkeeping—records, retention requirements
- Training and Communications—training
- Exposure Monitoring—determination documentation, initial, every 6 months, and quarterly monitoring, posted results
- Medical Surveillance—programs, initial, annual, termination and “other” examinations, information provided to the physician, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas marked, labels

### Programs, Policies and Procedures

**1910.1053(f)(1)**—*Engineering and work practice controls.* The employer shall use *engineering and work practice controls* to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible. Wherever such feasible engineering and *work practice controls* are not sufficient to reduce employee exposure to or below the PEL, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection that complies with the requirements of *paragraph (g) [Respiratory Protection]* of this section.

**1910.1053(f)(2)(i)**—The employer shall establish and implement a **written exposure control plan** that contains at least the following elements [*Reference paragraph (f)(2)(i) for specific requirements*].

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

**1910.1053(f)(2)(iii)**—The employer shall make the **written exposure control plan** readily **available** for examination and **copying**, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director.

**1910.1053(g)(2)**—**Respiratory protection program.** Where respirator use is required by this section, the employer shall institute a **respiratory protection program** in accordance with 29 CFR 1910.134.

**1910.1053(j)(1)**—**Hazard communication.** The employer shall include **respirable crystalline silica in the program** established to comply with the **hazard communication standard (HCS)** (29 CFR 1910.1200). The employer shall ensure that each employee has access to **labels** on containers of crystalline silica and **safety data sheets**, and is **trained** in accordance with the provisions of HCS and *paragraph (j)(3)* of this section. The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

**1910.1053(j)(3)(i)(C)**—*Specific measures* the employer has implemented to protect employees from exposure to respirable crystalline silica, including *engineering controls*, *work practices*, and respirators to be used.

**1910.1053(j)(3)(i)(E)**—The purpose and a description of the **medical surveillance program** required by *paragraph (i) [Medical Surveillance]* of this section.

### Recordkeeping

**1910.1053(f)(2)(i)**—The employer shall establish and implement a **written exposure control plan** that contains at least the following elements [*Reference paragraph (f)(2)(i) for specific requirements*].

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

**1910.1053(f)(2)(iii)**—The employer shall make the **written exposure control plan** readily **available** for examination and **copying**, upon request, to each employee covered by this section, their designated representatives, the Assistant Secretary and the Director.

**1910.1053(i)(4)(iv)**—Information from **records** of employment-related medical examinations previously provided to the employee and currently within the control of the employer.

**1910.1053(j)(1)**—**Hazard communication**. The employer shall include **respirable crystalline silica in the program** established to comply with the **hazard communication standard (HCS) (29 CFR 1910.1200)**. The employer shall ensure that each employee has access to **labels** on containers of crystalline silica and **safety data sheets**, and **is trained** in accordance with the provisions of HCS and **paragraph (j)(3)** of this section. The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

**1910.1053(k)(1)(i)**—The employer shall make and **maintain** an accurate **record** of all **exposure measurements** taken to assess employee exposure to respirable crystalline silica, as prescribed in **paragraph (d) [Exposure Assessment]** of this section.

**1910.1053(k)(1)(iii)**—The employer shall ensure that **exposure records** are **maintained** and made **available** in accordance with **29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]**.

**1910.1053(k)(2)(i)**—The employer shall make and **maintain** an accurate **record** of all **objective data** relied upon to comply with the requirements of this section.

**1910.1053(k)(3)(i)**—The employer shall make and **maintain** an accurate **record** for each employee covered by medical surveillance under **paragraph (i) [Medical Surveillance]** of this section.

**1910.1053(k)(3)(ii)**—The **record** shall include the following information about the employee:

**1910.1053(k)(3)(ii)(B)**—A **copy** of the **PLHCPs' and specialists' written medical opinions**; and

**1910.1053(k)(3)(ii)(C)**—A **copy** of the **information** provided to the **PLHCPs and specialists**.

**1910.1053(k)(3)(iii)**—The employer shall ensure that **medical records** are **maintained** and made **available** in accordance with **29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]**.

### **Training and Communications**

**1910.1053(i)(4)**—**Information provided to the PLHCP**. The employer shall ensure that the examining **PLHCP** has a **copy** of this **standard**, and shall provide the **PLHCP** with the following information. [**Reference paragraph (i)(4)**].

**1910.1053(i)(7)(ii)**—The employer shall ensure that the **examining specialist** is provided with all of the information that the employer is obligated to provide to the **PLHCP** in accordance with **paragraph (i)(4) [Information provided to the PLHCP]** of this section.

**1910.1053(j)**—**Communication of respirable crystalline silica hazards to employees**.

**1910.1053(j)(3)**—**Employee information and training**.

**1910.1053(j)(3)(i)**—The employer shall ensure that **each employee covered by this section can demonstrate knowledge and understanding** of at least the following. [**Reference paragraph (j)(3)(i) for specific requirements**].

### **Exposure Monitoring**

**1910.1053(d)(3)(i)**—The employer shall **perform initial monitoring** to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area. Where several employees perform the same tasks on the same shift and in the same work area, the employer may sample a representative fraction of these employees in order to meet this requirement. In representative sampling, the **employer shall sample the employee(s)** who are expected to have the highest exposure to respirable crystalline silica.

**1910.1053(d)(3)(ii)**—If **initial monitoring** indicates that employee exposures are below the action level, the employer may discontinue monitoring for those employees whose exposures are **represented by such monitoring**.

**1910.1053(d)(3)(iii)**—Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, the **employer shall repeat such monitoring within six months** of the most recent monitoring.

**1910.1053(d)(3)(iv)**—Where the most recent exposure monitoring indicates that employee exposures are above the PEL, the employer shall *repeat such monitoring within three months* of the most recent monitoring.

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

**1910.1053(d)(5)**—*Methods of sample analysis.* The employer shall ensure that all samples taken to satisfy the monitoring requirements of *paragraph (d) [Exposure Assessment]* of this section are evaluated by a laboratory that analyzes air samples for respirable crystalline silica in accordance with the *procedures in Appendix A* to this section.

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

**1910.1053(k)(1)(i)**—The employer shall *make and maintain an accurate record of all exposure measurements* taken to assess employee exposure to respirable crystalline silica, as prescribed in *paragraph (d) [Exposure Assessment]* of this section.

**1910.1053(k)(1)(iii)**—The employer shall ensure that **exposure records are maintained and made available** in accordance with *29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

### Medical Surveillance

**1910.1053(k)(3)(i)**—The employer shall *make and maintain an accurate record* for each employee covered by medical surveillance under *paragraph (i) [Medical Surveillance]* of this section.

**1910.1053(k)(3)(ii)**—The **record** shall include the *following information* about the employee:

**1910.1053(k)(3)(ii)(C)**—A *copy* of the *information provided to the PLHCPs and specialists.*

**1910.1053(k)(3)(iii)**—The employer shall ensure that **medical records are maintained and made available** in accordance with *29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

### Signs, Markings and Tags

**1910.1053(e)(2)(ii)**—The employer shall **post signs** at all entrances to regulated areas that bear the legend specified in *paragraph (j)(2) [Signs]* of this section.

**1910.1053(j)(2)**—**Signs.** The employer shall **post signs** at all entrances to regulated areas that bear the following legend. [*Reference paragraph (j)(2) for specific requirements*].

## 1910.1096—IONIZING RADIATION

**Scope/Application:** *This section applies to occupational exposure to ionizing radiation.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—initial, periodic, and quarterly inspections and tests
- Recordkeeping—exposure records maintained
- Training and Communications—initial and immediate training, written 24 hour notice
- Signs, Markings and Tags—signs posted, copy of procedures posted

### Inspections and Tests

**1910.1096(f)(3)(i)**—*Initial tests, inspections, and checks* of the signal-generating system shall be made to verify that the fabrication and installation were made in accordance with design plans and specifications and to develop a thorough knowledge of the performance of the system and all components under normal and hostile conditions.

**1910.1096(f)(3)(ii)**—*Once the system has been placed in service, periodic tests, inspections, and checks* shall be made to minimize the possibility of malfunction.

**1910.1096(f)(3)(iii)**—Following significant alterations or revisions to the system, *tests and checks* similar to the initial installation tests shall be made.

**1910.1096(f)(3)(vi)**—In addition to the initial startup and operating tests, *periodic scheduled performance tests and status checks must be made* to insure that the system is at all times operating within design limits and capable of the required response.

**1910.1096(f)(3)(vii)**—*Periodic tests shall be scheduled* on the basis of need, experience, difficulty, and disruption of operations. The entire system *should be operationally tested at least quarterly*.

### **Recordkeeping**

**1910.1096(b)(2)(iii)**—The employer *maintains adequate past and current exposure records* which show that the addition of such a dose will not cause the individual to exceed the amount authorized in this subparagraph. As used in this subparagraph *Dose to the whole body* shall be deemed to include any dose to the whole body, gonad, active bloodforming organs, head and trunk, or lens of the eye.

**1910.1096(i)(3)**—Each employer to whom this section applies *shall post a current copy of its provisions and a copy of the operating procedures* applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these *documents* on the way to and from their place of employment, or shall keep such *documents available* for examination of employees upon request.

**1910.1096(m)(1)**—In addition to any notification required by *paragraph (1)* of this section each employer *shall make a report in writing within 30 days to the Assistant Secretary of Labor* or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; or under *paragraph (p)(2) [Nuclear Regulatory Commission Licenses]* of this section, or the requirements of the laws and regulations of States named in *paragraph (p)(3) [Nuclear Regulatory Commission Licenses]* of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each *report* required under this paragraph shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

**1910.1096(m)(2)**—In any case where an employer is required pursuant to the provisions of this paragraph to report to the U.S. Department of Labor any exposure of an individual to radiation or to concentrations of radioactive material, the employer *shall also notify such individual of the nature and extent of exposure. Such notice shall be in writing* and shall contain the following *statement*: “You should preserve this *report* for future reference.”

**1910.1096(n)(1)**—Every employer *shall maintain records of the radiation exposure* of all employees for whom personnel monitoring is required under *paragraph (d) [Precautionary Procedures and Personal Monitoring]* of this section and advise each of his employees of his individual exposure *on at least an annual basis*.

**1910.1096(n)(2)**—Every employer *shall maintain records in the same units* used in tables in *paragraph (b) [Exposure of Individuals to Radiation in Restricted Areas]* of this section and *appendix B to 10 CFR Part 20*.

**1910.1096(o)(1)**—At the request of a former employee, an employer *shall furnish to the employee a report of the employee’s exposure to radiation* as shown in *records maintained* by the employer pursuant to *paragraph (n)(1) [Records]* of this section. *Such report shall be furnished within 30 days from the time the request is made*, and shall cover each calendar quarter of the individual’s employment involving exposure to radiation or such lesser period as may be requested by the employee. The *report* shall also include the *results* of any calculations and analysis of radioactive material deposited in the body of the employee. The *report shall be in writing and contain the following statement*: “You should preserve this report for future reference.”

### **Training and Communications**

**1910.1096(f)(3)(viii)**—All employees whose work may necessitate their presence in an area covered by the signal *shall be made familiar* with the actual sound of the signal—preferably as it sounds at their work location. Before placing the system into operation, all employees normally working in the area *shall be made acquainted* with the signal by actual demonstration at their work locations.

**1910.1096(i)(2)**—All individuals working in or frequenting any portion of a radiation area *shall be informed* of the occurrence of radioactive materials or of radiation in such portions of the radiation area; *shall be instructed* in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; *shall be instructed* in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and *shall be advised* of reports of radiation exposure which employees may request pursuant to the regulations in this section.

**1910.1096(l)(1)**—*Immediate notification.* Each employer shall immediately notify the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

**1910.1096(l)(1)(i)**—*Exposure of the whole body* of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual to 150 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation.

**1910.1096(l)(1)(ii)**—*The release of radioactive material in concentrations which*, if averaged over a period of 24 hours, would exceed 5,000 times the limit specified for such materials in Table II of appendix B to 10 CFR part 20.

**1910.1096(l)(2)**—*Twenty-four hour notification.* Each employer shall within 24 hours following its occurrence notify the Assistant Secretary of Labor or his duly authorized representative for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and applicable regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

**1910.1096(l)(2)(i)**—*Exposure of the whole body* of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation.

**1910.1096(m)(1)**—In addition to any notification required by paragraph (1) of this section each employer shall make a **report in writing** within 30 days to the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; or under paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each **report** required under this paragraph shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

**1910.1096(m)(2)**—In any case where an employer is required pursuant to the provisions of this paragraph to report to the U.S. Department of Labor any exposure of an individual to radiation or to concentrations of radioactive material, the employer shall also notify such individual of the nature and extent of exposure. Such notice shall be in **writing** and shall contain the following **statement**: “You should preserve this **report** for future reference.”

**1910.1096(o)(1)**—At the request of a former employee, an employer shall furnish to the employee a **report** of the employee’s exposure to radiation as shown in **records maintained** by the employer pursuant to paragraph (n)(1) [Records] of this section. Such **report** shall be furnished within 30 days from the time the request is made, and shall cover each calendar quarter of the individual’s employment involving exposure to radiation or such lesser period as may be requested by the employee. The **report** shall also include the **results** of any calculations and analysis of radioactive material deposited in the body of the employee. The **report** shall be in **writing** and contain the following **statement**: “You should preserve this report for future reference.”

### Signs, Markings and Tags

**1910.1096(e)(2)**—*Radiation area.* Each radiation area shall be conspicuously **posted** with a **sign or signs** bearing the radiation caution symbol described in subparagraph (1) of this paragraph.

**1910.1096(e)(3)(i)**—Each high radiation area shall be conspicuously **posted** with a **sign or signs** bearing the radiation caution symbol.

**1910.1096(i)(3)**—Each employer to whom this section applies shall **post** a current **copy** of its provisions and a **copy** of the **operating procedures** applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these **documents** on the way to and from their place of employment, or shall keep such **documents available** for examination of employees upon request.



## 1910.1200—HAZARD COMMUNICATION

**Scope/Application:** *This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—written hazard communication program
- Recordkeeping—safety data sheets readily available, update in 3 months
- Training and Communications—initial training
- Qualified Person—physician
- Signs, Markings and Tags—chemicals labeled, written materials, update in 3 months

### Programs, Policies and Procedures

**1910.1200(e)(1)**—Employers shall develop, implement, and **maintain** at each workplace, a **written hazard communication program** which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for **labels** and other forms of warning, **safety data sheets**, and employee information and training will be met. [Reference paragraph (e) for specific information.]

**1910.1200(e)(5)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **written hazard communication program** may be kept at the primary workplace facility.

**1910.1200(g)(2)**—The chemical manufacturer or importer **preparing the safety data sheet** shall ensure that it is in English (although the employer may **maintain copies** in other languages as well), and includes at least the following section numbers and headings, and associated *information* under each heading, in the order listed (See Appendix D to §1910.1200—*Safety Data Sheets*, for the specific content of each section of the **safety data sheet**). [Reference paragraph (g)(2) for specific information.]

**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the **safety data sheet**, the chemical manufacturer, importer or employer **preparing the safety data sheet** shall mark it to indicate that no applicable information was found.

**1910.1200(g)(4)**—Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may **prepare one safety data sheet** to apply to all of these similar mixtures.

**1910.1200(g)(5)**—The chemical manufacturer, importer or employer **preparing the safety data sheet** shall ensure that the **information** provided accurately reflects the **scientific evidence** used in making the hazard classification. If the chemical manufacturer, importer or employer **preparing the safety data sheet** becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new **information** shall be added to the **safety data sheet** within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the **information to the safety data sheet** before the chemical is introduced into the workplace again.

**1910.1200(g)(6)(i)**—Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate **safety data sheet** with their initial shipment, and with the first shipment after a **safety data sheet** is updated.

**1910.1200(g)(6)(iii)**—If the **safety data sheet** is not provided with a shipment that has been **labeled** as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible.

**1910.1200(g)(10)**—**Safety data sheets** may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the **required information** is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

## Recordkeeping

**1910.1200(e)(1)**—Employers shall develop, implement, and **maintain** at each workplace, a **written hazard communication program** which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for **labels** and other forms of warning, **safety data sheets**, and employee information and training will be met. [Reference paragraph (e) for specific information.]

**1910.1200(e)(5)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **written hazard communication program** may be kept at the primary workplace facility.

**1910.1200(f)(7)**—The employer may use **signs, placards, process sheets, batch tickets, operating procedures, or other such written materials** in lieu of **affixing labels** to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(6) [Workplace Labeling] of this section to be on a **label**. The employer shall ensure the **written materials** are readily accessible to the employees in their work area throughout each work shift.

**1910.1200(g)(2)**—The chemical manufacturer or importer **preparing the safety data sheet** shall ensure that it is in English (although the employer may **maintain copies** in other languages as well), and includes at least the following section numbers and headings, and associated *information* under each heading, in the order listed (See Appendix D to §1910.1200—Safety Data Sheets, for the specific content of each section of the **safety data sheet**). [Reference paragraph (g)(2) for specific information.]

**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the **safety data sheet**, the chemical manufacturer, importer or employer **preparing the safety data sheet** shall mark it to indicate that no applicable information was found.

**1910.1200(g)(5)**—The *chemical manufacturer, importer or employer preparing the safety data sheet* shall ensure that the information **recorded** accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer **preparing the safety data sheet** becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the **safety data sheet** within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the **safety data sheet** before the chemical is introduced into the workplace again.

**1910.1200(g)(8)**—The employer shall **maintain in the workplace copies** of the required **safety data sheets** for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to **maintaining paper copies of the safety data sheets** are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

**1910.1200(g)(9)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **safety data sheets** may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

**1910.1200(g)(10)**—**Safety data sheets** may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the **required information** is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

**1910.1200(g)(11)**—**Safety data sheets** shall also be made **readily available**, upon request, to designated representatives, the Assistant Secretary, and the Director, in accordance with the requirements of 29 CFR 1910.1020(e) [Access to Records].

**1910.1200(i)(2)**—Where a treating **physician or nurse** determines that a medical emergency exists and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating **physician or nurse**, regardless of the existence of a **written statement of need or a confidentiality agreement**. The chemical manufacturer, importer, or employer may require a **written statement of need and confidentiality agreement**, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets] of this section, as soon as circumstances permit.

**1910.1200(i)(3)**—*In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, or percentage composition otherwise permitted to be withheld under paragraph (i)(1) [Trade Secrets] of this section, to a **health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse)** providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:*

**1910.1200(i)(3)(i)**—The request is in **writing**.

**1910.1200(i)(3)(iii)(v)**—The **health professional**, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, *agree in a **written confidentiality agreement** that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) [Trade Secrets] of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.*

**1910.1200(i)(7)**—If the chemical manufacturer, importer, or employer *denies a **written request** for disclosure of a specific chemical identity or percentage composition, the denial must:*

**1910.1200(i)(7)(i)**—Be provided to the health professional, employee, or designated representative, *within thirty days of the request.*

**1910.1200(i)(8)**—The *health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) [Trade Secrets] of this section may refer the request and the **written denial** of the request to OSHA for consideration.*

### **Training and Communications**

**1910.1200(f)(7)**—The employer *may use **signs, placards, process sheets, batch tickets, operating procedures, or other such written materials** in lieu of affixing **labels** to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(6) [Workplace Labeling] of this section to be on a **label**. The employer shall ensure the **written materials** are readily accessible to the employees in their work area throughout each work shift.*

**1910.1200(g)(6)(ii)**—The chemical manufacturer or importer *shall either provide **safety data sheets** with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;*

**1910.1200(g)(6)(iv)**—The chemical manufacturer or importer *shall also provide distributors or employers with a **safety data sheet** upon request.*

**1910.1200(g)(7)(i)**—Distributors *shall ensure that **safety data sheets, and updated information, are provided** to other distributors and employers with their initial shipment and with the first shipment after a **safety data sheet** is updated.*

**1910.1200(g)(7)(ii)**—The distributor *shall either provide **safety data sheets** with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;*

**1910.1200(g)(7)(iii)**—Retail distributors selling hazardous chemicals to employers having a commercial account *shall provide a **safety data sheet** to such employers upon request, and shall **post a sign** or otherwise inform them that a **safety data sheet** is available.*

**1910.1200(g)(7)(iv)**—Wholesale distributors selling hazardous chemicals to employers over-the-counter *may also provide **safety data sheets** upon the request of the employer at the time of the over-the-counter purchase, and shall **post a sign** or otherwise inform such employers that a **safety data sheet** is available.*

**1910.1200(g)(7)(v)**—If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have **safety data sheets** on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor *shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a **safety data sheet** can be obtained.*

**1910.1200(g)(7)(vi)**—Wholesale distributors *shall also provide **safety data sheets** to employers or other distributors upon request.*

**1910.1200(g)(7)(vii)**—Chemical manufacturers, importers, and distributors need not provide **safety data sheets** to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

**1910.1200(g)(9)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **safety data sheets** may be **kept at the primary workplace facility**. In this situation, the employer shall ensure that employees *can immediately obtain the required information in an emergency*.

**1910.1200(g)(10)**—**Safety data sheets** may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the **required information** is provided for each hazardous chemical, and is readily **accessible** during each work shift to employees when they are in their work area(s).

**1910.1200(h)(1)**—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**. [Reference paragraph (h) for specific information.]

**1910.1200(i)(2)**—Where a *treating physician or nurse determines that a medical emergency exists* and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating **physician or nurse**, regardless of the existence of a **written statement of need** or a **confidentiality agreement**. The chemical manufacturer, importer, or employer may require a **written statement of need and confidentiality agreement**, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets] of this section, as soon as circumstances permit.

**1910.1200(i)(3)**—*In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, or percentage composition otherwise permitted to be withheld under paragraph (i)(1) [Trade Secrets] of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:*

**1910.1200(i)(3)(i)**—The request is in **writing**.

**1910.1200(i)(3)(iii)(v)**—The **health professional**, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, *agree in a written confidentiality agreement* that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) [Trade Secrets] of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

**1910.1200(i)(7)**—If the chemical manufacturer, importer, or employer *denies a written request* for disclosure of a specific chemical identity or percentage composition, the denial must:

1910.1200(i)(7)(i)—Be provided to the **health professional**, employee, or designated representative, *within thirty days of the request*.

1910.1200(i)(7)(ii)—Be in **writing**.

**1910.1200(i)(8)**—The **health professional**, employee, or designated representative whose *request for information is denied under paragraph (i)(3) [Trade Secrets] of this section* may refer the request and the **written denial** of the request to OSHA for consideration.

**1910.1200(i)(9)**—When a **health professional**, employee, or designated representative *refers the denial to OSHA under paragraph (i)(8) [Trade Secrets] of this section*, OSHA shall consider the **evidence**.

**1910.1200(i)(12)**—Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any **information** which this section requires the chemical manufacturer, importer, or employer to make **available**. Where there is a trade secret claim, *such claim shall be made no later than at the time the information is provided to the Assistant Secretary* so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

## Qualified Person

**1910.1200(i)(2)**—Where a *treating physician or nurse determines that a medical emergency exists* and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating *physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets]* of this section, as soon as circumstances permit.

**1910.1200(i)(3)(iii)(v)**—The *health professional*, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, *agree in a written confidentiality agreement* that the *health professional*, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in *paragraph (i)(6) [Trade Secrets]* of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

**1910.1200(i)(8)**—The *health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) [Trade Secrets]* of this section may refer the request and the *written denial* of the request to OSHA for consideration.

**1910.1200(i)(9)**—When a *health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) [Trade Secrets]* of this section, OSHA shall consider the *evidence*.

## Signs, Markings and Tags

**1910.1200(f)(5)**—Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace *is labeled, tagged, or marked* in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

**1910.1200(f)(6)**—Workplace *labeling*. Except as provided in *paragraphs (f)(7) and (f)(8)* of this section, the employer shall ensure that each container of hazardous chemicals in the workplace *is labeled, tagged or marked*.

**1910.1200(f)(7)**—The employer may use *signs, placards, process sheets, batch tickets, operating procedures, or other such written materials* in lieu of affixing *labels* to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and *conveys the information* required by *paragraph (f)(6) [Workplace Labeling]* of this section to be on a *label*. The employer shall ensure the *written materials* are readily accessible to the employees in their work area throughout each work shift.

**1910.1200(f)(9)**—The employer shall not remove or deface existing *labels* on incoming containers of hazardous chemicals, unless the container *is immediately marked* with the required information.

**1910.1200(f)(10)**—The employer shall ensure that *workplace labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available* in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the *material* presented, as long as the information is presented in English as well.

**1910.1200(f)(11)**—Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical *shall revise the labels for the chemical within six months of becoming aware of the new information, and shall ensure that labels on containers of hazardous chemicals shipped after that time contain the new information*. If the chemical is not currently produced or imported, the chemical manufacturer, importer, distributor, or employer *shall add the information to the label* before the chemical is shipped or introduced into the workplace again.

**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the *safety data sheet*, the chemical manufacturer, importer or employer *preparing the safety data sheet shall mark* it to indicate that no applicable information was found.

**1910.1200(g)(6)(iii)**—If the *safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the distributor or employer shall obtain one* from the chemical manufacturer or importer as soon as possible.

**1910.1200(g)(7)(iii)**—Retail distributors selling hazardous chemicals to employers having a commercial account *shall provide a **safety data sheet** to such employers upon request, and shall **post a sign** or otherwise inform them that a **safety data sheet** is available.*

**1910.1200(g)(7)(iv)**—Wholesale distributors selling hazardous chemicals to employers over-the-counter *may also provide **safety data sheets** upon the request of the employer at the time of the over-the-counter purchase, and shall **post a sign** or otherwise inform such employers that a **safety data sheet** is available.*

## **1910.1201—RETENTION OF DOT MARKINGS, PLACARDS AND LABELS**

**Scope/Application:** *This section applies to DOT markings, placards and labels.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—labeling, marking, placarding

### **Signs, Markings and Tags**

**1910.1201(c)**—*Markings, placards and labels shall be **maintained** in a manner that ensures that they are readily visible.*

**1910.1201(d)**—For non-bulk packages which will not be reshipped, the provisions of this section are met if a **label** or other acceptable **marking** is **affixed** in accordance with the Hazard Communication Standard (29 CFR 1910.1200).

## **1910.1450—OCCUPATIONAL EXPOSURE TO HAZARDOUS CHEMICALS IN LABORATORIES**

**Scope/Application:** *This section shall apply to all employers engaged in the laboratory use of hazardous chemicals. For laboratories, this section shall supersede the requirements of all other OSHA health standards in 29 CFR 1910, subpart Z except requirements limiting employee exposure and prohibition of eye and skin contact.*

**Exception:** *This standard does not apply to uses of hazardous chemicals that do not meet the definition of laboratory use.*

### **STANDARD HIGHLIGHTS**

- Programs, Policies and Procedures—chemical hygiene plan, chemical hygiene officer and committee, SDS
- Recordkeeping—records, retention requirements
- Training and Communications—initial and refresher training
- Exposure Monitoring—initial monitoring, posted results
- Medical Surveillance—information provided to the physician, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—labels

### **Programs, Policies and Procedures**

**1910.1450(e)(1)**—Where hazardous chemicals as defined by this standard are used in the workplace, the employer *shall develop and carry out the provisions of a **written Chemical Hygiene Plan**. [Reference paragraph (e) for specific information.]*

**1910.1450(e)(3)(vii)**—*Designation of personnel responsible for implementation of the **Chemical Hygiene Plan** including the assignment of a **Chemical Hygiene Officer**, and, if appropriate, establishment of a **Chemical Hygiene Committee**.*

**1910.1450(e)(4)**—The employer *shall review and evaluate the effectiveness of the **Chemical Hygiene Plan** at least annually and update it as necessary.*

**1910.1450(h)(1)(ii)**—Employers *shall **maintain any safety data sheets** that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees.*

**1910.1450(h)(2)(iii)**—If the chemical substance is produced for another user outside of the laboratory, the employer *shall comply with the Hazard Communication Standard (29 CFR 1910.1200) including the requirements for **preparation of safety data sheets** and labeling.*

### **Recordkeeping**

**1910.1450(d)(4)**—*Employee notification of **monitoring results**. The employer shall, within 15 working days after the receipt of any **monitoring results**, notify the employee of these **results** in **writing** either individually or by **posting results** in an appropriate location that is accessible to employees.*

**1910.1450(e)(1)**—Where hazardous chemicals as defined by this standard are used in the workplace, the employer shall develop and carry out the provisions of a **written Chemical Hygiene Plan**. [Reference paragraph (e) for specific information.]

**1910.1450(g)(3)**—**Information provided to the physician.** The employer shall **provide information to the physician.**

**1910.1450(g)(4)(i)**—For examination or consultation required under this standard, the employer shall **obtain a written opinion from the examining physician.**

**1910.1450(h)(1)(ii)**—Employers shall **maintain any safety data sheets** that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees.

**1910.1450(h)(2)(iii)**—If the chemical substance is produced for another user outside of the laboratory, the employer shall comply with the Hazard Communication Standard (29 CFR 1910.1200) including the requirements for preparation of **safety data sheets and labeling.**

**1910.1450(j)(1)**—The employer shall establish and **maintain for each employee an accurate record** of any measurements taken to monitor employee exposures and any medical consultation and examinations **including tests or written opinions** required by this standard.

**1910.1450(j)(2)**—The employer shall assure that such **records are kept, transferred, and made available** in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1450(d)(4)**—**Employee notification of monitoring results.** The employer shall, within 15 working days after the receipt of any **monitoring results**, notify the employee of these **results in writing** either individually or by **posting results** in an appropriate location that is accessible to employees.

**1910.1450(f)(1)**—The employer shall provide employees with **information and training** to ensure that they are apprised of the hazards of chemicals present in their work area. [Reference paragraph (f)(1) for specific information.]

**1910.1450(f)(2)**—Such information shall be provided at the time of an employee's initial assignment to a work area where hazardous chemicals are present and prior to assignments involving new exposure situations. The frequency of refresher information and training shall be determined by the employer.

**1910.1450(g)(3)**—**Information provided to the physician.** The employer shall **provide information to the physician.** [Reference paragraph (g)(3) for specific information.]

**1910.1450(g)(4)(i)**—For examination or consultation required under this standard, the employer shall obtain a **written opinion from the examining physician.** [Reference paragraph (g)(4) for specific information.]

### **Exposure Monitoring**

**1910.1450(d)(1)**—**Initial monitoring.** The employer shall measure the employee's exposure to any substance regulated by a standard which requires monitoring if there is reason to believe that exposure levels for that substance routinely exceed the action level (or in the absence of an action level, the PEL).

**1910.1450(d)(2)**—**Periodic monitoring.** If the initial monitoring prescribed by paragraph (d)(1) [Initial Monitoring] of this section discloses employee exposure over the action level (or in the absence of an action level, the PEL), the employer shall immediately comply with the exposure monitoring provisions of the relevant standard.

**1910.1450(d)(4)**—**Employee notification of monitoring results.** The employer shall, within 15 working days after the receipt of any **monitoring results**, notify the employee of these **results in writing** either individually or by **posting results** in an appropriate location that is accessible to employees.

### **Medical Surveillance**

**1910.1450(g)(1)**—The employer shall provide all employees who work with hazardous chemicals an **opportunity to receive medical attention**, including any follow-up examinations which the examining **physician** determines to be necessary, under certain circumstances. [Reference paragraph (g)(1) for specific information.]

**1910.1450(g)(1)(i)**—Whenever an employee develops signs or symptoms associated with a hazardous chemical to which the employee may have been exposed in the laboratory, the employee shall be provided an opportunity to receive an appropriate medical examination.

**1910.1450(g)(1)(ii)**—Where *exposure monitoring reveals an exposure level routinely above the action level (or in the absence of an action level, the PEL)* for an OSHA regulated substance for which there are exposure monitoring and medical surveillance requirements, *medical surveillance shall be established for the affected employee as prescribed by the particular standard.*

**1910.1450(g)(1)(iii)**—*Whenever an event takes place in the work area such as a spill, leak, explosion or other occurrence resulting in the likelihood of a hazardous exposure, the affected employee shall be provided an opportunity for a medical consultation.* Such consultation shall be for the purpose of determining the need for a medical examination.

**1910.1450(g)(3)**—***Information provided to the physician.*** *The employer shall provide information to the physician. [Reference paragraph (g)(3) for specific information.]*

**1910.1450(g)(4)(i)**—For examination or consultation required under this standard, the employer *shall obtain a written opinion from the examining physician.* [Reference paragraph (g)(4)(i) for specific information.]

#### **Qualified Person**

**1910.1450(g)(3)**—***Information provided to the physician.*** *The employer shall provide information to the physician.*

**1910.1450(g)(4)(i)**—For examination or consultation required under this standard, the employer *shall obtain a written opinion from the examining physician.*

**1910.1450(g)(1)**—The employer *shall provide* all employees who work with hazardous chemicals an *opportunity to receive medical attention, including any follow-up examinations* which the *examining physician* determines to be necessary, under certain circumstances.

#### **Signs, Markings and Tags**

**1910.1450(h)(2)(iii)**—If the chemical substance is produced for another user outside of the laboratory, the employer *shall comply with the Hazard Communication Standard (29 CFR 1910.1200) including the requirements for preparation of safety data sheets and labeling.*



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