



# OSHA Marine Terminal Standards Requiring Programs, Inspections, Procedures, Records and/or Training



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**This guide is in a series of industry guides focused on standards requiring programs, training, recordkeeping, inspections, procedures and/or documentation. It is intended to be consistent with all existing OSHA standards; therefore, if an area is considered by the reader to be inconsistent with a standard, then the OSHA standard should be followed.**

**To obtain additional copies of this guide, or if you have questions about North Carolina occupational safety and health standards or rules, please contact:**

**N.C. Department of Labor  
Education, Training and Technical Assistance Bureau  
1101 Mail Service Center  
Raleigh, NC 27699-1101**

**Phone: 919-707-7876 or 1-800-NC-LABOR (1-800-625-2267)**

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Additional sources of information are listed on the inside back cover of this guide.

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The projected cost of the NCDOL OSH program for federal fiscal year 2014–2015 is \$18,237,603. Federal funding provides approximately 29 percent (\$5,302,500) of this fund.



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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 booklet, like the other educational materials produced by the N.C. Department of Labor, can help.

Josh Dobson  
*Commissioner of Labor*

## Overview

This industry guide is designed to assist employers in the marine terminals industry in complying with standards that have special requirements such as written programs, inspections, competent persons, training and recordkeeping requirements that are applicable to marine terminals. 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 NCDOL's Education, Training and Technical Assistance Bureau 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 assist 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, 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.

**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.” The term “competent person” for purposes of this part means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as required by the particular regulation under the condition to which it applies.

**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, designated persons and authorized persons.

**SMT: Signs, markings and 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, posting and placarding.

**O: Other requirements:** Indicates rules that have special requirements other than those listed above, such as consensus standards.

Section 2 contains state-specific standards, Section 3 contains recordkeeping standards, and Section 4 contains marine terminal standards. These sections are broken out by subpart and sections within the subpart that have special requirements. Each section will contain a “**Note**” that explains the scope of the standard (who is covered). 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 “**Note**.”

Following the “**Note**” (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 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						

## 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 1917—MARINE TERMINALS

### SUBPART A —SCOPE AND DEFINITIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1917.1(a)(2)(i)—Abrasive Blasting											X
1910.94(a)—Abrasive Blasting	X	X									
1917.1(a)(2)(ii)—Access to Employee Exposure and Medical Records											X
1910.1020—Access to Employee Exposure and Medical Records			X		X						
1917.1(a)(2)(iii)—Commercial Diving Operations											X
1910, Subpart T—Commercial Diving Operations	X	X	X		X					X	X
• 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	
• 1910.423—Post-Dive Procedures	X		X		X						
• 1910.430—Equipment	X	X	X								



• 1910.440—Recordkeeping Requirements			X								
1917.1(a)(2)(iv)—Electrical											X
1910, Subpart S—Electrical	X	X	X		X			X	X	X	
• 1910.304—Wiring Design and Protection	X	X	X					X			
• 1910.305—Wiring Methods, Components, and Equipment for General Use	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 Personnel			X							X	
1917.1(a)(2)(v)—Grain Handling Facilities											X
1910.272—Grain Handling Facilities	X	X	X	X	X						
1917.1(a)(2)(vi)—Hazard Communication									X		X
1910.1200—Hazard Communication	X		X		X					X	X
1917.1(a)(2)(vii)—Ionizing Radiation											X
1910.1096—Ionizing Radiation			X	X		X				X	
1917.1(a)(2)(viii)—Noise											X
1910.95—Noise	X	X	X	X	X	X		X		X	
1917.1(a)(2)(ix)—Nonionizing Radiation											X
1910.97—Nonionizing Radiation										X	X
1917.1(a)(2)(x)—Respiratory Protection											X
1910.134—Respiratory Protection	X	X	X	X	X		X		X	X	
1917.1(a)(2)(xi)—Safety Requirements for Scaffolding											X
1910.28—Safety Requirements for Scaffolding			X	X					X		
1917.1(a)(2)(xii)—Servicing Multi-Piece and Single Piece Rim Wheels											X
1910.177—Servicing Multi-Piece and Single Piece Rim Wheels	X	X	X	X	X					X	
1917.1(a)(2)(xiii)—Toxic and Hazardous Substances											X
1910, Subpart Z—Toxic and Hazardous Substances	X	X	X	X	X	X	X	X	X	X	X
• 1910.1000—Air Contaminants	X							X	X		
• 1910.1001—Asbestos	X	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		X	X	
• 1910.1025—Lead	X	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	
• 1910.1043—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	
• 1910.1450—Occupational Exposure to Hazardous Chemicals in Laboratories	X		X		X	X	X		X	X	
1917.1(a)(2)(xiv) —Powered Industrial Trucks											X
1910.178—Powered Industrial Trucks			X	X	X						
1917.1(b) —Chromium (VI)											X
1915.1026—Chromium (VI)	X		X		X	X	X		X	X	

## 29 CFR PART 1917—MARINE TERMINALS

### SUBPART B—MARINE TERMINAL OPERATIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1917.13—Slinging					X						
1917.17—Railroad Facilities	X	X			X					X	
1917.18—Log Handling	X										
1917.19—Movement of Barges and Railcars	X										
1917.20—Interference with Communications	X	X			X				X		
1917.22—Hazardous Cargo	X	X			X				X		
1917.23—Hazardous Atmospheres and Substances		X	X		X	X			X	X	
1917.24—Carbon Monoxide	X	X	X						X		X
1917.25—Fumigants, Pesticides, Insecticides, and Hazardous Preservatives		X	X	X	X	X			X	X	
1917.26—First Aid and Lifesaving Facilities			X		X				X		X
1917.27—Personnel					X			X	X	X	X
1917.29—Retention of DOT Markings, Placards and Labels										X	X
1917.30—Emergency Action Plans	X				X						

**29 CFR PART 1917—MARINE TERMINALS**

**SUBPART C—CARGO HANDLING GEAR AND 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>
1917.41—House Falls		X							X		
1917.42—Miscellaneous Auxiliary Gear	X	X	X	X					X	X	X
1917.43—Powered Industrial Trucks	X	X		X	X				X	X	X
1917.44—General Rules Applicable to Vehicles	X	X	X		X					X	X
1917.45—Cranes and Derricks	X	X	X		X				X	X	X
1917.46—Load Indicating Devices		X		X						X	
1917.47—Winches										X	
1917.48—Conveyors					X				X	X	
1917.49—Spouts, Chutes, Hoppers, Bins, and Associated Equipment		X			X				X	X	
1917.50—Certification of Marine Terminal Material Handling Devices		X	X	X					X	X	X

**29 CFR PART 1917—MARINE TERMINALS**

**SUBPART D—SPECIALIZED TERMINALS**

<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>
1917.71—Terminals Handling Intermodal Containers or Roll-On Roll-Off Operations	X	X	X	X	X			X	X	X	X
1917.73—Terminal Facilities Handling Menhaden and Similar Species of Fish		X			X				X	X	

**29 CFR PART 1917—MARINE TERMINALS**

**SUBPART E—PERSONAL 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>
1917.91—Eye and Face Protection											X
1917.93—Head Protection											X
1917.94—Foot Protection											X
1917.95—Other Protective Measures										X	X

**29 CFR PART 1917—MARINE TERMINALS**

**SUBPART F—TERMINAL FACILITIES**

<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>
1917.111—Maintenance and Load Limits										X	
1917.113—Clearance Heights										X	
1917.115—Platforms and Skids										X	
1917.116—Elevators and Escalators		X	X						X	X	
1917.117—Manlifts	X	X	X						X	X	
1917.118—Fixed Ladders	X	X	X								
1917.119—Portable Ladders		X			X					X	X
1917.122—Employee Exits										X	
1917.123—Illumination		X									X
1917.125—Guarding Temporary Hazards										X	
1917.126—River Banks										X	
1917.128—Signs and Marking										X	

**29 CFR PART 1917—MARINE TERMINALS**

**SUBPART G—RELATED TERMINAL OPERATIONS AND 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>
1917.151—Machine Guarding					X				X	X	
1917.152—Welding, Cutting and Heating (Hotwork)		X			X				X	X	
1917.153—Spray Painting		X								X	X
1917.156—Fuel Handling and Storage		X								X	
1917.157—Battery Charging and Changing									X		

## SECTION 2

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

#### 7A .0600—Safety and Health Programs and Committees

**Scope/Application:** *This section sets forth rules of procedure for implementation of N.C. Gen. Stat. 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
- Training and Communications—on or off-site, knowledgeable trainer, applicable standards
- Recordkeeping—reporting requirements
- Inspections and Tests—quarterly inspections, self-audits, checklists

#### Programs, Policies and Procedures

**7A .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.

**Note to Section 7A .0601(b):** *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.*

**7A .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 **material 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*.

**7A .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.

**7A .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.

*Note to Section 7A .0604: 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].*

**7A .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).*

### **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.

**7A .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.

*Note to Section 7A .0606: Reference Section 7A .0606—Training and Education for specific training requirements.]*

**7A .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.*

**7A .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.*

### **Recordkeeping**

**7A .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 material 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.*

**7A .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.

**Note to Section 7A .0604:** 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].

**7A .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.]

**Note to Section 7A .0605:** Reference Section 07A .0605 [Reports for specific requirements].

**7A .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.

### **Inspections and Tests**

**13 NCAC 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 *material 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*.



# SECTION 3

## 29 CFR 1904 Subpart B—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

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

### 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.*

**Note to paragraph 4(a):** *Specific requirements are found in 1904.4(a).*

**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.

**Note to paragraph (7)(b)(1):** *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 (see 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.

**1904.33(b)(1)**—Retention and Updating—Do I have to update the OSHA 300 Log during the five-year storage period? Yes, during the storage period, *you must update your stored OSHA 300 Logs to include newly discovered recordable injuries or illnesses and to show any changes that have occurred in the classification of previously recorded injuries and illnesses.* If the description or outcome of a case changes, you must remove or line out the original entry and enter the new information.

**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.

## Certification

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

**1904.32(a)(3)**—*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 make sure that they are complete and correct.*

**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.

## Signs, Markings and Tags

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

**1904.32(a)(4)**—*Post the annual 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.*

## 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 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*).

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

**1904.35(b)(1)(ii)**—Employee Involvement. *You must tell each employee how to report work-related injuries and illnesses to you.*

**1904.35(b)(2)(v)(A)**—Employee Involvement—When an employee, former employee, or personal representative asks for a *copy of the OSHA 301 Incident Report* describing an injury or illness to that employee or former employee, *you must give the requester a copy of the OSHA 301 Incident Report containing that information by the end of the next business day.*

**1904.35(b)(2)(v)(B)**—Employee Involvement. When an authorized employee representative asks for a copies of the *OSHA 301 Incident Reports* for an establishment where the agent represents employees under a collective bargaining agreement, *you must give copies of those forms to the authorized employee representative within 7 calendar days.* You are only required to give the authorized employee representative information from the *OSHA 301 Incident Report* section titled “Tell us about the case.” You must remove all other information from the *copy* of the *OSHA 301 Incident Report* or the equivalent substitute form that you give to the authorized employee representative.

**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. [Note: 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)**—Reporting Fatalities and Multiple Hospitalization Incidents to OSHA. Basic requirement. When an authorized government representative *asks for the records you keep under Part 1904 [Recordkeeping], you must provide copies of the records within four (4) business hours.*

**1904.41(a)**—Annual OSHA Injury and Illness Survey of Ten or More Employers. Basic requirement. If you receive OSHA’s annual survey *form*, *you must fill it out and send it to OSHA or OSHA’s designee, as stated on the survey form.*

**1904.41(b)(2)**—Annual OSHA Injury and Illness Survey of Ten or More Employers. *How quickly do I need to respond to an OSHA survey form? You must send the survey reports to OSHA, or OSHA’s designee, by mail or other means described in the survey form, within 30 calendar days, or by the date stated in the survey form, whichever is later.*

**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*.

**Programs, Policies, and Procedures**

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

**1904.32(a)(1)**—*Review the OSHA 300 Log to verify* that the entries are complete and accurate, and correct any deficiencies identified;

**1904.32(a)(2)**—*Create an annual summary* of injuries and illnesses recorded on the *OSHA 300 Log*;

**1904.35(b)(1)(i)**—Employee Involvement. *You must set up a way for employees to report* work-related injuries and illnesses promptly.

# SECTION 4

## 29 CFR 1917 Subpart A—Scope and Definitions

**Scope/Application:** *The regulations of this part apply to employment within a marine terminal as defined in § 1917.2, including the loading, unloading, movement or other handling of cargo, ship's stores or gear within the terminal or into or out of any land carrier, holding or consolidation area, any other activity within and associated with the overall operation and functions of the terminal, such as the use and routine maintenance of facilities and equipment. All cargo transfer accomplished with the use of shore-based material handling devices shall be regulated by this part.*

### 1917.1—SCOPE AND APPLICABILITY

#### STANDARD HIGHLIGHTS

- Other—referenced 29 CFR 1910 standards

#### Other

**1917.1(a)(2)**—*Part 1910 of this chapter does not apply to marine terminals except for the following provisions:*

**1917.1(a)(2)(i)**—Abrasive blasting. *Subpart G, 1910.94(a) [Ventilation].*

**1917.1(a)(2)(ii)**—Access to employee exposure and medical records. *Subpart Z, 1910.1020 [Access To Employee Exposure and Medical Records].*

**1917.1(a)(2)(iii)**—Commercial diving operations. *Subpart T of part 1910 [Commercial Diving Operations].*

**1917.1(a)(2)(iv)**—Electrical. *Subpart S of part 1910 [Electrical].*

**1917.1(a)(2)(v)**—Grain handling facilities. *Subpart R, 1910.272 [Grain Handling Facilities].*

**1917.1(a)(2)(vi)**—Hazard communication. *Subpart Z, 1910.1200 [Hazard Communication].*

**1917.1(a)(2)(vii)**—Ionizing radiation. *Subpart Z, 1910.1096 [Ionizing Radiation].*

**1917.1(a)(2)(viii)**—Noise. *Subpart G, 1910.95 [Noise].*

**1917.1(a)(2)(ix)**—Nonionizing radiation. *Subpart G, 1910.97 [Nonionizing Radiation].*

**1917.1(a)(2)(x)**—Respiratory protection. *Subpart I, 1910.134 [Respiratory Protection].*

**1917.1(a)(2)(xi)**—Safety requirements for scaffolding. *Subpart D, 1910.28 [Safety Requirements for Scaffolding].*

**1917.1(a)(2)(xii)**—Servicing multi-piece and single piece rim wheels. *Subpart N, 1910.177 [Servicing Multi-Piece and Single Piece Rim Wheels].*

**1917.1(a)(2)(xiii)**—Toxic and hazardous substances. *Subpart Z applies to marine cargo handling activities except for the following:*

**1917.1(a)(2)(xiii)(A)**—When a substance or cargo is contained within a sealed, intact means of packaging or containment complying with Department of Transportation or International Maritime Organization requirements;

**1917.1(a)(2)(xiii)(B)**—Bloodborne pathogens, 1910.1030 [Bloodborne Pathogens];

**1917.1(a)(2)(xiii)(C)**—Carbon monoxide, 1910.1000 (See 1917.24(a)) [Carbon Monoxide];

**1917.1(a)(2)(xiii)(D)**—Hydrogen sulfide, 1910.1000 (See 1917.73(a)(2)) [Hydrogen Sulfide]; and

**1917.1(a)(2)(xiii)(E)**—Hexavalent chromium 1910.1026 (See § 1915.1026) [Hexavalent Chromium].

[Reference 29 CFR 1910.94(a)]

### 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

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

### 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*.

### 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]*.

### Other

**1910.94(a)(2)(iii)**—Organic abrasives which are combustible shall be used only in automatic systems. Where flammable or explosive dust mixtures may be present, the construction of the equipment, including the exhaust system and all electric wiring, shall conform to the requirements of *American National Standard Installation of Blower and Exhaust Systems for Dust, Stock, and Vapor Removal or Conveying, Z33.1-1961 (NFPA 91-1961)* which is incorporated by reference as specified in § 1910.6, and subpart S of this part. The blast nozzle shall be bonded and grounded to prevent the build up of static charges. Where flammable or explosive dust mixtures may be present, the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the *National Fire Protection Association Explosion Venting Guide, NFPA 68-1954*, which is incorporated by reference as specified in § 1910.6.

**1910.94(a)(4)(i)**—The construction, installation, inspection, and maintenance of exhaust systems shall conform to the principles and requirements set forth in *American National Standard Fundamentals Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960, and ANSI Z33.1-1961*, which are incorporated by reference as specified in § 1910.6.

**1910.94(a)(5)(i)**—Employers must use only respirators approved by the *National Institute for Occupational Safety and Health (NIOSH) under 42 CFR part 84* to protect employees from dust produced during abrasive-blasting operations.

**1910.94(a)(5)(iii)**—Properly fitted particulate filter respirators, commonly referred to as dust-filter respirators, may be used for short, intermittent, or occasional dust exposures such as cleanup, dumping of dust collectors, or unloading shipments of sand at a receiving point, when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. The respirators used must be approved by *NIOSH under 42 CFR part 84* for protection against the specific type of dust encountered.

**[Reference 29 CFR 1910.1020]**

## 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, SDS
- 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.*

**Note: 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.

**Note to Paragraph (g)(1):** 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**.

## 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.

**Note to Paragraph (g)(1):** 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.

[Reference 29 CFR 1910, Subpart T]

## 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.*

**Note to paragraph (a)(1):** *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—safe practices 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.*

**Note to paragraph (a)(1):** *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.*

**Note to paragraph (a)(1):** *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
- Qualified Person—first aid kit approved by physician
- Inspections and Tests—assessment, inspection before dive
- Training and Communications—briefing prior to dive
- Signs, Markings and Tags—flag displayed
- Recordkeeping—list, approved first aid kit

### 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.

### 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.

### Inspections and Tests

**1910.421(d)**—Planning and assessment. Planning of a diving operation shall include an assessment of the safety and health aspects.

**Note to paragraph (d):** Reference paragraph (d) for specific planning and assessment 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.

**Note to paragraph (g):** Reference paragraph (g) for specific inspection information.

### Training and Communications

**1910.421(f)(1)**—Dive team members shall be briefed.

**Note to paragraph (f)(1):** Reference paragraph (f) for specific information regarding briefing.

### 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.

## Recordkeeping

**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.*

## 1910.423—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 Service] 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—employee instructions
- Recordkeeping—records
- Programs, Policies and Procedures—investigate each incident, written evaluations

### 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).*

### Recordkeeping

**1910.423(d)(1)**—*Information shall be **recorded** and maintained for each diving operation.*

**Note to paragraph (d)(1):** *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.*

**Note to paragraph (d)(2):** *Reference paragraph (d) for specific 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.*

**Note to paragraph (d)(3):** *Reference paragraph (d) for specific additional 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.*

**Note to paragraph (e)(3):** *Reference paragraph (e) for specific evaluation documentation.*

### 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.*

*Note to paragraph (e)(1): Reference paragraph (e) for specific information regarding incident evaluations and investigations.*

**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.

*Note to paragraph (e)(3): Reference paragraph (e) for specific evaluation information.*

## **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**

- Recordkeeping—tagging/logging system, records
- Programs, Policies and Procedures—tagging/logging system
- Inspections and Tests—regular inspections, testing every 6 months and annually

### **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.

### **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(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.*

## **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.*

**[Reference 29 CFR 1910, Subpart S]**

## 29 CFR 1910, 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
- Competent Person—designated
- Inspections and Tests—visual inspections each day, tests before use
- Recordkeeping—records

### 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.

### Competent Person

**1910.304(b)(3)(ii)(C)(2)**—The employer *shall designate one or more competent persons* to implement the program.

### 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)(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.*

## 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

- Signs, Markings and Tags—posted signs
- Qualified Person—authorized qualified person

#### 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*.

### **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.

## **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.*

**Note to Paragraph (b):** *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
- Qualified Person—inspections
- Recordkeeping—written procedures
- Training and Communications—familiar with techniques

### 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. **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.

### 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.*

### 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:

**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. [Note: 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.

### **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.

## **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].*

*[Reference 29 CFR 1910.272]*

## 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
- Training and Communications—initial and annual training
- Certification—records
- Inspections and Tests—tests, regular, daily, and visual inspections
- Recordkeeping—permit, records
- 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.* [**Note:** 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.*

### **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.

### **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.*

### **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(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.*

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

**1910.272(m)(4)**—The employer *shall implement procedures for the use of tags and locks* which will prevent the inadver-

tent 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.*

[Reference 29 CFR 1910.1200]

## 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 on site
- Signs, Markings and Tags—chemicals labeled, written materials, update in 3 months
- Recordkeeping—SDS readily available, update in 3 months
- Training and Communications—initial training
- Other—trade secrets, written requests
- Qualified Person—physician

### 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.

**Note to Paragraph (e):** *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).

**Note to Paragraph (g)(2):** *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).

### 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) [Labels and Other Forms of Warning]* 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.*

### Recordkeeping

**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)(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.

### **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.

**Note to Paragraph (h):** 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.

## Other

**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)(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**.

[Reference 29 CFR 1910.1096]

## 1910.1096—IONIZING RADIATION

**Scope/Application:** This section applies to occupational exposure to ionizing radiation.

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—signs posted, copy of procedures posted
- Inspections and Tests—initial, periodic, and quarterly inspections and tests
- Training and Communications—initial and immediate training, written 24 hour notice
- Recordkeeping—exposure records maintained

### 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)[Notification of Incidents] 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.

### 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.

### 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.”

### **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(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."

[Reference 29 CFR 1910.95]

## 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
- Exposure Monitoring—program
- Inspections and Tests—audiometric testing
- Certification—audiologists, otolaryngologist, physician, technician
- Medical Surveillance—baseline and annual audiograms
- Training and Communications—program, initial and annual training
- Signs, Markings and Tags—post the standard
- Recordkeeping—retention requirements, records
- Qualified Person—audiologist, otolaryngologist or physician.

### 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.

**Note to Paragraph (c)(1):** 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.

**Note to paragraph (g):** 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*.

*Note to Paragraph (k)(3): Reference paragraph (k)(3) for specific information.*

### **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*.

### **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.

### **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.*

### **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*.

*Note to Paragraph (g)(7)(iii): Reference paragraph (g)(7)(iii) for specific information.*

### **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.

**Note to Paragraph (k)(3):** 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.

### 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.

### Recordkeeping

**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.

**Note to Paragraph (m):** 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.

**Note to Paragraph (m):** 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.

### 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.

[Reference 29 CFR 1910.97]

## 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
- Other—consensus standard

### 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-11.

**1910.97(a)(3)(ii)**

American National Standard Safety Color Code for Marking Physical Hazards and the Identification of Certain Equip-

ment, 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.*

#### Other

#### **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.

*[Reference 29 CFR 1910.134]*

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

#### **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. [**Note:** *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 respirator 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.

### Qualified Person

**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(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(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.

### 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.

*Note to Paragraph (e)(5)(i): 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.

*Note to Paragraph (e)(6)(i): Reference paragraph (e)(6)(i) for specific information.*

### 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.

## 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.*

## 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.*

## 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.

**Note to Paragraph (k)(1):** *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.

## Recordkeeping

**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. [**Note:** *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.

[Reference 29 CFR 1910.28]

## 1910.28—SAFETY REQUIREMENTS FOR SCAFFOLDS

**Scope/Application:** This section is intended to prescribe rules and establish minimum requirements for the construction, care, and use of scaffolds, in order to insure safety under normal conditions of usage.

### STANDARD HIGHLIGHTS

- Qualified Person—registered professional engineer
- Recordkeeping—copies, design requirements
- Inspections and Tests—periodic inspections

#### Qualified Person

**1910.28(b)(16)**—All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with tables D-7 through D-12 of this section. If they are over 60 feet in height they shall be designed by a registered professional engineer and constructed and erected in accordance with such design. A **copy** of the typical drawings and specifications shall be made available to the employer and for inspection purposes.

**1910.28(c)(4)**—Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in tables D-13, 14, and 15, of this section. Drawings and specification of all tube and coupler scaffolds above the limitations in tables D-13, 14, and 15 of this section shall be designed by a registered professional engineer and **copies** made available to the employer and for inspection purposes.

**1910.28(c)(5)**—All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended loads as set forth in tables D-13, 14, and 15 of this section, or as set forth in the specifications by a registered professional engineer, **copies** which shall be made available to the employer and for inspection purposes.

**1910.28(d)(11)**—Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a registered professional engineer and **copies** made available to the employer and for inspection purposes.

#### Recordkeeping

**1910.28(b)(16)**—All wood pole scaffolds 60 feet or less in height shall be constructed and erected in accordance with tables D-7 through D-12 of this section. If they are over 60 feet in height they shall be designed by a registered professional engineer and constructed and erected in accordance with such design. A **copy** of the typical drawings and specifications shall be made available to the employer and for inspection purposes.

**1910.28(c)(4)**—Tube and coupler scaffolds shall be limited in heights and working levels to those permitted in tables D-13, 14, and 15, of this section. Drawings and specification of all tube and coupler scaffolds above the limitations in tables D-13, 14, and 15 of this section shall be designed by a registered professional engineer and **copies** made available to the employer and for inspection purposes.

**1910.28(c)(5)**—All tube and coupler scaffolds shall be constructed and erected to support four times the maximum intended loads as set forth in tables D-13, 14, and 15 of this section, or as set forth in the specifications by a registered professional engineer, **copies** which shall be made available to the employer and for inspection purposes.

**1910.28(d)(11)**—Drawings and specifications for all frame scaffolds over 125 feet in height above the base plates shall be designed by a registered professional engineer and **copies** made available to the employer and for inspection purposes.

#### Inspections and Tests

**1910.28(d)(14)**—Periodic inspections shall be made of all welded frames and accessories, and any maintenance, including painting, or minor corrections authorized by the manufacturer, shall be made before further use.

**1910.28(f)(11)**—All parts of the scaffold such as bolts, nuts, fittings, clamps, wire rope, and outrigger beams and their fastenings, shall be maintained in sound and good working condition and *shall be inspected before each installation and periodically thereafter*.

**1910.28(g)(8)**—All wire ropes, fiber ropes, slings, hangers, platforms, and other supporting parts *shall be inspected before every installation. Periodic inspections shall be made while the scaffold is in use*.

**1910.28(i)(6)**—The hoisting machines, cables, and equipment shall be regularly serviced and *inspected after each installation and every 30 days thereafter*.

**1910.28(p)(6)**—All overhead supporting members *shall be inspected and checked for strength before the scaffold is erected*.

[Reference 29 CFR 1910.177]

## 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
- Training and Communications—program, evaluate abilities, initial training
- Inspections and Tests—visual inspections each day, reinspections
- Signs, Markings and Tags—marked and tagged
- Certification—manufacturer
- Recordkeeping—certified

### 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.

### 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.

### 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.

## 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.

## 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.

## Recordkeeping

**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.

*[Reference 29 CFR 1910, Subpart Z]*

# 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, technically qualified person
- 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

- Exposure Monitoring—initial and every 6 month monitoring, results posted, evaluations
- Signs, Markings and Tags—regulated areas, posted signs, labels
- Programs, Policies and Procedures—work controls, compliance program, respirator program, medical surveillance program, hazard communication program
- Recordkeeping—retention requirements
- Training and Communications—initial and annual training, inform
- Inspections and Tests—tests
- Medical Surveillance—program, initial, annual, and termination examinations, written opinions, information provided to the physician
- Competent Person—certified industrial hygienist (CIH)
- Qualified Person—physician

### 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.

### 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.*

### **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.

**Note to Paragraph (j):** *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.

### **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.

**Note to Paragraph (j):** *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.*

**Note to Paragraph (l)(6):** *Reference paragraph (l)(6) for specific information.*

### **Recordkeeping**

**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.

**Note to Paragraph (l)(7):** *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].

### **Inspections and Tests**

**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.

### **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.



*Note to Paragraph (l)(6): 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.

*Note to Paragraph (l)(7): 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.

**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.

**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.

### **1910.1003—13 CARCINOGENS**

**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-Nitrophenyl, 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
- Medical Surveillance—program, initial, annual, and emergency examinations, written opinion
- Signs, Markings and Tags—posted signs, labels, posted emergency procedures
- Training and Communications—initial and annual training
- Recordkeeping—records
- Qualified Person—physician

#### **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.

**Note to Paragraph (e):** 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.

#### 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.

**Note to Paragraph (g):** Reference paragraph (g) for specific information.

#### 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. [**Note:** 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.

## 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.*

**Note to Paragraph (e):** *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.

**Note to Paragraph (g):** *Reference paragraph (g) for specific information.*

## 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(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.

**Note to Paragraph (g):** *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)**—*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(e)(4)(i)**—Each employee prior to being *authorized to enter* a regulated area, *shall receive a training and indoctrination program.*

**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.

## 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
- Exposure Monitoring—program, monitoring quarterly, measurements, results posted
- Training and Communications—initially, annually
- Medical Surveillance—program, examinations, written opinions
- Signs, Markings and Tags—labels, posting signs
- Recordkeeping—retention requirements, medical records, safety data sheets
- Qualified Person—physician

### 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.

**Note to Paragraph (j):** *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.

### 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.

### 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.

*Note to Paragraph (j): 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.

*Note to Paragraph (k): 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.

### 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.

**Note to Paragraph (k):** 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.

### 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.

**Note to Paragraph (l)(2)(i):** 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.

**Note to Paragraph (l)(3)(i):** Reference paragraph (l)(3)(i) for specific information.

**1910.1017(l)(5)**—Containers of vinyl chloride shall be legibly labeled.

### Recordkeeping

**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.

### 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.

## 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

- Exposure Monitoring—initially, quarterly and 6 month monitoring, written results posted
- Programs, Policies and Procedures—compliance program, respirator program, training program, housekeeping and maintenance plan, medical surveillance program, hazard communication program
- Medical Surveillance—initial, examinations, written opinions
- Training and Communications—program, initial and annual training
- Signs, Markings and Tags—posted signs, labels
- Recordkeeping—retention requirements, safety data sheets
- Inspections and Tests—signs clean
- Qualified Person—physician

### 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.

## 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 **written** program to reduce exposures* to or below the permissible exposure limit by means of engineering and work practice controls.  
*1910.1018(h)(2) [Respirator Program].*

**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.

## 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.*

**Note to Paragraph (n)(5):** *Reference paragraph (n)(5) for specific information.*

**1910.1018(n)(6)(i)**—The employer *shall obtain a **written** opinion from the examining physician.* [**Note:** *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.

## Training and Communications

**1910.1018(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring per-*



formed 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.*

**Note to Paragraph (o)(1):** 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.

### **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.*

**Note to paragraph (j)(2)(vii)(A):** 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.

**Note to Paragraph (p)(2)(i):** Reference paragraph (p)(2)(i) for specific information.

### **Recordkeeping**

**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]*.

### **Inspections and Tests**

**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.

### **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. [**Note:** Reference paragraph (n)(6) for specific information.]

**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.

## **1910.1025—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
- 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
- Training and Communications—instructions, inform, training initially and annually
- Signs, Markings and Tags—posting
- Recordkeeping—records, retention requirements, safety data sheets
- Inspections and Tests—signs cleaned
- Qualified Person—physician

### **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.

**Note to Paragraph (l)(1):** 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.

### **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.

**Note to Paragraph (d)(3):** *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.*

*Note to Paragraph (j)(3): 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.*

*Note to Paragraph (j)(3): Reference paragraph (j)(3) for specific information.*

### **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.*

*Note to Paragraph (j)(3): 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.*

*Note to Paragraph (j)(3): 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.

*Note to Paragraph (l)(1): 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.

### 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.

*Note to Paragraph (g)(2)(vii)(A): 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.

*Note to Paragraph (m)(2)(i): Reference paragraph (m)(2)(i) for specific information.*

### 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(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.

*Note to Paragraph (n): Reference paragraph (n) for specific 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.

*Note to Paragraph (n): Reference paragraph (n) for specific records 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.

*Note to Paragraph (n): Reference paragraph (n) for specific records 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.

## **Inspections and Tests**

**1910.1025(m)(2)(iii)**—The employer shall ensure that signs required by this paragraph (m)(2) [Signs] are illuminated and cleaned as necessary so that the legend is readily visible.

## **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)(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 consulta-

tion under this section with **information**.

**1910.1025(j)(3)(v)(B)**—The employer shall instruct each examining and consulting physician.

**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.

### 1910.1027—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

- Exposure Monitoring—determination, initial and semi-annual monitoring, posted results
- Signs, Markings and Tags—regulated areas established, posted signs
- Programs, Policies and Procedures—work controls established, compliance program, respirator program, emergency action plan, medical surveillance program, hazard communication program
- Medical Surveillance—program, initial, annual, termination and “other” examinations, information provided to physician, hazard communication program
- Training and Communications—initial and annual training
- Recordkeeping—records, retention requirements, safety data sheets
- Qualified Person—physician

#### 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.

### 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.

### 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.

### **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 (I): Reference paragraph (I) for specific information.*

**1910.1027(I)(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 (I): Reference paragraph (I) for specific information.*

- **1910.1027(I)(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(I)(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(I)(11)(i)(D)**—For any employee who is medically removed under the provisions of paragraph (I)(11)(i) [Medical Removal Protection] of this section, the employer shall provide follow-up biological monitoring in accordance with (I)(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 (I)(11)(iv)-(v) [Medical Removal Protection] or the employee must be permanently removed from excess cadmium exposure.

**1910.1027(I)(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(I)(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(I)(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(I)(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 (I)(9) [Information Provided to a Physician] of this section.

### **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(I)(9)**—**Information provided to the physician:** The employer shall provide **information** to the examining physician.

*Note to Paragraph (I): Reference paragraph (I) for specific information.*

**1910.1027(I)(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(I)(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.

**Note to Paragraph (m)(4):** Reference paragraph (m)(4) for specific information.

### 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(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(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].

### Qualified Person

**1910.1027(l)(9)**—**Information provided to the physician:** The employer shall provide **information** to the examining physician.

**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)(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)(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.

## 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

- Signs, Markings and Tags—regulated area established, post signs
- Exposure Monitoring—determination, periodic monitoring, posted results
- Programs, Policies and Procedures—compliance program, respirator program, medical surveillance program, training program, hazard communication program
- Medical Surveillance—program, initial, annual and “other” examinations, written opinion
- Training and Communications—program initial and annual training
- Recordkeeping—retention requirements, records, safety data sheets
- Qualified Person—physician

### 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].*

## 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.*

## 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.

### **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 [Note: 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.

### **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. [Note: 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. [**Note:** Reference *paragraph (j)(3)* for specific information.]

### 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(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(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* `

## Qualified Person

**1910.1028(i)(6)**—*Information provided to the physician. The employer shall provide **information** to the examining physician [Note: 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)(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)(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.*

## 1910.1029—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

- Exposure Monitoring—monitoring every 3 months, after new process or change, posted results
- 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
- Training and Communications—inform launderers, instruct physician, initial and annual training
- Medical Surveillance—program, initial, annual, and “other” examinations
- Signs, Markings and Tags—labels, posted, regulated areas
- Recordkeeping—retention requirements, safety data sheets
- Qualified Person—physician

### 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.

### **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.

**Note to Paragraph (f)(3):** *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 reha-

bilitated 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.*

**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.

### **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.*

*Note to Paragraph (j)(4): 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.*

*Note to Paragraph (k)(1)(iv): 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.

### **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]*.

*Note to Paragraph (j)(1)(ii): Reference paragraph (j)(1)(ii) 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*

**Note to Paragraph (j)(2):** 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.

**Note to Paragraph (j)(4):** Reference paragraph (j)(4) for specific information.

**1910.1029(j)(5)(i)**—The employer shall obtain a **written** opinion from the examining physician.

**Note to Paragraph (j)(5)(i):** 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.

### 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.

**Note to Paragraph (l)(2)(i):** Reference paragraph (l)(2)(i) for specific information.

**1910.1029(l)(3)(i)**—The employer shall ensure that labels of containers of contaminated protective clothing and equipment include specific information.

**Note to Paragraph (l)(3)(i):** Reference paragraph (l)(3)(i) for specific information.

### Recordkeeping

**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(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(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) [Exposure Monitoring and

*Measurement*] of this section.

**Note to Paragraph (m)(1):** 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.

**Note to Paragraph (m)(2):** Reference paragraph (m)(2) 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*].

### Qualified Person

**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(j)(4)**—*Information provided to the physician.* The employer shall provide **information** to the examining physician.

**1910.1029(j)(5)(i)**—The employer shall obtain a **written** opinion from the examining physician.

## 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

- Exposure Monitoring—initial and annual monitoring, posted results
- Programs, Policies and Procedures—compliance program, respirator program, work controls, medical surveillance program, training program
- Medical Surveillance—program, initial, annual and “other” examinations
- Training and Communications—program, initial and annual training
- Signs, Markings and Tags—posting opinions, warning signs
- Recordkeeping—records, retention requirements
- Qualified Person—physician

### 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.

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

**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.

**Note to Paragraph (h)(1)(i):** Reference paragraph (h)(1)(i) for specific information.

### **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.

**Note to Paragraph (h)(1):** 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.*

**Note to Paragraph (h)(4):** *Reference paragraph (h)(4) for specific information.*

**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.*

**Note to Paragraph (i)(1):** *Reference paragraph (i)(1) for specific information.*

### **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*

**Note to Paragraph (h)(4):** *Reference paragraph (h)(4) for specific information.*

**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.*

**Note to Paragraph (i)(1)(i):** *Reference paragraph (i)(1)(i) 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.*

### **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.*

### **Recordkeeping**

**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(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)(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(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.*

#### **Qualified Person**

**1910.1043(h)(4)**—*Information provided to the physician. The employer shall provide information to the examination physician.*

**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(h)(4)**—*Information provided to the physician. The employer shall provide information to the examination physician*

**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(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.

### **1910.1044—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**

- Exposure Monitoring—initially, every 6 months, emergency, and quarterly monitoring, posted results
- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Medical Surveillance—program, initial and annual examinations
- Training and Communications—initial training
- Signs, Markings and Tags—regulated areas, posted signs, labels
- Recordkeeping—retention requirements, records, safety data sheets
- Qualified Person—physician

#### **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 re-determining 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*.

### **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 nonetheless 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*.

**Note to Paragraph (m)**: 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*.

### **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*.

**Note to Paragraph (m)(1)**: Reference paragraph (m)(1) 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.

**Note to Paragraph (m)(4):** 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.

### 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.

**Note to Paragraph (m)(4):** 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.

### 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.

### 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(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].

### Qualified Person

**1910.1044(m)(4)**—Information provided to the physician. The employer shall provide the following **information** to the examining physician.

**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.

## 1910.1045—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

- Exposure Monitoring—initially, every 6 months, and quarterly monitoring, posted results
- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Medical Surveillance—program, initial, annual, termination and “other” examinations
- Training and Communications—training program, initial and annual training
- Signs, Markings and Tags—posted signs, labels
- Recordkeeping—retention requirements, records, safety data sheets
- Inspections and Tests—signs cleaned
- Qualified Person—physician

### 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 mea-

measurements taken at least seven (7) days apart, 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.

### **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.

**Note to Paragraph (g):** 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*.

**Note to Paragraph (n):** Reference paragraph (n) 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.

**Note to Paragraph (o)(1):** Reference paragraph (o)(1) 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.

### 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. [Note: 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.

**Note to Paragraph (n)(5):** 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.

### 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.

**Note to Paragraph (n)(5):** 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.

**Note to Paragraph (o)(1):** Reference paragraph (o)(1) 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.

### 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.

**Note to Paragraph (p)(2):** Reference paragraph (p)(2) 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.

### 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.

**Note to Paragraph (g):** 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.

**Note to Paragraph (n)(5):** 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(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 employ-

ment 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].

### 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.

### Qualified Person

**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.

## 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

- Exposure Monitoring—determination, monitoring, posted results
- Programs, Policies and Procedures—work controls, compliance program, respirator program, action plan, medical surveillance program, training program, hazard communication program
- Medical Surveillance—program, initial and annual examinations, written opinion
- Training and Communications—initial and annual training, training program, hazard communication program
- Signs, Markings and Tags—regulated areas, labels
- Recordkeeping—retention requirements, records, safety data sheets
- Qualified Person—physician

### 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.

### **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.

### **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 em-



ployee 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.

**Note to Paragraph (i)(3):** 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.

**Note to Paragraph (i)(4)(i):** 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.

### **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.

**Note to Paragraph (i)(3):** 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. [**Note:** Reference paragraph (j)(3)(ii) for specific information.]

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

**1910.1047(e)(1)**—The employer shall establish a regulated area wherever occupational exposures to airborne concentra-

tions 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.*

*Note to Paragraph (j)(2)(i): 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.*

### **Recordkeeping**

**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(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].*

### **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.

**Note to Paragraph (i)(3):** 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.

**Note to Paragraph (i)(4)(i):** 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.

## 1910.1048—FORMALDEHYDE

**Scope/Application:** This section applies to occupational exposure to formaldehyde, its solutions, and materials that release formaldehyde.

### STANDARD HIGHLIGHTS

- Exposure Monitoring—periodic monitoring, posted results
- 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
- Signs, Markings and Tags—regulated areas, posted signs, labels
- Medical Surveillance—questionnaires, initial and annual examinations
- Training and Communications Program—training program, initial and annual training
- Recordkeeping—retention requirements
- Qualified Person—physician

### 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 individu-

ally 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.

### **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. [**Note:** 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.

**Note to Paragraph (n)(3):** 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.*

### 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**.

**Note to Paragraph (e)(1)(i):** 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.

**Note to Paragraph (h)(2)(ii)(A):** 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.

**Note to Paragraph (h)(2)(ii)(B):** 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.

### 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.

**Note to Paragraph (l)(1)(i):** Reference paragraph (l)(1)(i) 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).

**Note to Paragraph (l)(6):** 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.

### 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).

**Note to Paragraph (l)(6):** 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.

**Note to Paragraph (n)(3):** 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.

### Recordkeeping

**1910.1048(l)(6)**—*Information provided to the physician. The employer shall provide **information** to the examining physician (specifically listed in standard).*

**Note to Paragraph (l)(6):** *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(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(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**.*

#### **Qualified Person**

**1910.1048(l)(6)**—*Information provided to the physician. The employer shall provide **information** to the examining physician (specifically listed in standard).*

**Note to Paragraph (l)(6):** *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.*

### **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
- Exposure Monitoring—determinations, monitoring initially, every 6 months, and quarterly, posted results
- Inspections and Tests—visual inspections, corrective actions, documentation
- Signs, Markings and Tags—marked regulated areas, labels, posted results
- Training and Communications—inform launderers, initial and annual training, SDS
- Medical Surveillance—program, initial, annual, emergency and “other” examinations, written opinions
- Recordkeeping—records, retention requirements, safety data sheets
- Qualified Person—physician

## 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.

**Note to Paragraph (m)(1):** Reference paragraph (m)(1) for specific information.

## 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.

### **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.

### **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.

*Note to Paragraph (k)(2)(i)(A): Reference paragraph (k)(2)(i)(A) for specific information.*

### **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.

### Medical Surveillance

**1910.1050(m)(1)(i)**—The employer shall make available a medical surveillance program for employees exposed to MDA.

**Note to Paragraph (m)(1):** Reference paragraph (m)(1) 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.

### 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(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 [Substance Data Sheet]* and *B [Substance Technical Guidelines]* 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(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].

## Qualified Person

**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(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.

### 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

- Exposure Monitoring—determination documentation, initial, every 6 months, and quarterly monitoring, posted results
- Signs, Markings and Tags—regulated areas marked, labels
- Training and Communications—communicate hazards, training program
- Programs, Policies and Procedures—work controls, compliance program, exposure goal program, respirator program, emergency plan, medical surveillance program, training program, hazard communication program
- Medical Surveillance—programs, initial, annual, termination and “other” examinations, information provided to the physician, written opinions
- Recordkeeping—records, retention requirements
- Qualified Person—physician

#### 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.

### **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.

### **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 informa-*

tion 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.*

**Note to Paragraph (k)(6):** *Reference paragraph (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.*

**Note to Paragraph (l)(2)(ii):** *Reference paragraph (l)(2)(ii) 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.*

### **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.*

**Note to Paragraph (f)(2)(i):** *Reference paragraph (f)(2)(i) 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.*

**Note to Paragraph (g)(1):** *Reference paragraph (g)(1) 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. [Note: 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.

### Medical Surveillance

**1910.1051(k)(1)**—Employees covered. The employer shall institute a medical screening and surveillance program as specified in this paragraph.

**Note to Paragraph (k)(1):** Reference paragraph (k)(1) 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.

**Note to Paragraph (k)(6):** Reference paragraph (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.

### **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(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(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)(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.

**Note to Paragraph (l)(2)(ii):** Reference paragraph (l)(2)(ii) 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].

#### Qualified Person

- **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)(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.

**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.*

### 1910.1052—METHYLENE CHLORIDE

**Scope/Application:** *This section applies to occupational exposure to methylene chloride.*

#### STANDARD HIGHLIGHTS

- Exposure Monitoring—initial and periodic monitoring, posted results
- Signs, Markings and Tags—marked regulated areas
- Training and Communications—initial and annual training, instruct physician
- Programs, Policies and Procedures—work controls, respirator program, action plan, hazard communications program
- Medical Surveillance—initial and periodic examinations, written opinion
- Recordkeeping—retention requirements, records
- Qualified Person—physician

#### 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.

#### Signs, Markings and Tags

**1910.1052(e)(1)**—The employer shall *establish a regulated area* wherever an employee's exposure to airborne concentra-

tions 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.

### **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.*

**Note to Paragraph (j)(8):** *Reference paragraph (j)(8) 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 carboxy-hemoglobin), 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(l)(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(l)(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(l)(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(l)(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.

### **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.*

### **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.*

**Note to Paragraph (j)(8):** *Reference paragraph (j)(8) 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.

**Note to Paragraph (j)(9):** 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.

**Note to Paragraph (j)(14)(ii):** Reference paragraph (j)(14)(ii) for specific information.

### 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(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(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].*

### Qualified Person

- **1910.1052(g)(4)(ii)**—Ensure that the PLHCP provides their findings in a **written opinion to the employee and the employer**.
- **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)(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.*

## **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**

- Exposure Monitoring—initial monitoring, posted results
- Programs, Policies and Procedures—chemical hygiene plan, chemical hygiene officer and committee, SDS
- Signs, Markings and Tags—labels
- Qualified Person—chemical hygiene officer and committee
- Training and Communications—initial and refresher training
- Medical Surveillance—information provided to the physician, written opinions
- Recordkeeping—records, retention requirements

### **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.*

### **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. [Note: 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.

#### 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.

#### Qualified Person

**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.

#### 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.

*Note to Paragraph (f)(1): 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.

*Note to Paragraph (g)(3): 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.

*Note to Paragraph (g)(4): Reference paragraph (g)(4) for specific information.*

#### 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.

*Note to Paragraph (g)(1): 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.

*Note to Paragraph (g)(3): 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.*

*Note to Paragraph (g)(4)(i): Reference paragraph (g)(4)(i) for specific information.*

### **Recordkeeping**

**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.* [**Note:** 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(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(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].*

*[Reference 29 CFR 1910.178]*

## **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**

- Training and Communications—training initially and every three years, evaluations
- Certification—driver certification
- Recordkeeping—certifications

### **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.

*Note to Paragraph (l)(3): Reference paragraph (l)(3) for specific information.*

- **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.*

## 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.

## 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.

[Reference 29 CFR 1910.1026]

## 1915.1026—Chromium (VI)

**Scope/Application:** This standard applies to occupational exposures to chromium (VI) in all forms and compounds in shipyards.

**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

- Exposure Monitoring—determination, initial, six months, and periodic monitoring, posted results
- Signs, Markings and Tags—marked regulated areas, labels
- Programs, Policies and Procedures—work controls, respirator program, medical surveillance program, hazard communication program
- Medical Surveillance—program, annual, emergency and termination examinations, written opinion, information provided to the physician
- Training and Communications—initial training, notifications
- Recordkeeping—records, retention requirements, safety data sheets
- Qualified Person—physician or other licensed health care professional [PLHCP]

## Exposure Monitoring

**1915.1026(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.

**1915.1026(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.

**1915.1026(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.

**1915.1026(d)(2)(iv)—**If monitoring reveals employee exposures to be above the PEL, the employer shall perform periodic monitoring at least every three months.

**1915.1026(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.

**1915.1026(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.

**1915.1026(d)(4)(i)**—*Within 5 work days* after making an *exposure determination* in accordance with paragraph (d)(2) or paragraph (d)(3) [*Exposure Determination*] 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.

**1915.1026(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.

**1915.1026(d)(5)**—Accuracy of measurement. Where *air monitoring* is performed to comply with the requirements of this section, the employer shall use a method of monitoring and analysis that can measure chromium (VI) to within an accuracy of plus or minus 25 percent (+/-25%) and can produce accurate measurements to within a statistical confidence level of 95 percent for airborne concentrations at or above the action level.

### Signs, Markings and Tags

**1915.1026(d)(4)(i)**—*Within 5 work days* after making an exposure determination in accordance with paragraph (d)(2) or paragraph (d)(3) [*Exposure Determination*] 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.

**1915.1026(g)(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, § 1910.1200*.

**1915.1026(j)(1)**—The employer shall include chromium (VI) in the program established to comply with the *Hazard Communication Standard (HCS) [§ 1910.1200]*. The employer shall ensure that each employee has access to *labels on containers* of chromium (VI) and **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (j)(2) [*Hazard Communication*] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; skin sensitization; and eye irritation.

### Programs, Policies and Procedures

**1915.1026(e)(1)(i)**—Except as permitted in paragraph (e)(1)(ii)—*Methods of Compliance* 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 (f) [*Respiratory Protection*] of this section.

**1915.1026(f)(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.

**1915.1026(g)(2)(i)**—The employer shall *ensure that employees remove all protective clothing and equipment contaminated with chromium (VI)* at the end of the work shift or at the completion of their tasks involving chromium (VI) exposure, whichever comes first.

**1915.1026(g)(2)(ii)**—The employer shall *ensure that no employee removes chromium (VI)-contaminated protective clothing or equipment from the workplace*, except for those employees whose job it is to launder, clean, maintain, or dispose of such clothing or equipment.

**1915.1026(g)(2)(iii)**—When contaminated protective clothing or equipment is removed for laundering, cleaning, maintenance, or disposal, the employer shall *ensure that it is stored and transported in sealed, impermeable bags or other closed, impermeable containers*.

**1915.1026(g)(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*, § 1910.1200.

**1915.1026(h)(3)(i)**—The employer shall provide readily accessible washing facilities capable of removing chromium (VI) from the skin, and shall *ensure that affected employees use these facilities when necessary*.

**1915.1026(h)(3)(ii)**—The employer shall *ensure that employees who have skin contact with chromium (VI) wash their hands and faces at the end of the work shift and prior to eating, drinking, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet*.

**1915.1026(h)(4)(i)**—Whenever the employer allows employees to consume food or beverages at a worksite where chromium (VI) is present, the employer shall *ensure that eating and drinking areas and surfaces are maintained as free as practicable of chromium (VI)*.

**1915.1026(h)(4)(ii)**—The employer shall *ensure that employees do not enter eating and drinking areas with protective work clothing or equipment unless surface chromium (VI) has been removed from the clothing and equipment by methods that do not disperse chromium (VI) into the air or onto an employee's body*.

**1915.1026(h)(5)**—Prohibited activities. The employer shall *ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in areas where skin or eye contact with chromium (VI) occurs; or carry the products associated with these activities, or store such products in these areas*.

**1915.1026(i)(1)(ii)**—The employer shall *assure that all medical examinations and procedures required by this section are performed by or under the supervision of a PLHCP*.

**1915.1026(i)(4)**—Information provided to the PLHCP. The employer shall *ensure that the examining PLHCP has a copy of this standard*, and shall provide specific information.

**Note to paragraph (i)(4):** *Reference paragraph (i)(4) for specific information.*

**1915.1026(j)(1)**—The employer shall include chromium (VI) in the program established to comply with the *Hazard Communication Standard (HCS)* [*1910.1200*]. The employer shall ensure that each employee has access to *labels on containers of chromium (VI) and safety data sheets, and is trained* in accordance with the provisions of HCS and *paragraph (j)(2) [Hazard Communication]* of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; skin sensitization; and eye irritation.

**1915.1026(j)(2)(i)**—The employer shall *ensure that each employee can demonstrate knowledge*.

**Note to paragraph (j)(2)(i):** *Reference paragraph (j)(2)(i) for specific information.*

**1915.1026(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]*.

**1915.1026(k)(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]*.

**1915.1026(k)(3)(iii)**—The employer shall *ensure that objective data are maintained and made available in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

**1915.1026(k)(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]*.

### **Medical Surveillance**

**1915.1026(i)(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.

**1915.1026(i)(2)**—*Frequency*. The employer shall provide a medical examination:

- **1915.1026(i)(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.
- **1915.1026(i)(2)(ii)**—*Annually*.
- **1915.1026(i)(2)(iii)**—*Within 30 days after a PLHCP's written medical opinion recommends an additional exami-*

nation.

- **1915.1026(i)(2)(iv)**—Whenever an employee shows signs or symptoms of the adverse health effects associated with chromium (VI) exposure.
- **1915.1026(i)(2)(v)**—Within 30 days after exposure during an emergency which results in an uncontrolled release of chromium (VI).
- **1915.1026(i)(2)(vi)**—At the termination of employment, unless the last examination that satisfied the requirements of paragraph (i)—Medical Surveillance this section was less than six months prior to the date of termination.

**1915.1026(i)(4)**—Information provided to the PLHCP. The employer shall ensure that the examining PLHCP has a **copy** of this standard, and shall provide information.

**Note to paragraph (i)(4):** Reference paragraph (i)(4) for specific information.

**1915.1026(i)(5)(i)**—The employer shall obtain a **written** medical opinion from the PLHCP, within 30 days for each medical examination performed on each employee.

**Note to paragraph (i)(5)(i):** Reference paragraph (i)(5)(i) for specific information.

### Training and Communications

**1915.1026(d)(4)(i)**—Within 5 work days after making an exposure determination in accordance with paragraph (d)(2) or paragraph (d)(3) [Exposure Determination] 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.

**1915.1026(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.

**1915.1026(g)(3)(iii)**—The employer shall inform any person who launders or cleans protective clothing or equipment contaminated with chromium (VI) of the potentially harmful effects of exposure to chromium (VI) and that the clothing and equipment should be laundered or cleaned in a manner that minimizes skin or eye contact with chromium (VI) and effectively prevents the release of airborne chromium (VI) in excess of the PEL.

**1915.1026(i)(4)**—Information provided to the PLHCP. The employer shall ensure that the examining PLHCP has a copy of this standard, and shall provide information.

**Note to paragraph (i)(4):** Reference paragraph (i)(4) for specific information.

**1915.1026(i)(5)(i)**—The employer shall obtain a **written** medical opinion from the PLHCP, within 30 days for each medical examination performed on each employee.

**Note to paragraph (i)(5)(i):** Reference paragraph (i)(5)(i) for specific information.

**1915.1026(i)(5)(iii)**—The employer shall provide a copy of the PLHCP's **written** medical opinion to the examined employee within two weeks after receiving it.

**1915.1026(j)(1)**—The employer shall include chromium (VI) in the program established to comply with the Hazard Communication Standard (HCS) [§ 1910.1200]. The employer shall ensure that each employee has access to labels on containers of chromium (VI) and **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (j)(2) [Hazard Communication] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; skin sensitization; and eye irritation.

**1915.1026(j)(2)(i)**—The employer shall ensure that each employee can demonstrate knowledge.

**Note to paragraph (j)(2)(i):** Reference paragraph (j)(2)(i) for specific information.

**1915.1026(k)(3)(iii)**—The employer shall ensure that objective data are maintained and made available in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

### Recordkeeping

**1915.1026(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.

**1915.1026(i)(5)(i)**—The employer shall obtain a **written medical opinion** from the PLHCP, *within 30 days* for each medical examination performed on each employee.

**Note to paragraph (i)(5)(i):** *Reference paragraph (i)(5)(i) for specific information.*

**1915.1026(j)(1)**—The employer shall include chromium (VI) in the program established to comply with the *Hazard Communication Standard (HCS) [§ 1910.1200]*. The employer shall ensure that each employee has access to *labels on containers* of chromium (VI) and **safety data sheets**, and is trained in accordance with the provisions of HCS and *paragraph (j)(2) [Hazard Communication]* of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; skin sensitization; and eye irritation.

**1915.1026(k)(1)(i)**—The employer shall *maintain an accurate record* of all air monitoring conducted to comply with the requirements of this section.

**1915.1026(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]*.

**1915.1026(k)(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*.

**1915.1026(k)(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]*.

**1915.1026(k)(3)(i)**—The employer shall *maintain an accurate record of all objective data relied upon to comply with the requirements of this section*.

**1915.1026(k)(3)(iii)**—The employer shall ensure that *objective data are maintained and made available in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records]*.

**1915.1026(k)(4)(i)**—The employer shall *establish and maintain an accurate record* for each employee covered by medical surveillance under *paragraph (i) [Medical Surveillance]* of this section.

**1915.1026(k)(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]*.

#### **Qualified Person**

**1915.1026(i)(1)(ii)**—The employer shall assure that all medical examinations *and procedures* required by this section are *performed by or under the supervision of a PLHCP*.

## 29 CFR 1917 Subpart B—Marine Terminal Operations

### 1917.13—SLINGING

*Scope/Application:* This section applies to Marine Terminal Operations.

#### STANDARD HIGHLIGHTS

- Training and Communications—instructions to employees

#### Training and Communications

1917.13(h)—The employer shall *require employees to stay clear of the area* beneath overhead drafts or descending lifting gear.

1917.13(i)—Employees shall *not be permitted to ride the hook or the load*.

### 1917.17—RAILROAD FACILITIES

*Scope/Application:* This section applies to Marine Terminal Operations.

#### STANDARD HIGHLIGHTS

- Training and Communications—instructions to employees
- Signs, Markings and Tags—posted warning signs
- Programs, Policies and Procedures—special precautions
- Inspections and Tests—inspection of doors

#### Training and Communications

1917.17(c)—The employer shall *direct that no employees* remain in railcars after work is concluded.

#### Signs, Markings and Tags

1917.17(n)—*Warning signs shall be posted* where doorways open onto tracks, at blind corners and at similar places where vision may be restricted.

1917.17(o)—*Warning signs shall be posted* if insufficient clearance for personnel exists between railcars and structures.

#### Programs, Policies and Procedures

1917.17(g)—The employer shall *institute all necessary controls* during railcar movement to safeguard personnel. If winches or capstans are employed for movement, *employees shall stand clear* of the hauling rope and shall not stand between the rope and the cars.

1917.17(h)—Before being opened fully, *doors shall be opened slightly to ensure that the load has not shifted* during that the load has not shifted during transit. *Special precautions shall be taken* if the doors being opened are visibly damaged.

1917.17(i)—If power industrial trucks are used to open railcar doors, the trucks or the *railcar doors shall be equipped with door opening attachments*. *Employees shall stand clear* of the railcar doors while they are being opened and closed.

#### Inspections and Tests

1917.17(h)—Before being opened fully, doors shall be opened slightly to ensure that the load has not shifted during that the load has not shifted during transit. Special precautions shall be taken if the doors being opened are *visibly damaged*.

### 1917.18—LOG HANDLING

*Scope/Application:* This section applies to Marine Terminal Operations.

#### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—special precautions

#### Programs, Policies and Procedures

1917.18(a)—The employer shall *ensure that structures (bunks)* used to contain logs have rounded corners and rounded structural parts to avoid sling damage.

## 1917.19—MOVEMENT OF BARGES AND RAILCARS

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—special precautions

### Programs, Policies and Procedures

1917.19—Barges and railcars *shall not be moved by cargo runners (running rigging)* from vessel cargo booms, cranes or other equipment not suitable for the purpose.

## 1917.20—INTERFERENCE WITH COMMUNICATIONS

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—special precautions
- Training and Communications—warnings or instructions

### Programs, Policies and Procedures

1917.20—*Cargo handling operations shall not be carried on when noise-producing, maintenance, construction or repair work interferes with the communication of warnings or instructions.*

### Training and Communications

1917.20—Cargo handling operations shall not be carried on when noise-producing, maintenance, construction or repair work *interferes with the communication of warnings or instructions.*

## 1917.22—HAZARDOUS CARGO

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—special precautions
- Training and Communications—instructions to employees
- Inspections and Tests—ascertain any hazardous cargo
- Qualified Person—designated person

### Programs, Policies and Procedures

1917.22(c)—If hazardous cargo is spilled or if its packaging leaks, employees shall be removed from the affected area until the employer has ascertained the specific hazards, provided any equipment, clothing and ventilation and fire protection equipment necessary to eliminate or protect against the hazard, and has instructed cleanup employees in *a safe method of cleaning up and disposing of a spill and handling and disposing of leaking containers*. Actual cleanup or disposal work shall be conducted under the supervision of a designated person.

### Training and Communications

1917.22(a)—Before cargo handling operations begin, the employer shall ascertain whether any hazardous cargo is to be handled and shall determine the nature of the hazard. The employer shall *inform employees of the nature of any hazard and any special precautions to be taken to prevent employee exposure, and shall instruct employees to notify him of any leaks or spills.*

1917.22(c)—If hazardous cargo is spilled or if its packaging leaks, employees shall be removed from the affected area until the employer has ascertained the specific hazards, provided any equipment, clothing and ventilation and fire protection equipment necessary to eliminate or protect against the hazard, and has *instructed cleanup employees in a safe method of cleaning up and disposing of a spill and handling and disposing of leaking containers*. Actual cleanup or disposal work shall be conducted under the supervision of a designated person.

### Inspections and Tests

1917.22(a)—Before cargo handling operations begin, the employer shall *ascertain whether any hazardous cargo is to be handled and shall determine the nature of the hazard*. The employer shall inform employees of the nature of any hazard

and any special precautions to be taken to prevent employee exposure, and shall instruct employees to notify him of any leaks or spills.

**1917.22(c)**—If *hazardous cargo is spilled or if its packaging leaks*, employees shall be removed from the affected area until the employer *has ascertained the specific hazards*, provided any equipment, clothing and ventilation and fire protection equipment necessary to eliminate or protect against the hazard, and has instructed cleanup employees in a safe method of cleaning up and disposing of a spill and handling and disposing of leaking containers. Actual cleanup or disposal work shall be conducted under the supervision of a designated person.

#### **Qualified Person**

**1917.22(c)**—If hazardous cargo is spilled or if its packaging leaks, employees shall be removed from the affected area until the employer has ascertained the specific hazards, provided any equipment, clothing and ventilation and fire protection equipment necessary to eliminate or protect against the hazard, and has instructed cleanup employees in a safe method of cleaning up and disposing of a spill and handling and disposing of leaking containers. Actual cleanup or disposal work shall be *conducted under the supervision of a designated person*.

### **1917.23—HAZARDOUS ATMOSPHERES AND SUBSTANCES**

**Scope/Application:** *This section applies to Marine Terminal Operations.*

#### **STANDARD HIGHLIGHTS**

- Training and Communications—instructions to employees
- Inspections and Tests—testing atmosphere
- Qualified Person—designated person
- Recordkeeping—results of test
- Exposure Monitoring—hazardous atmosphere
- Signs, Markings and Tags—warning signs

#### **Training and Communications**

**1917.23(d)(2)**—Persons entering a space containing a hazardous atmosphere shall be *instructed in the nature of the hazard, precautions to be taken, and the use of protective and emergency equipment*. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such space;

**1917.23(d)(3)**—Except for emergency or rescue operations, employees shall not enter into any atmosphere which has been identified as flammable or oxygen deficient (less than 19.5% oxygen). Persons who may be required to enter flammable or oxygen deficient atmospheres in emergency operations shall be *instructed in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized*.

#### **Inspections and Tests**

**1917.23(b)(1)**—When the employer is aware that a room, building, vehicle, railcar or other space contains or has contained a hazardous atmosphere, a designated and appropriately equipped person shall *test the atmosphere before employee entry to determine whether a hazardous atmosphere exists*.

**1917.23(b)(2)**—**Records** of results of any tests required by this section shall be maintained for *at least thirty (30) days*.

**1917.23(c)**—Testing during ventilation. When mechanical ventilation is used to maintain a safe atmosphere, *tests shall be made* by a designated person to ensure that the atmosphere is not hazardous.

**1917.23(d)(3)**—Except for emergency or rescue operations, employees shall not enter into any atmosphere which has been *identified as flammable or oxygen deficient (less than 19.5% oxygen)*. Persons who may be required to enter flammable or oxygen deficient atmospheres in *emergency operations shall be instructed* in the dangers attendant to those atmospheres and instructed in the use of self-contained breathing apparatus, which shall be utilized.

#### **Qualified Person**

**1917.23(b)(1)**—When the employer is aware that a room, building, vehicle, railcar or other space contains or

has contained a hazardous atmosphere, a *designated and appropriately equipped person* shall test the atmosphere before employee entry to determine whether a hazardous atmosphere exists.

**1917.23(c)**—Testing during ventilation. When mechanical ventilation is used to maintain a safe atmosphere, tests shall be *made by a designated person* to ensure that the atmosphere is not hazardous.

**1917.23(d)**—Entry into hazardous atmospheres. Only *designated persons shall enter hazardous atmospheres*, in which case specific requirements shall apply.

*Note to Paragraph (d): Reference paragraph (d) for the specific entry requirements.*

**1917.23(e)**—When the packaging of asbestos cargo leaks, spillage shall be cleaned up by *designated employees* protected from the harmful effects of asbestos as required by *1910.1001 [Asbestos]* of this chapter.

#### **Recordkeeping**

**1917.23(b)(2)**—*Records of results of any tests* required by this section shall be *maintained for at least thirty (30) days*.

#### **Exposure Monitoring**

**1917.23(d)(2)**—Persons entering a space containing a hazardous atmosphere *shall be instructed* in the nature of the hazard, precautions to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall *continuously monitor the activity of employees within such space*;

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

**1917.23(d)(4)**—To prevent inadvertent employee entry into spaces that have been identified as having hazardous, flammable or oxygen deficient atmospheres, *appropriate warning signs or equivalent means shall be posted at all means of access to those spaces*.

### **1917.24—CARBON MONOXIDE**

**Scope/Application:** *This section applies to Marine Terminal Operations.*

#### **STANDARD HIGHLIGHTS**

- Inspections and Tests—testing atmosphere
- Qualified Person—designated person
- Recordkeeping—results of test
- Programs, Policies and Procedures—removal of employees
- Other—consensus standard
- Exposure Monitoring—carbon monoxide concentrations

#### **Inspections and Tests**

**1917.24(a)**—Exposure limits. The carbon monoxide content of the atmosphere in a room, building, vehicle, railcar or any enclosed space shall be *maintained at not more than 50 parts per million (ppm) (0.005%) as an eight hour average area level* and employees shall be *removed from the enclosed space if the carbon monoxide concentration exceeds a ceiling of 100 ppm (0.01%)*.

**1917.24(b)**—Testing. *Tests to determine carbon monoxide concentration* shall be made when necessary to ensure that employee exposure does not exceed the limits specified in *paragraph (a)[Exposure Limits]* of this section.

**1917.24(c)**—Instrumentation. *Tests for carbon monoxide concentration* shall be made by designated persons using gas detector tube units certified by *NIOSH under 30 CFR Part 11* or other measuring instruments whose accuracy is as great or greater.

**1917.24(d)**—**Records.** A **record** of the date, time, location and *results of carbon monoxide tests shall be available for at least thirty (30) days*.

#### **Qualified Person**

**1917.24(c)**—Instrumentation. Tests for carbon monoxide concentration shall be *made by designated persons* using gas



detector tube units certified by *NIOSH under 30 CFR Part 11* or other measuring instruments whose accuracy is as great or greater.

### Recordkeeping

**1917.24(d)—Records.** A *record* of the date, time, location and results of carbon monoxide tests shall be available for at least thirty (30) days.

### Programs, Policies and Procedures

**1917.24(a)—Exposure limits.** The *carbon monoxide content* of the atmosphere in a room, building, vehicle, railcar or any enclosed space shall be *maintained at not more than 50 parts per million (ppm) (0.005%) as an eight hour average area level* and employees shall be *removed from the enclosed space if the carbon monoxide concentration exceeds a ceiling of 100 ppm (0.01%)*.

### Other

**1917.24(c)—Instrumentation.** Tests for carbon monoxide concentration shall be made by *designated persons* using gas detector tube units certified by *NIOSH under 30 CFR Part 11* or other measuring instruments whose accuracy is as great or greater.

### Exposure Monitoring

**1917.24(a)—Exposure limits.** The carbon monoxide content of the atmosphere in a room, building, vehicle, railcar or any enclosed space shall be *maintained at not more than 50 parts per million (ppm) (0.005%) as an eight hour average area level* and employees shall be *removed from the enclosed space if the carbon monoxide concentration exceeds a ceiling of 100 ppm (0.01%)*.

**1917.24(b)—Testing.** *Tests to determine carbon monoxide concentration* shall be made when necessary to ensure that employee exposure does not exceed the limits specified in *paragraph (a)[Exposure Limits]* of this section.

## 1917.25—FUMIGANTS, PESTICIDES, INSECTICIDES AND HAZARDOUS PRESERVATIVES

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—testing atmosphere
- Qualified Person—designated person
- Recordkeeping—results of test
- Training and Communications—instruction on hazards
- Exposure Monitoring—carbon monoxide concentrations
- Signs, Marking, Tags—posted signs
- Certification—written warranty

### Inspections and Tests

**1917.25(a)—**At any time that the concentration in any space reaches the level specified as hazardous by the fumigant manufacturer or by *Table Z-1 of 29 CFR 1910.1000 [Limits for Air Contaminants]*, whichever is lower, all employees shall be removed from the space and shall not be permitted to re-enter until such time as *tests demonstrate that the atmosphere is safe*.

**1917.25(b)—***Tests to determine the atmospheric concentration of chemicals used to treat cargo.*

**Note to Paragraph (b):** *Reference paragraph (b) for the specific testing requirements.*

**1917.25(c)—**Results of any *tests shall be available for at least 30 days*. Such **records** may be entered on any retrievable medium, and shall be available for inspection.

### Qualified Person

**1917.25(b)—***Tests to determine the atmospheric concentration of chemicals used to treat cargo shall be:*

- **1917.25(b)(2)**—*Conducted by designated persons;*

**1917.25(d)**—Chemicals shall only be applied to cargoes by *designated persons*.

**1917.25(e)**—Only *designated persons* shall enter hazardous atmospheres, in which case the specific provisions apply.

**Note to Paragraph (e):** *Reference paragraph (e) for the specific testing requirements.*

### Recordkeeping

**1917.25(c)**—Results of any tests shall be available for at least 30 days. Such **records** may be entered on any retrievable medium, and shall be available for inspection.

### Training and Communications

**1917.25(e)(2)**—Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precaution to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such a space.

**1917.25(f)**—Signs shall be clearly **posted** where fumigants, pesticides, or hazardous preservatives have created a hazardous atmosphere. These signs shall note the danger, identify specific chemical hazards, and give appropriate information and precautions *including instructions for the emergency treatment of employees affected by any chemical in use.*

### Exposure Monitoring

**1917.25(e)(2)**—Persons entering a space containing a hazardous atmosphere shall be instructed in the nature of the hazard, precaution to be taken, and the use of protective and emergency equipment. Standby observers, similarly equipped and instructed, shall continuously monitor the activity of employees within such a space.

### Signs, Marking, Tags

**1917.25(f)**—Signs shall be clearly **posted** where fumigants, pesticides, or hazardous preservatives have created a hazardous atmosphere. These signs shall note the danger, identify specific chemical hazards, and give appropriate **information** and **precautions** *including instructions for the emergency treatment of employees affected by any chemical in use.*

### Certification

**1917.25(g)**—In the case of containerized shipments of fumigated tobacco, the contents of the container shall be aerated by opening the container doors for a period of 48 hours after the completion of fumigation and prior to loading. When tobacco is within shipping cases having polyethylene or similar bag liners, the aeration period shall be 72 hours. The employer shall *obtain a written warranty from the fumigation facility* stating that the appropriate aeration period has been met.

## 1917.26—FIRST AID AND LIFESAVING FACILITIES

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Qualified Person—person certified in first aid
- Training and Communications—instruction on hazards
- Other—USCG
- Inspections and Tests—first aid kit

### Qualified Person

**1917.26(b)**—A first aid kit shall be available at the terminal, and *at least one person holding a valid first aid certificate* shall be at the terminal when work is in progress.

**1917.26(c)**—First aid kit. First aid kits shall be weatherproof and shall contain individual sealed packages for each item that must be kept sterile. The contents of each kit shall be *determined by a person certified in first aid* and cognizant of the hazards found in marine cargo handling operations. The contents *shall be checked* at intervals that allow prompt

replacement of expended items.

### **Training and Communications**

**1917.26(a)**—Employers shall *instruct employees to report every injury*, regardless of severity, to the employer.

**1917.26(e)**—Telephone or *equivalent means of communication* shall be readily available.

### **Other**

**1917.26(f)**—A *U.S. Coast Guard approved* 30-inch (76.2 cm) life ring, with at least 90 feet (27.43m) of line attached, shall be available at readily accessible points at each waterside work area where the employees' work exposes them to the hazard of drowning. Employees working on any bridge or structure leading to a detached vessel berthing installation shall wear *U.S. Coast Guard approved personal flotation devices* except where protected by railings, nets, or safety belts and lifelines. A readily available portable or permanent ladder giving access to the water shall also be provided within 200 feet (61 m) of such work areas.

## **1917.27—PERSONNEL**

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### **STANDARD HIGHLIGHTS**

- Qualified Person—designated person
- Training and Communications—training of supervisors and course instruction
- Other—consensus standard
- Competent Person—crane operator
- Signs, Markings and Tags—signal code

### **Qualified Person**

**1917.27(a)(1)**—Only those *employees determined by the employer to be competent by reason of training or experience*, and who understand the signs, notices and *operating instructions and are familiar* with the signal code in use shall be permitted to operate a crane, winch or other power operated cargo handling apparatus, or any power operated vehicle, or give signals to the operator of any hoisting apparatus.

**Exception:** *Employees being trained and supervised by a designated person may operate such machinery and give signals to operators during training.*

### **Training and Communications**

**1917.27(a)(1)**—Only those employees determined by the employer to be *competent by reason of training or experience*, and who understand the signs, notices and *operating instructions and are familiar* with the signal code in use shall be permitted to operate a crane, winch or other power operated cargo handling apparatus, or any power operated vehicle, or give signals to the operator of any hoisting apparatus.

**Exception:** *Employees being trained and supervised by a designated person may operate such machinery and give signals to operators during training.*

**1917.27(b)(1)**—After October 3, 1985 immediate supervisors of cargo-handling operation of more than five (5) persons, shall *satisfactorily complete a course in accident prevention*. Employees *newly assigned to supervisory duties after that date shall be required to meet the provisions of this paragraph within ninety (90) days* of such assignment.

**1917.27(b)(2)**—The course shall *consist of instruction suited to the particular operations involved*.<sup>(3)</sup>

### **Other**

**1917.27(a)(2)**—*No employee known to have defective uncorrected eyesight or hearing, or to be suffering from heart disease, epilepsy, or similar ailments* that may suddenly incapacitate the employee, shall be permitted to operate a crane, winch or other power-operated cargo handling apparatus or a power-operated vehicle.

**Note to paragraph (a)(2):** *OSHA is defining suddenly incapacitating medical ailments consistent with the Americans with Disabilities Act (ADA), 42 U.S.C. 12101 (1990). Therefore, employers who act in accordance with the employment*

provisions (Title I) of the ADA (42 U.S.C. 12111-12117), the regulations implementing Title I (29 CFR Part 1630), and the Technical Assistance Manual for Title I issued by the Equal Employment Opportunity Commission (Publication number: EEOC—M1A), will be considered as being in compliance with this paragraph.

### Competent Person

**1917.27(a)(1)**—Only those *employees determined by the employer to be competent by reason of training or experience*, and who understand the signs, notices and *operating instructions and are familiar with the signal code in use* shall be permitted to operate a crane, winch or other power operated cargo handling apparatus, or any power operated vehicle, or give signals to the operator of any hoisting apparatus.

**Exception:** Employees *being trained and supervised by a designated person* may operate such machinery and give signals to operators during training.

### Signs, Markings and Tags

**1917.27(a)(1)**—Only those employees determined by the employer *to be competent* by reason of training or experience, and *who understand the signs, notices and operating instructions and are familiar with the signal code in use* shall be permitted to operate a crane, winch or other power operated cargo handling apparatus, or any power operated vehicle, or give signals to the operator of any hoisting apparatus.

**Exception:** Employees *being trained and supervised by a designated person* may operate such machinery and give signals to operators during training.

## 1917.29—RETENTION OF DOT MARKINGS, PLACARDS AND LABELS

**Scope/Application:** *This section applies to Marine Terminal Operations.*

### STANDARD HIGHLIGHTS

- Other—consensus standard
- Signs, Markings and Tags—marking of hazardous material

### Other

**1917.29(a)**—Any employer who receives a package of hazardous material which is required to be marked, labeled or placarded in accordance with the U. S. Department of Transportation's Hazardous Materials Regulations (49 CFR Parts 171 through 180) shall *retain those markings, labels and placards on the package until the packaging is sufficiently cleaned of residue and purged of vapors to remove any potential hazards.*

**1917.29(e)**—For the purposes of this section, the term “hazardous material” and any other terms not defined in this section have the same definition as in the *Hazardous Materials Regulations (49 CFR Parts 171 through 180).*

### Signs, Markings and Tags

**1917.29(a)**—Any employer who receives a package of hazardous material which *is required to be marked, labeled or placarded* in accordance with the U. S. Department of Transportation's Hazardous Materials Regulations (49 CFR Parts 171 through 180) shall *retain those Markings labels and placards on the package until the packaging is sufficiently cleaned of residue and purged of vapors to remove any potential hazards.*

**1917.29(b)**—Any employer who receives a freight container, rail freight car, motor vehicle, or transport vehicle that is *required to be marked or placarded* in accordance with the Hazardous Materials Regulations shall *retain those markings and placards on the freight container, rail freight car, motor vehicle or transport vehicle until the hazardous materials which require the marking or placarding are sufficiently removed to prevent any potential hazards.*

**1917.29(c)**—*Markings placards and labels shall be maintained in a manner that ensures that they are readily visible.*

**1917.29(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).*

## 1917.30—EMERGENCY ACTION PLANS

**Scope/Application:** *This section applies to Marine Terminal Operations.*

## STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—emergency action plans
- Training and Communications—alarm system, emergency evacuation

### Programs, Policies and Procedures

**1917.30(a)(1)**—Scope and application. This paragraph (a) requires all employers to *develop and implement an emergency action plan*.<sup>3a</sup> The *emergency action plan* shall be in **writing** (except as provided in paragraph (a)(5)(iv) of this section) and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies.

**1917.30(a)(3)**—Alarm system. The employer shall *establish an employee alarm system that provides warning* for necessary emergency action and for reaction time for safe escape of employees from the workplace or the immediate work area.

**1917.30(a)(4)**—Evacuation. The employer shall *establish the types of evacuation* to be used in emergency circumstances.

**1917.30(a)(5)(i)**—*Before implementing the emergency action plan*, the employer shall designate and train a sufficient number of *persons to assist in the safe and orderly emergency evacuation of employees*.

**1917.30(a)(5)(ii)**—The employer *shall review the plan* with each employee covered by the plan.

**Note to Paragraph (a)(5)(ii):** *Reference paragraph (a)(5)(ii) for the specific information that needs to be covered.*

**1917.30(a)(5)(iii)**—The employer shall review with each employee upon initial *assignment those parts of the plan* that the employee must know to protect the employee in the event of an emergency. The **written plan** shall be kept at the workplace and be made available for employee review.

**1917.30(a)(5)(iv)**—Employers with 10 or fewer employees may communicate the plan orally to employees and *need not maintain a written plan*.

### Training and Communications

**1917.30(a)(3)**—Alarm system. The employer shall *establish an employee alarm system that provides warning* for necessary emergency action and for reaction time for safe escape of employees from the workplace or the immediate work area.

**1917.30(a)(5)(i)**—Before implementing the *emergency action plan*, the employer shall *designate and train a sufficient number of persons to assist in the safe and orderly emergency evacuation of employees*.

**1917.30(a)(5)(ii)**—The employer *shall review the plan* with each employee covered by the plan .

**Note to Paragraph (a)(5)(ii):** *Reference paragraph (a)(5)(ii) for the specific information that needs to be covered.*

**1917.30(a)(5)(iii)**—The employer shall *review with each employee upon initial assignment those parts of the plan* that the employee must know to protect the employee in the event of an emergency. The **written plan** shall be kept at the workplace and be *made available for employee review*.

**1917.30(a)(5)(iv)**—Employers with *10 or fewer employees may communicate the plan orally* to employees and need not *maintain a written plan*.

## 29 CFR 1917 Subpart C—Cargo Handling Gear and Equipment

### 1917.41—HOUSE FALLS

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspection of loose gear
- Qualified Person—designated employee

#### Inspections and Tests

**1917.41(c)**—*Designated employees shall inspect chains, links, shackles, swivels, blocks and other loose gear used in house fall operations before each day's use. Defective gear shall not be used.*

#### Qualified Person

**1917.41(c)**—*Designated employees shall inspect chains, links, shackles, swivels, blocks and other loose gear used in house fall operations before each day's use. Defective gear shall not be used.*

### 1917.42—MISCELLANEOUS AUXILIARY GEAR

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspection of loose gear
- Qualified Person—designated employee
- Programs, Policies and Procedures—manufacturer recommendations
- Other—consensus standards, manufacturer's recommendations
- Recordkeeping—manufacturer ratings available for inspection
- Signs, Markings and Tags—marking chain slings
- Certification—proof testing

#### Inspections and Tests

**1917.42(a)(1)**—*At the completion of each use, loose gear such as slings, chains, bridles, blocks and hooks shall be so placed as to avoid damage to the gear. Loose gear shall be inspected and any defects corrected before reuse.*

**1917.42(a)(2)**—*All loose gear shall be inspected by the employer or his authorized representative before each use and, when necessary, at intervals during its use, to ensure that it is safe. Any gear which is found upon such inspection to be visibly unsafe shall not be used until it is made safe.*

**1917.42(b)(1)**—*The employer shall ascertain and adhere to the manufacturer's recommended ratings for wire rope and wire rope slings and shall have such ratings available for inspection. When the manufacturer is unable to supply such ratings, the employer shall use the tables for wire rope and wire rope slings found in American National Safety Standard for Slings, ANSI B30.9-1971. A design safety factor of at least five shall be maintained for the common sizes of running wire used as falls, in purchases or in such uses as light load slings. Wire rope with a safety factor of less than five may be used.*

**Note to Paragraph (b)(1):** *Reference paragraph (b)(1) for the specific information required.*

**1917.42(b)(2)**—*Wire rope or wire rope slings having specific conditions shall not be used.*

**Note to Paragraph (b)(2):** *Reference paragraph (b)(2) for the specific information required.*

**1917.42(b)(3)**—*Protruding ends of strands in splices on slings and bridles shall be covered or blunted. Coverings shall be removable so that splices can be examined. Means used to cover or blunt ends shall not damage the wire.*

**1917.42(b)(4)**—Where wire rope clips are used to form eyes, the employer shall adhere to the *manufacturer's recommendations, which shall be made available for inspection*. If “U” bolt clips are used and the manufacturer's recommendations are not available, Table C-1 shall be used to determine the number and spacing of the clips. “U” bolts shall be applied with the “U” section in contact with the dead end of the rope.

**1917.42(d)(1)**—The employer shall adhere to the manufacturers' ratings and use recommendations for the specific synthetic fiber rope used and shall *make such ratings available for inspection*.

**1917.42(g)(3)**—Defective synthetic web slings removed from service shall not be returned to service unless repaired by a sling manufacturer or similar entity. *Each repaired sling shall be proof tested* by the repairer to twice the slings rated capacity prior to its return to service. The employer shall retain a **certificate** of the proof test and make it available for examination.

**1917.42(h)(3)(i)**—Sling chains, including end fastenings shall be *inspected for visible defects* before each day's use and as often as necessary during use to ensure integrity of the sling.

**1917.42(h)(3)(ii)**—*Thorough inspections* of chains on use shall be made quarterly to detect wear, defective welds, deformation or increase in length or stretch. The *month of inspection shall be indicated on each chain by color of paint on a link or by other equally effective means*.

**1917.42(h)(3)(v)**—Only *designated persons shall inspect chains* used for slinging and hoisting.

**1917.42(h)(4)**—Chains shall be repaired only under qualified supervision. Links or portions of chain defective under any of the criteria of paragraph (h)(3)(iii) of this section shall be replaced with properly dimensioned links or connections of material similar to those of the original chain. Before repaired chains are returned to service, they shall be *tested to the proof load recommended by the manufacturer* for the original chain. *Tests shall be performed by the manufacturer or shall be certified by an agency accredited* for the purpose under part 1919 of this chapter. Test **certificates** shall be available for inspection.

**1917.42(h)(5)**—Wrought iron chains in constant use shall be annealed or normalized at intervals not exceeding six months. *Heat treatment certificates shall be available for inspection*. Alloy chains shall not be annealed.

**1917.42(j)(1)**—The manufacturers' recommended safe working loads for hooks shall not be exceeded. *Hooks other than hand hooks shall be tested* in accordance with 1917.50(c)(6) [*Certification of Marine Terminal Handling Devices*].

## **Qualified Person**

**1917.42(a)(2)**—All loose gear shall be inspected by the employer or his *authorized representative* before each use and, when necessary, at intervals during its use, to ensure that it is safe. Any gear which is found upon such inspection to be visibly unsafe shall not be used until it is made safe.

**1917.42(h)(3)(v)**—Only *designated persons* shall inspect chains used for slinging and hoisting.

**1917.42(h)(4)**—Chains shall be repaired only under *qualified supervision*. Links or portions of chain defective under any of the criteria of *paragraph (h)(3)(iii) [Chains and Chain Slings Used for Hoisting]* of this section shall be replaced with properly dimensioned links or connections of material similar to those of the original chain. Before repaired chains are returned to service, they shall be tested to the proof load recommended by the manufacturer for the original chain. Tests shall be *performed by the manufacturer or shall be certified by an agency accredited for the purpose under part 1919 of this chapter*. Test **certificates** shall be available for inspection.

## **Programs, Policies and Procedures**

**1917.42(b)(1)**—The employer shall ascertain and *adhere to the manufacturer's recommended ratings* for wire rope and wire rope slings and shall have such ratings available for inspection. *When the manufacturer is unable to supply such ratings, the employer shall use the tables for wire rope and wire rope slings found in American National Safety Standard for Slings, ANSI B30.9-1971*. A design safety factor of at least five shall be maintained for the common sizes of running wire used as falls, in purchases or in such uses as light load slings. Wire rope with a safety factor of less than five may be used only:

**Note to Paragraph (b)(1):** *Reference paragraph (b)(1) for the specific information required.*

**1917.42(b)(4)**—Where wire rope clips are used to form eyes, the employer shall *adhere to the manufacturer's recommendations, which shall be made available for inspection*. If “U” bolt clips are used and the *manufacturer's recommendations are not available, Table C-1 shall be used to determine the number and spacing of the clips*. “U” bolts shall be applied with

the “U” section in contact with the dead end of the rope.

**1917.42(c)(1)**—The employer shall *ascertain the manufacturers’ ratings* for the specific natural fiber rope used and have such ratings available for inspection. The *manufacturers’ ratings shall be adhered to* and a minimum design safety factor of five maintained.

**1917.42(d)(1)**—The employer shall *adhere to the manufacturers’ ratings* and use recommendations for the specific synthetic fiber rope used and shall make such ratings available for inspection.

**1917.42(g)(4)**—Synthetic web slings provided by the employer shall only be *used in accordance with the manufacturer’s use recommendations*, which shall be available.

**1917.42(h)(1)**—The employer shall *adhere to the manufacturer’s recommended ratings* for safe working loads for the sizes of wrought iron and alloy steel chains and chain slings used and shall have such ratings available. *When the manufacturer is unable to provide such ratings, the employer shall use the tables for chains and chain slings found in American National Safety Standard for Slings, ANSI 30.9-1971.*

## Other

**1917.42(b)(1)**—The employer shall ascertain and *adhere to the manufacturer’s recommended ratings* for wire rope and wire rope slings and shall have such ratings available for inspection. *When the manufacturer is unable to supply such ratings, the employer shall use the tables for wire rope and wire rope slings found in American National Safety Standard for Slings, ANSI B30.9-1971.* A design safety factor of at least five shall be maintained for the common sizes of running wire used as falls, in purchases or in such uses as light load slings. Wire rope with a safety factor of less than five may be used only:

*Note to Paragraph (b)(1): Reference paragraph (b)(1) for the specific information required.*

**1917.42(b)(4)**—Where wire rope clips are used to form eyes, the employer shall *adhere to the manufacturer’s recommendations*, which shall be made available for inspection. If “U” bolt clips are used and the *manufacturer’s recommendations are not available, Table C-1 shall be used to determine the number and spacing of the clips.* “U” bolts shall be applied with the “U” section in contact with the dead end of the rope.

**1917.42(c)(1)**—The employer shall *ascertain the manufacturers’ ratings* for the specific natural fiber rope used and have such ratings *available for inspection.* The *manufacturers’ ratings shall be adhered to* and a minimum design safety factor of five maintained.

**1917.42(d)(1)**—The employer shall *adhere to the manufacturers’ ratings* and use recommendations for the specific synthetic fiber rope used and shall make such ratings available for inspection.

**1917.42(h)(1)**—The employer shall *adhere to the manufacturer’s recommended ratings* for safe working loads for the sizes of wrought iron and alloy steel chains and chain slings used and shall have such ratings available. *When the manufacturer is unable to provide such ratings, the employer shall use the tables for chains and chain slings found in American National Safety Standard for Slings, ANSI 30.9-1971.*

**1917.42(h)(4)**—Chains shall be repaired only under qualified supervision. Links or portions of chain defective under any of the criteria of *paragraph (h)(3)(iii)[Chains and Chain Slings Used for Hoisting]* of this section shall be replaced with properly dimensioned links or connections of material similar to those of the original chain. Before repaired chains are returned to service, they shall be tested to the proof load *recommended by the manufacturer* for the original chain. Tests shall be *performed by the manufacturer or shall be certified by an agency accredited for the purpose under part 1919 of this chapter.* Test *certificates* shall be available for inspection.

**1917.42(i)(1)**—If available, the *manufacturer’s recommended safe working loads* for shackles shall not be exceeded. In the absence of manufacturer’s recommendations, *Table C-3 [Safe Working Loads for Shackles]* shall apply.

**1917.42(j)(1)**—The *manufacturers’ recommended safe working loads* for hooks shall not be exceeded. Hooks other than hand hooks shall be tested in accordance with 1917.50(c)(6) [*Certification of Marine Terminal Handling Devices*].

## Recordkeeping

**1917.42(b)(1)**—The employer shall ascertain and adhere to the manufacturer’s recommended ratings for



wire rope and wire rope slings and shall *have such ratings available for inspection*. When the manufacturer is unable to supply such ratings, the employer shall use the tables for wire rope and wire rope slings found in *American National Safety Standard for Slings, ANSI B30.9-1971*. A design safety factor of at least five shall be maintained for the common sizes of running wire used as falls, in purchases or in such uses as light load slings. Wire rope with a safety factor of less than five may be used only: [**Note:** Reference paragraph (b)(1) for the specific information required.]

**1917.42(b)(4)**—Where wire rope clips are used to form eyes, the employer shall adhere to the manufacturer’s recommendations, *which shall be made available for inspection*. If “U” bolt clips are used and the manufacturer’s recommendations are not available, *Table C-1 [Number and Spacing of U-Bolt Wire Rope Clips]* shall be used to determine the number and spacing of the clips. “U” bolts shall be applied with the “U” section in contact with the dead end of the rope.

**1917.42(c)(1)**—The employer shall ascertain the manufacturers’ ratings for the specific natural fiber rope used and *have such ratings available for inspection*. The manufacturers’ ratings shall be adhered to and a minimum design safety factor of five maintained.

**1917.42(d)(1)**—The employer shall adhere to the manufacturers’ ratings and use recommendations for the specific synthetic fiber rope used and shall *make such ratings available for inspection*.

**1917.42(g)(3)**—Defective synthetic web slings removed from service shall not be returned to service unless repaired by a sling manufacturer or similar entity. Each repaired sling shall be proof tested by the repairer to twice the slings rated capacity prior to its return to service. The employer shall *retain a certificate of the proof test and make it available for examination*.

**1917.42(g)(4)**—Synthetic web slings provided by the employer shall only be used in accordance with the *manufacturer’s use recommendations, which shall be available*.

**1917.42(h)(4)**—Chains shall be repaired only under qualified supervision. Links or portions of chain defective under any of the criteria of *paragraph (h)(3)(iii)[Chains and Chain Slings Used for Hoisting]* of this section shall be replaced with properly dimensioned links or connections of material similar to those of the original chain. Before repaired chains are returned to service, *they shall be tested to the proof load recommended by the manufacturer for the original chain*. Tests shall be performed by the manufacturer or shall be **certified** by an agency accredited for the purpose under *part 1919* of this chapter. *Test certificates shall be available for inspection*.

**1917.42(h)(5)**—Wrought iron chains in constant use shall be annealed or normalized at intervals not exceeding six months. *Heat treatment certificates shall be available for inspection*. Alloy chains shall not be annealed.

## Signs, Markings and Tags

**1917.42(h)(3)(ii)**—*Thorough inspections* of chains on use shall be made quarterly to detect wear, defective welds, deformation or increase in length or stretch. The *month of inspection shall be indicated on each chain by color of paint on a link or by other equally effective means*.

## Certification

**1917.42(g)(3)**—Defective synthetic web slings removed from service shall not be returned to service unless repaired by a sling manufacturer or similar entity. Each repaired sling *shall be proof tested* by the repairer to twice the slings rated capacity prior to its return to service. The employer shall *retain a certificate of the proof test and make it available for examination*.

**1917.42(h)(4)**—Chains shall be repaired only under qualified supervision. Links or portions of chain defective under any of the criteria of *paragraph (h)(3)(iii)[Chains and Chain Slings Used for Hoisting]* of this section shall be replaced with properly dimensioned links or connections of material similar to those of the original chain. Before repaired chains are returned to service, they shall be tested to the proof load recommended by the manufacturer for the original chain. *Tests shall be performed by the manufacturer or shall be certified by an agency accredited for the purpose under part 1919 of this chapter. Test certificates shall be available for inspection*.

**1917.42(h)(5)**—Wrought iron chains in constant use shall be annealed or normalized at intervals not exceeding six months. *Heat treatment certificates shall be available for inspection*. Alloy chains shall not be annealed.

## 1917.43—POWERED INDUSTRIAL TRUCKS

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—testing and repair
- Qualified Person—designated person, professional engineer
- Programs, Policies and Procedures—manufacturer recommendations
- Other—USCG, NRTL
- Signs, Markings and Tags—labels, decals
- Certification—written approval
- Training and Communications—instructions to drivers

### Inspections and Tests

**1917.43(c)(2)**—Batteries on all powered trucks shall be disconnected during repairs to the primary electrical system *unless power is necessary for testing* and repair. On trucks equipped with systems capable of storing residual energy, that energy shall be safely discharged before work on the primary electrical system begins.

**1917.43(d)(3)**—*When the atmosphere in an area is hazardous* and the provisions of *United States Coast Guard regulations at 33 CFR 126.15(e)* do not apply, only power-operated industrial trucks approved for such locations shall be used.

### Qualified Person

**1917.43(b)(1)**—After October 3, 1983 modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall not be performed without either the manufacturer's prior **written** approval or the **written** approval of a *professional engineer* experienced with the equipment who has consulted with the manufacturer, if available. Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.

**1917.43(c)(1)**—Only *designated persons* shall perform maintenance and repair.

### Programs, Policies and Procedures

**1917.43(b)(1)**—After October 3, 1983 modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall *not be performed without either the manufacturer's prior written approval or the written approval of a professional engineer experienced with the equipment* who has consulted with the manufacturer, if available. Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.

**1917.43(e)(3)**—Forks. Forks, fork extensions and other attachments shall be secured so that they cannot be accidentally dislodged, and shall be used only *in accordance with the manufacturer's recommendations*.

### Other

**1917.43(d)(1)**—"Approved power-operated industrial truck" means one listed or approved for the intended use by a *nationally recognized testing laboratory*.

**1917.43(d)(3)**—When the atmosphere in an area is hazardous and the *provisions of United States Coast Guard regulations at 33 CFR 126.15(e)* do not apply, only power-operated industrial trucks approved for such locations shall be used.

### Signs, Markings and Tags

**1917.43(b)(1)**—After October 3, 1983 modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall not be performed without either the manufacturer's prior **written** approval or the **written** approval of a professional engineer experienced with the equipment who has consulted with the manufacturer, if available. *Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.*

**1917.43(b)(5)**—Powered industrial trucks shall be *marked with their rated capacities*, which shall be visible to the operator.

**1917.43(d)(2)**—Approved trucks acquired and used after February 15, 1972, shall *bear a label or other identification* indicating testing laboratory approval.

**1917.43(e)(5)(i)**—Forklift truck rated capacities, with and without removable counterweights, shall not be exceeded. *Rated capacities shall be marked on the vehicle* and shall be visible to the operator. *The vehicle weight, with and without*

counterweight, shall be similarly marked.

## Certification

**1917.43(b)(1)**—After October 3, 1983 modifications, such as adding counterweights, that might affect the vehicle's capacity or safety shall not be performed without either *the manufacturer's prior written approval or the written approval of a professional engineer* experienced with the equipment who has consulted with the manufacturer, if available. Capacity, operation and maintenance instruction plates, tags or decals shall be changed to conform to the equipment as modified.

## Training and Communications

**1917.43(b)(7)**—The employer shall *direct drivers* to ascend and descend grades slowly.

**1917.43(b)(8)**—The employer shall *direct drivers* to slow down and sound the horn at crossaisles and other locations where visibility is obstructed.

**1917.43(b)(9)**—If the load obstructs the forward view, the employer shall *direct drivers* to travel with the load trailing.

## 1917.44—GENERAL RULES APPLICABLE TO VEHICLES

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tires and rims
- Programs, Policies and Procedures—servicing procedures
- Other—consensus standards
- Signs, Markings and Tags—traffic signs
- Recordkeeping—manufacturer's manual
- Training and Communications—instructions to drivers

### Inspections and Tests

**1917.44(o)(4)**—Servicing procedures. The following procedures shall be followed:

- **1917.44(o)(4)(viii)**—After inflation, *tires, rims and rings shall be inspected* while within the restraining device to ensure seating and locking. If adjustment is necessary the tire shall first be deflated by valve core removal; and
- **1917.44(o)(4)(ix)**—Before assembly, *wheel components shall be inspected*, and damaged rim components shall not be reused.

### Programs, Policies and Procedures

**1917.44(o)(4)**—*Servicing procedures. Specific procedures shall be followed.*

**Note to Paragraph (o)(4):** *Reference paragraph (o)(4) for the specific servicing procedures required.*

### Other

**1917.44(o)(5)(i)**—The employer shall provide a chart containing as a minimum the **instructions** and **information** provided in the *United States Department of Transportation, National Highway Traffic Safety Administration (NHTSA) publication "Safety Precautions for Mounting and Demounting Tube-Type Truck/Bus Tires" and "Multi-Piece Rim Wheel Matching Chart,"* and pertinent to the type(s) of multi-piece rim wheels being serviced. *The chart shall be available in the terminal's service area.*

**1917.44(o)(8)(i)**—Only tools *recommended in the rim manual* for the type of wheel being serviced shall be used to service multi-piece rim wheels.

- **Footnote(4)** *The United States Coast Guard at 33 CFR 126.15(d) and (e) has additional regulations applicable to vehicles in terminals.*
- **Footnote(5)** *Department of Transportation regulations in 49 CFR Part 393, Subpart C—Brakes, address the immobilization of trailer road wheels prior to disconnection of the trailer and until braking is again provided. Section 49 CFR 393.84 addresses the condition of flooring. These DOT rules apply when the motor carrier is engaged in interstate commerce or in the transport of certain hazardous items wholly within a municipality or the*

commercial zone thereof.

- **Footnote(6)** *NHTSA charts are available from General Services Division, National Highway Traffic Safety Administration, Attention: N48-51, 400 Seventh Street, S.W., Washington, D.C. 20590. Industry charts are available upon request for the manufacturer.*

### Signs, Markings and Tags

**1917.44(e)**—*Stop signs shall be **posted** at main entrances and exits of structures where visibility is impaired, and at blind intersections, unless direct traffic control or warning mirror systems or other systems of equivalent safety are provided.*

**1917.44(f)**—*Vehicular routes, traffic rules, and parking areas shall be established, identified, and used.*

**1917.44(h)**—*Signs indicating pedestrian traffic shall be clearly **posted** at vehicular check-in and check-out lines and similar locations where employees may be working.*

### Recordkeeping

**1917.44(o)(5)(i)**—The employer shall provide a chart containing as a minimum the **instructions** and **information** provided in the United States Department of Transportation, National Highway Traffic Safety Administration (NHTSA) publication “Safety Precautions for Mounting and Demounting Tube-Type Truck/Bus Tires” and “Multi-Piece Rim Wheel Matching Chart,” and pertinent to the type(s) of multi-piece rim wheels being serviced. *The chart shall be available in the terminal’s service area.*

**1917.44(o)(5)(ii)**—A current rim manual containing *the manufacturer’s **instructions*** for mounting, demounting, maintenance and safety precautions relating to the multi-piece rim wheels being serviced shall be *available in the terminal’s service area.*

**1917.44(o)(8)(i)**—Only tools *recommended in the rim manual* for the type of wheel being serviced shall be used to service multi-piece rim wheels.

### Training and Communications

**1917.44(g)**—The employer shall *direct vehicle drivers* to warn employees in traffic lanes of the vehicle’s approach.

**1917.44(o)(3)(i)**—Only employees *trained in the procedures required in paragraph (o)(4)* of this section and who have demonstrated their ability to service multi-piece rim wheels shall be assigned such duties.

**1917.44(o)(3)(ii)**—Employees assigned such duties shall have demonstrated their ability by the safe performance of the following tasks: [**Note:** *Reference paragraph (o)(3)(ii) for the specific elements.*]

**1917.44(o)(5)(i)**—The employer shall provide a *chart containing as a minimum the **instructions** and **information*** provided in the United States Department of Transportation, National Highway Traffic Safety Administration (NHTSA) publication “Safety Precautions for Mounting and Demounting Tube-Type Truck/Bus Tires” and “Multi-Piece Rim Wheel Matching Chart,” and pertinent to the type(s) of multi-piece rim wheels being serviced. *The chart shall be available in the terminal’s service area.*

**1917.44(o)(5)(ii)**—A current rim manual containing *the manufacturer’s **instructions*** for mounting, demounting, maintenance and safety precautions relating to the multi-piece rim wheels being serviced shall be available in the terminal’s service area.

## 1917.45—CRANES AND DERRICKS

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—hoisting platforms or devices
- Programs, Policies and Procedures—manufacturer’s procedures, operating instructions
- Other—consensus standards
- Signs, Markings and Tags—durable rating charts, rated load
- Recordkeeping—manufacturer’s manual
- Training and Communications—operating instructions
- Qualified Person—designated person, professional engineer

## Inspections and Tests

**1917.45(j)(4)**—Platforms or devices used to hoist employees shall be *inspected for defects* before each day's use and shall be removed from service if defective.

**1917.45(k)(1)**—Designated persons shall *visually inspect each crane and derrick* on each day of use for defects in functional operating components and shall report any defect found to the employer. The employer shall inform the operator of the findings.

**1917.45(k)(2)**—A designated person shall *thoroughly inspect all functional components and accessible structural features* of each crane or device at monthly intervals.

**1917.45(k)(3)**—Any *defects found during such inspections* which may create a safety hazard shall be corrected before further equipment use. Repairs shall be performed only by designated persons.

**1917.45(k)(4)**—A **record** of *monthly inspections* shall be maintained for six months in or on the crane or derrick or at the terminal.

## Programs, Policies and Procedures

**1917.45(b)(1)**—Except for bridge cranes covered by paragraph (g) of this section, cranes and derricks having ratings that vary with boom length, radius (outreach) or other variables shall have a durable rating chart visible to the operator, covering the complete range of the manufacturer's (or design) capacity ratings. The rating chart shall include all operating radii (outreach) for all permissible boom lengths and jib lengths as applicable, with and without outriggers, and alternate ratings for optional equipment affecting such ratings. *Precautions or warnings specified by the owner or manufacturer shall be included along with the chart.*

**1917.45(b)(3)**—*Designated working loads shall not be increased beyond the manufacturer's ratings or original design limitations* unless such increase receives the manufacturer's approval. When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis shall be performed or *approved by a person accredited for certifying* the equipment under *Part 1919 of this chapter*. Engineering design analysis shall be performed by a *registered professional engineer competent* in the field of cranes and derricks. Any structural changes necessitated by the change in rating shall be carried out.

**1917.45(f)(6)**—Counterweights or ballast. Cranes shall be operated only with the specified type and amount of ballast or counterweights. Ballast or counterweight shall be located and secured only as provided in *the manufacturer's or design specifications*, which shall be available.

**1917.45(f)(7)**—Outriggers. Outriggers shall be used *according to the manufacturers' specifications or design data*, which shall be available. Floats, when used, shall be securely attached to the outriggers. Wood blocks or other support shall be of sufficient size to support the outrigger, free of defects that may affect safety and of sufficient width and length to prevent the crane from shifting or toppling under load.

**1917.45(g)(3)(ii)**—The wind indicating device shall provide a visible or audible warning to alert the operator of high wind conditions. That warning shall be transmitted whenever circumstances are present.

**Note to Paragraph (g)(3)(ii):** *Reference paragraph (g)(3)(ii) for the specific warning requirements.*

**1917.45(g)(3)(iii)**—*Instructions. The employer shall post operating instructions* for high wind conditions in the operator's cab of each crane. *Operators shall be directed to comply with these instructions.* The *instructions shall include procedures* for responding to high wind alerts and for any coordination necessary with other cranes.

## Other

**1917.45(f)(5)(ii)**—A seat (lap) belt, meeting the requirements of *49 CFR 571.208-210 for a Type 1 seat belt assembly*, shall be installed on the operator's seat of high speed container gantry cranes where the seat trolleys.

## Signs, Markings and Tags

**1917.45(b)(1)**—Except for bridge cranes covered by *paragraph (g) of this section*, cranes and derricks having ratings that vary with boom length, radius (outreach) or other variables shall have a *durable rating chart* visible to the operator, covering the complete range of the manufacturer's (or design) capacity ratings. The *rating chart shall include all operating radii (outreach)* for all permissible boom lengths and jib lengths as applicable, with and without outriggers, and alternate

ratings for optional equipment affecting such ratings. *Precautions or warnings specified by the owner or manufacturer shall be included along with the chart.*

**1917.45(f)(1)(i)**—Crane and derrick *operating controls shall be clearly marked, or a chart indicating their function shall be posted* at the operator's position.

**1917.45(f)(4)(iv)**—If the top of a ladder or stairway or any position thereof is located where a moving part of a crane, such as a revolving house, could strike an employee ascending or descending the ladder or stairway, *a prominent warning sign shall be posted at the foot of the ladder or stairway.* A system of communication (such as a buzzer or bell) shall be established and maintained between the foot of the ladder or stairway and the operator's cab.

**1917.45(g)(2)**—Rated load marking. *The rated loads of bridge cranes shall be plainly marked on each side of the crane and in the cab. If there is more than one hoisting unit, each hoist shall have its rated load marked on it or on its load block. Marking shall be legible from the ground level.*

**1917.45(g)(3)(iii)**—Instructions. The employer shall *post operating instructions* for high wind conditions in the operator's cab of each crane. Operators shall be directed to comply with these instructions. The instructions shall include procedures for responding to high wind alerts and for any coordination necessary with other cranes.

**1917.45(g)(8)**—Pedestrian clearance. If the track area is used for employee passage or for work, a minimum clearance of three feet (.91 m) shall be provided between trucks or the structures of rail-mounted cranes and any other structure or obstruction. When the required clearance is not available on at least one side of the crane's trucks, the area shall not be used and *shall be marked and identified.*

**1917.45(j)(1)**—No employee shall be hoisted by the load hoisting apparatus of a crane or derrick except:

- **1917.45(j)(1)(iii)**—On a platform meeting the following requirements:
  - **1917.45(j)(1)(iii)(C)**—*Bearing a plate or permanent marking* indicating maximum load rating, which shall not be exceeded, and the weight of the platform itself;

## **Recordkeeping**

**1917.45(b)(3)**—Designated working loads shall not be increased beyond the manufacturer's ratings or original design limitations unless such increase *receives the manufacturer's approval.* When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis shall be performed or approved by a person accredited for **certificating** the equipment under Part 1919 of this chapter. Engineering design analysis shall be performed by a registered professional engineer competent in the field of cranes and derricks. Any structural changes necessitated by the change in rating shall be carried out.

**1917.45(k)(4)**—A *record of monthly inspections* shall be *maintained for six months* in or on the crane or derrick or at the terminal.

## **Training and Communications**

**1917.45(b)(3)**—Designated working loads shall not be increased beyond the manufacturer's ratings or original design limitations unless such increase *receives the manufacturer's approval.* When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis shall be performed or approved by a person accredited for **certificating** the equipment under Part 1919 of this chapter. Engineering design analysis shall be performed by a *registered professional engineer* competent in the field of cranes and derricks. Any structural changes necessitated by the change in rating shall be carried out.

**1917.45(f)(4)(iv)**—If the top of a ladder or stairway or any position thereof is located where a moving part of a crane, such as a revolving house, could strike an employee ascending or descending the ladder or stairway, *a prominent warning sign shall be posted* at the foot of the ladder or stairway. *A system of communication (such as a buzzer or bell) shall be established and maintained between the foot of the ladder or stairway and the operator's cab.*

**1917.45(g)(3)(ii)**—The wind indicating device shall provide a visible or audible warning to alert the operator of high wind conditions. That warning shall be transmitted whenever circumstances are present.

**Note to Paragraph (g)(3)(ii):** *Reference paragraph (g)(3)(ii) for the specific warning requirements.*

**1917.45(g)(3)(iii)**—*Instructions.* The employer shall **post** operating instructions for high wind conditions in the operator's cab of each crane. *Operators shall be directed to comply with these instructions. The instructions shall include procedures for responding to high wind alerts and for any coordination necessary with other cranes.*

**1917.45(g)(9)**—*Warning devices.* Rail-mounted cranes shall be equipped with an *effective travel warning device which shall be used to warn employees who may be in the path of the moving crane.*

**1917.45(g)(10)**—*Communications.* *Means of communication shall be provided between the operator's cab and the base of the gantry of all rail-mounted cranes.* This requirement may be met by telephone, radio, sound-signalling system or other effective methods, but not solely by hand-signalling.

**1917.45(j)(5)**—*Employees being hoisted shall remain in continuous sight of and communication with the operator or signalman.*

**1917.45(k)(1)**—*Designated persons shall visually inspect each crane and derrick on each day of use for defects in functional operating components and shall report any defect found to the employer. The employer shall inform the operator of the findings.*

### **Qualified Person**

**1917.45(b)(3)**—*Designated working loads shall not be increased beyond the manufacturer's ratings or original design limitations unless such increase receives the manufacturer's approval. When the manufacturer's services are not available or where the equipment is of foreign manufacture, engineering design analysis shall be performed or approved by a person accredited for certifying the equipment under Part 1919 of this chapter. Engineering design analysis shall be performed by a registered professional engineer competent in the field of cranes and derricks. Any structural changes necessitated by the change in rating shall be carried out.*

**1917.45(f)(9)**—*Electrical equipment shall be so located or enclosed that live parts will not be exposed to accidental contact. Designated persons may work on energized equipment only if necessary during inspection, maintenance, or repair.*

**1917.45(g)(11)**—*Limit switch bypass systems shall be secured during all cargo operations. Such bypass systems shall not be used except in an emergency or during non-cargo handling operations such as stowing cranes or derricks or performing repairs. When a situation requiring the use of a bypass system or the readjustment of a limit switch arises, it shall be done only under the direction of a crane mechanic.*

**1917.45(i)(1)**—*Use of cranes together. When two or more cranes hoist a load in unison, a designated person shall direct the operation and instruct personnel in positioning, rigging of the load and movements to be made.*

**1917.45(k)(1)**—*Designated persons shall visually inspect each crane and derrick on each day of use for defects in functional operating components and shall report any defect found to the employer. The employer shall inform the operator of the findings.*

**1917.45(k)(2)**—*A designated person shall thoroughly inspect all functional components and accessible structural features of each crane or device at monthly intervals.*

**1917.45(k)(3)**—*Any defects found during such inspections which may create a safety hazard shall be corrected before further equipment use. Repairs shall be performed only by designated persons.*

## **1917.46—LOAD INDICATING DEVICES**

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—checking accuracy of LID
- Signs, Markings and Tags—crane ratings
- Certification—certification survey

### **Inspections and Tests**

**1917.46(a)(1)(iii)**—*The device shall permit the operator to determine, before making any lift, that the indicating or substitute system is operative. In the alternative, if a device is so mounted or attached to preclude such a determina-*

tion, it may not be used unless it has been **certified** by the manufacturer to remain operable within the limits stated in paragraph (a)(1)(ii) of this section for a specific period of use. *Checks for accuracy, using known values of load, shall be performed at the time of every certification survey (see 1917.50) and at such additional times as may be recommended by the manufacturer.*

### Signs, Markings and Tags

**1917.46(a)(1)(i)(A)**—A direct indication in the cab of actual weight hoisted or a means of determining this by referencing a weight indication to *crane ratings posted and visible to the operator*, except that the use of a dynamometer or simple scale alone will not meet this requirement; or

**1917.46(a)(1)(v)**—*Marking shall be conspicuously placed* giving: units of measure in pounds or both pounds and kilograms, capacity of the indicating system, accuracy of the indicating system, and operating instructions and precautions. In the case of systems utilizing indications other than actual weights, the *marking shall include data on*: the means of measurement, capacity of the system, accuracy of the system, and operating instructions and precautions. If the system used provides no readout, but is such as to automatically cease crane operation when the rated load limit under any specific condition of use is reached, *marking shall be provided giving the make and model of the device installed, a description of what it does, how it is operated, and any necessary precautions regarding the system.* All weight indications, other types of loading indications, and other data required shall be readily visible to the operator.

**1917.46(a)(1)(vii)**—When the device uses the radius as a factor in its use or in its operating indications, the indicated radius (which may be in feet and/or meters, or degrees of boom angle, depending on the system used) shall be a figure which is within the range of a figure no greater than 110 percent of the actual radius to a figure which is no less than 97 percent of the actual (true) radius. *A conversion chart shall be provided whenever it is necessary to convert between degrees of radius and feet or meters.*

**1917.46(a)(1)(viii)(D)**—While the crane is used exclusively to handle cargo or equipment *the total actual gross weight of which is known by means of marking of the unit or units hoisted*, when such total actual gross weight never exceeds 11,200 lbs., and when 11,200 lbs., is less than the rated capacity of the crane at the maximum outreach that is possible under the conditions of use at the time.

### Certification

**1917.46(a)(1)(iii)**—The device shall permit the operator to determine, before making any lift, that the indicating or substitute system is operative. In the alternative, if a device is so mounted or attached to preclude such a determination, it may not be used unless it has been **certified** by the manufacturer to remain operable within the limits stated in paragraph (a)(1)(ii) of this section for a specific period of use. *Checks for accuracy, using known values of load, shall be performed at the time of every certification survey (see 1917.50) and at such additional times as may be recommended by the manufacturer.*

## 1917.47—WINCHES

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—identification

### Signs, Markings and Tags

**1917.47(b)**—Winches shall have *clearly identifiable* and readily accessible stop controls.

## 1917.48—CONVEYORS

**Scope/Application:** *This section applies to cargo handling gear and equipment.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—locked out and tagged out
- Qualified Person—designated person
- Training and Communications—instructing employees

### Signs, Markings and Tags



**1917.48(i)(1)**—Conveyors shall be stopped and their power sources locked out and *tagged out* during maintenance, repair, and servicing, unless power is necessary for testing.

**1917.48(i)(2)**—The starting device shall be locked out and *tagged out* in the stop position before an attempt is made to remove the cause of a jam or overload of the conveying medium, unless it is necessary to have the power on to remove the jam.

### **Qualified Person**

**1917.48(j)(1)**—Only *designated persons* shall operate, repair or service powered conveyors.

### **Training and Communications**

**1917.48(j)(2)**—The employer shall *direct employees* to stay off operating conveyors.

## **1917.49—SPOUTS, CHUTES, HOPPERS, BINS, AND ASSOCIATED EQUIPMENT**

*Scope/Application: This section applies to cargo handling gear and equipment.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—locked out and tagged out
- Qualified Person—designated person
- Training and Communications—instructing employees
- Inspections and Tests—equipment and gear

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

**1917.49(h)(2)**—The power supply to the equipment carrying the cargo to the bin shall be turned off, locked out and *tagged*.

**1917.49(i)(2)**—The power supply to the equipment carrying the cargo to the bin is turned off, locked out, and *tagged*.

**1917.49(l)(3)**—Before adjustments are made to a power shovel, wire, or associated equipment, the power supply to the shovel shall be turned off, locked out, and *tagged*, the belt stopped, and the hopper closed.

### **Qualified Person**

**1917.49(k)**—Chutes and hoppers shall be repaired only by *designated persons*.

**1917.49(l)(1)**—Before power shoveling operations begin, a *designated person* shall inspect the equipment to be used. The inspection shall include at least the eye bolts, wires, and sheaves.

### **Training and Communications**

**1917.49(b)**—*Direct communication* shall be provided between the discharge or shipboard control end of loading spouts and chutes and the point in the terminal from which the flow of cargo is controlled.

**1917.49(h)**—Before an employee enters an empty bin:

- **1917.49(h)(1)**—Personnel controlling the flow of cargo into the bin *shall have been notified* of the entry;

**1917.49(i)**—Before an employee enters a bin containing a bulk commodity such as coal or sugar, the employer shall ensure that:

- **1917.49(i)(1)**—Personnel controlling the flow of cargo into the bin *have been notified* of the entry;

### **Inspections and Tests**

**1917.49(a)**—Standing and running rigging and associated gear used as a permanent part of spouts, chutes or similar devices shall be *inspected before each use* and shall not be used if it has any functional defects. (*See also 1917.50(c)(2) for certification requirements.*)

**1917.49(l)(1)**—Before power shoveling operations begin, a designated person shall *inspect the equipment to be used*. *The inspection shall include at least the eye bolts, wires, and sheaves.*

## **1917.50—CERTIFICATION OF MARINE TERMINAL MATERIAL HANDLING DEVICES**

*Scope/Application: This section applies to cargo handling gear and equipment.*

## STANDARD HIGHLIGHTS

- Signs, Markings and Tags—safe working load
- Qualified Person—designated person, registered professional engineer
- Inspections and Tests—surveys and examinations
- Recordkeeping—tests and examinations
- Certification—surveys
- Other—consensus standards

### Signs, Markings and Tags

**1917.50(c)(4)(ii)**—House fall span beams or other house fall block supports shall be *marked with the safe working load*, which shall not be exceeded.

**1917.50(h)**—Loose gear obtained after October 3, 1983 shall *bear a legible mark* indicating that it has been tested (*see paragraph (c)(6)* of this section). Single sheave blocks shall be *marked with safe working loads and proof test loads*. *Marks relating to testing shall be identifiable* on the related **certificates**, which shall be available.

**1917.50(i)(2)**—All cargo handling gear provided by the employer with a safe working load greater than five short tons (10,000 lbs. or 4.54 metric tons) shall have its *safe working load plainly marked on it*.

### Qualified Person

**1917.50(b)**—The **certifications** required by this section shall be performed

- **1917.50(b)(1)**—In accordance with Part 1919 of this chapter, by *persons then currently accredited by the Occupational Safety and Health Administration* as provided in that part; or
- **1917.50(b)(2)**—In accordance with standards established and enforced by the state in which the device is located or by a political subdivision thereof, which have been found by the Secretary to be compatible with Part 1919 of this chapter, by *persons designated as competent* to perform such **certification** by competent state authority and recognized as such by the Secretary.

**1917.50(c)(5)(ii)**—Special stevedoring gear provided by the employer that has a SWL of five short tons (10,000 lbs or 4.54 metric tons) or less shall be inspected and tested as a unit before initial use according to *paragraphs (d) and (e)* of this section or by a *designated person* (*see Table A in this paragraph (c)(5)(ii) [Special Gear]*).

**1917.50(c)(5)(iv)**—All cargo handling gear covered by this section with a SWL greater than five short tons (10,000 lbs. or 4.54 metric tons) shall be proof load tested according to Table A of this section every 4 years in accordance with paragraph (b) of this section or by a *designated person*.

### Inspections and Tests

**1917.50(a)(1)**—**Certification surveys** are to be completed for the conditions of use found at the time such surveys are completed, with the understanding that equipment owners/users can change the configurations of the equipment according to the manufacturers specifications without affecting the established **certification** status for the equipment.

**1917.50(a)(2)**—In cases of foreign manufactured cranes, there shall be an owner's warranty that the design is adequate for the intended use. The warranty shall be based on a *thorough examination* of the design specifications by a registered professional engineer familiar with the equipment.

**1917.50(c)(1)**—Each crane and derrick shall be *tested as a unit quadrennially*, and shall be examined annually. **Certificates** of tests and examinations shall be made readily available for inspection.

**1917.50(c)(2)**—Bulk cargo spouts and suckers, together with any portable extensions and rigging or outriggers supporting them vertically, shall be *examined annually*. **Certificates** attesting to the required examination shall be made readily available for inspection.

**1917.50(c)(3)**—Vertical pocket or bucket conveyors such as banana, sugar, and grain marine legs (other than those within a grain elevator structure) used within a marine terminal facility shall be *examined annually*. The annual examination shall include all supporting structures, rigging and mechanical components and observa-

tion of all steps of operations. **Certificates** attesting to the *required examinations shall be readily available for inspection.*

**1917.50(c)(4)(i)**—House fall cargo-handling gear in use shall be *proof load tested* as a unit upon initial **certification** and every fourth year thereafter. *An examination shall be carried out in conjunction with each unit proof load test and annually thereafter.* The *unit test* shall consist of a proof load of 25 percent in excess of the rated safe working load. *Examinations* shall include all supporting structures and components. **Certificates** attesting to the *required tests and examinations* shall be readily available for *inspection.*

**1917.50(c)(5)(i)**—Special stevedoring gear provided by the employer, the strength of which depends upon components other than commonly used stock items such as shackles, ropes, or chains, and that has a Safe Working Load (SWL) greater than five short tons (10,000 lbs or 4.54 metric tons) shall be *inspected and tested as a unit* before initial use (see Table A in paragraph (c)(5)(ii) of this section). In addition, any special stevedoring gear that suffers damage necessitating structural repair shall be *inspected and retested after repair and before being returned to service.*

**1917.50(c)(5)(ii)**—Special stevedoring gear provided by the employer that has a SWL of five short tons (10,000 lbs or 4.54 metric tons) or less shall be *inspected and tested as a unit* before initial use according to *paragraphs (d) and (e) of this section or by a designated person (see Table A [Safe Working Load] in this paragraph (c)(5)(ii)).*

**1917.50(c)(5)(iii)**—Every spreader that is not a part of ship's gear and is used for handling intermodal containers shall be *inspected and tested before initial use* to a proof load equal to 25 percent greater than its rated capacity. In addition, any spreader that suffers damage necessitating structural repair shall be *inspected and retested after repair and before being returned to service.*

**1917.50(c)(5)(iv)**—All cargo handling gear covered by this section with a SWL greater than five short tons (10,000 lbs. or 4.54 metric tons) shall be *proof load tested* according to *Table A [Safe Working Load]* of this section *every 4 years in accordance with paragraph (b) of this section or by a designated person.*

**1917.50(c)(5)(v)**—**Certificates** and *inspection and test records* attesting to the tests required by this section shall be *available for inspection.*

**1917.50(c)(6)**—Wire rope and loose gear obtained after October 3, 1983, and used for material handling shall have been tested and **certificated** before being placed into use in accordance with the provisions of paragraphs (a), (c), and (d) of 1919.31 and 1919.32 through 1919.34 of this chapter as applicable. **Certificates** attesting to the *required tests, inspections and examinations* shall be *available.*

**1917.50(e)**—For *equipment certificated in accordance with paragraph (b)(2) of this section* and transferred to a job site in another state, *the current certification shall remain valid until the next inspection or examination becomes due.*

**1917.50(f)**—**Certification** procedures shall not be construed as a substitute for, or cause for elimination of, *normal operational inspection and maintenance routine* throughout the year.

**1917.50(g)(1)**—Every unit of equipment requiring quadrennial certification shall have had such quadrennial **certification** within the previous 48 months. Equipment requiring annual **certification** shall have had such annual **certification** within the previous 12 months, except that no annual **certification** is required within 12 months after any required quadrennial **certification**. *Annual examinations for certification* may be accomplished up to one month early without effect on subsequent due dates.

**1917.50(g)(2)**—When **certificated** equipment is out of service for 6 months or more beyond the due date of a **certification inspection**, *an examination equivalent to an initial certification*, including *unit proof load test*, shall be performed before the equipment re-enters service.

**1917.50(h)**—Loose gear obtained after October 3, 1983 shall bear a legible mark indicating that it has been tested (*see paragraph (c)(6) of this section*). Single sheave blocks shall be marked with safe working loads and *proof test loads*. *Marks relating to testing* shall be identifiable on the related **certificates**, which shall be available.

## Recordkeeping

**1917.50(a)**—The employer shall not use any material handling device listed in *paragraph (c)* of this section until he has ascertained that the device has been **certificated**, as evidenced by *current and valid documents* attesting to compliance with the requirements of *paragraph (b)* of this section.

**1917.50(c)(3)**—Vertical pocket or bucket conveyors such as banana, sugar, and grain marine legs (other than those within a grain elevator structure) used within a marine terminal facility shall be examined annually. The *annual examination shall include* all supporting structures, rigging and mechanical components and observation of all steps of operations. **Certificates attesting to the required examinations shall be readily available for inspection.**

**1917.50(c)(4)(i)**—House fall cargo-handling gear in use shall be *proof load tested as a unit upon initial certification and every fourth year thereafter*. An examination shall be carried out in conjunction with *each unit proof load test and annually thereafter*. The *unit test shall* consist of a proof load of 25 percent in excess of the rated safe working load. Examinations shall include all supporting structures and components. **Certificates attesting to the required tests and examinations shall be readily available for inspection.**

**1917.50(c)(5)(v)**—**Certificates and inspection and test records attesting to the tests required by this section shall be available for inspection.**

**1917.50(c)(6)**—Wire rope and loose gear obtained after October 3, 1983, and used for material handling shall have been tested and **certificated** before being placed into use in accordance with the provisions of *paragraphs (a), (c), and (d) of 1919.31 and 1919.32 through 1919.34* of this chapter as applicable. **Certificates attesting to the required tests, inspections and examinations shall be available.**

## Certification

**1917.50(a)**—The employer shall not use any material handling device listed in *paragraph (c)* of this section until he has ascertained that the *device has been certificated*, as evidenced by current and valid documents attesting to compliance with the requirements of *paragraph (b)* of this section.

**1917.50(a)(1)**—**Certification surveys** are to be completed for the conditions of use found at the time such surveys are completed, with the understanding that equipment owners/users can change the configurations of the equipment according to the manufacturers specifications without affecting the established **certification** status for the equipment.

**1917.50(a)(2)**—In cases of foreign manufactured cranes, there shall be an *owner's warranty* that the design is adequate for the intended use. The *warranty* shall be based on a thorough examination of the design specifications by a registered professional engineer familiar with the equipment.

**1917.50(b)**—The **certifications** required by this section shall be performed

- **1917.50(b)(1)**—In accordance with *Part 1919* of this chapter, by persons then *currently accredited* by the Occupational Safety and Health Administration as provided in that part; or
- **1917.50(b)(2)**—In accordance with standards established and enforced by the state in which the device is located or by a political subdivision thereof, which have been found by the Secretary to be compatible with *Part 1919* of this chapter, by persons designated as competent to perform such **certification** by competent state authority and recognized as such by the Secretary.

**1917.50(c)**—The marine terminal material handling devices listed below shall be **certificated** in the following manner:

- **1917.50(c)(1)**—Each crane and derrick *shall be tested* as a unit quadrennially, and shall be examined annually. **Certificates of tests and examinations shall be made readily available for inspection.**
- **1917.50(c)(2)**—Bulk cargo spouts and suckers, together with any portable extensions and rigging or outriggers supporting them vertically, shall be examined annually. **Certificates attesting to the required examination shall be made readily available for inspection.**
- **1917.50(c)(3)**—Vertical pocket or bucket conveyors such as banana, sugar, and grain marine legs (other than those within a grain elevator structure) used within a marine terminal facility shall be *examined annually*. The annual examination shall include all supporting structures, rigging and mechanical components and observation of

all steps of operations. **Certificates** attesting to the required examinations shall be readily available *for inspection*.

**1917.50(c)(4)(i)**—House fall cargo-handling gear in use shall *be proof load tested* as a unit upon initial certification and every fourth year thereafter. An examination shall be carried out in conjunction with each unit proof load test and annually thereafter. The unit test shall consist of a proof load of 25 percent in excess of the rated safe working load. Examinations shall include all supporting structures and components. **Certificates** attesting to the *required tests and examinations* shall be readily available *for inspection*.

**1917.50(c)(5)(v)**—**Certificates and inspection and test records attesting to the tests** required by this section shall be available for inspection.

**1917.50(c)(6)**—Wire rope and loose gear obtained after October 3, 1983, and used for material handling shall have been tested and **certificated** before being placed into use in accordance with the provisions of *paragraphs (a), (c), and (d) of 1919.31 and 1919.32 through 1919.34* of this chapter as applicable. **Certificates** attesting to the required tests, inspections and examinations shall be available.

**1917.50(d)**—Disassembly and reassembly of equipment does not require recertification of the equipment provided that the equipment is reassembled and used in a manner consistent with its **certification**.

**1917.50(e)**—For equipment **certificated in accordance with paragraph (b)(2)** of this section and transferred to a job site in another state, the current **certification** shall remain *valid until the next inspection* or examination becomes due.

**1917.50(f)**—**Certification procedures** shall not be construed as a substitute for, or cause for elimination of, normal operational inspection and maintenance routine throughout the year.

**1917.50(g)(1)**—Every unit of equipment requiring quadrennial **certification** shall have had such quadrennial **certification** within the previous 48 months. Equipment requiring annual **certification** shall have had such annual **certification** within the previous 12 months, except that no annual **certification** is required within 12 months after any required quadrennial **certification**. *Annual examinations for certification* may be accomplished up to one month early without effect on subsequent due dates.

**1917.50(g)(2)**—When **certificated equipment** is out of service for 6 months or more beyond the due date of a **certification** inspection, an examination equivalent to an *initial certification*, including unit proof load test, shall be performed before the equipment re-enters service.

**1917.50(h)**—Loose gear obtained after October 3, 1983 shall bear a *legible mark indicating that it has been tested (see paragraph (c)(6) of this section)*. Single sheave blocks shall be marked with safe working loads and proof test loads. Marks relating to testing shall be identifiable on the related **certificates**, which shall be available.

**1917.50(j)**—Exceptions: The **certification requirements** of this section do not apply to the following equipment: [*Note: Reference paragraph (j) for the specific exceptions.*]

#### **Other**

**1917.50(b)(2)**—*In accordance with standards established and enforced by the state* in which the device is located or by a political subdivision thereof, which have been found by the Secretary to be compatible with Part 1919 of this chapter, by *persons designated as competent to perform such certification by competent state authority and recognized as such by the Secretary*.

**1917.50(j)**—Exceptions: The **certification requirements** of this section do not apply to the following equipment:

- **1917.50(j)(1)**—Small industrial crane trucks as described on page 8 and illustrated on page 13 of *ASME B56.1, 1959, "Safety Code for Powered Industrial Trucks"*, and powered industrial trucks.

## 29 CFR 1917 Subpart D—Specialized Terminals

### 1917.71—TERMINALS HANDLING INTERMODAL CONTAINERS OR ROLL-ON ROLL-OFF OPERATIONS

**Scope/Application:** *This section applies to specialized terminals.*

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—weight marked on containers
- Training and Communications—instructing employees
- Recordkeeping—cargo stowage plan
- Inspections and Tests—weighing containers
- Other—accuracy standards of scales
- Programs, Policies and Procedures—job assignments
- Certification—test certificates
- Competent Person—competent authority
- Qualified Person—qualified engineer

#### Signs, Markings and Tags

**1917.71(a)**—Every intermodal container shall be *legibly and permanently marked*.

**Note to Paragraph (a):** *Reference paragraph (a) for specific information.*

**1917.71(b)(1)**—The employer shall ascertain from the carrier whether a container to be hoisted is loaded or empty. Empty containers shall be identified before loading or discharge in such a manner as will inform every supervisor and foreman on the site and in charge of loading or discharging, or every crane or other hoisting equipment operator and signalman, if any, that such container is empty. Methods of identification may include cargo plans, manifests *or markings on the container*.

**1917.71(b)(2)(i)**—The actual gross weight shall be *plainly marked* so as to be visible to the crane or other hoisting equipment operator or signalman, or to every supervisor and foreman on the site and in charge of the operation;

**1917.71(b)(4)(ii)**—If the terminal has no scales, the actual gross weight may be calculated on the basis of the container's contents and the container's empty weight. The weights used in the calculation shall be **posted conspicuously on the container**, with the name of the person making the calculation and the date.

**1917.71(b)(6)**—Closed dry van containers carrying vehicles are exempted from *paragraph (b)(4)* of this section provided that:

- **1917.71(b)(6)(ii)**—The *container is marked on the outside* in such a manner that an employee can readily discern that the container is carrying vehicles;

**1917.71(c)**—No container or containers shall be hoisted *if their actual gross weight exceeds the weight marked as required in paragraph (a)(2) of this section*, or if it exceeds the capacity of the crane or other hoisting device intended to be used.

**1917.71(d)(1)**—*Marked or designated areas* shall be set aside within a container or roll-on roll-off terminal for passage of employees to and from active cargo transfer points, except where transportation to and from those points is provided by the employer.

**1917.71(f)(4)**—After July 27, 1998, flat bed, low boy trailers (mafis) and other similar equipment used to transport containers shall be *marked with their cargo capacities* and shall not be overloaded.

**1917.71(i)(8)**—The employer shall ensure that each interbox connector used in a VTL operation:

- **1917.71(i)(8)(vi)**—Is *clearly and durably marked* with its safe working load for lifting and an identifying *number or mark* that will enable it to be associated with its test certificate.

#### Training and Communications

**1917.71(b)(1)**—The employer shall *ascertain from the carrier* whether a container to be hoisted is loaded or empty. Empty containers shall be identified before loading or discharge in such a manner as will inform every supervisor and foreman on the site and in charge of loading or discharging, or every crane or other hoisting equipment operator and

signalman, if any, that such container is empty. Methods of identification may include cargo plans, manifests or markings on the container.

**1917.71(b)(2)**—In the case of a loaded container:

- **1917.71(b)(2)(ii)**—The cargo stowage plan or equivalent permanently recorded display serving the same purpose, containing the actual gross weight and the serial number or other positive identification of that specific container, *shall be provided to the crane or other hoisting equipment operator and signalman*, if any, and to every supervisor and foreman on the site and in charge of the operation.

**1917.71(d)(2)**—The employer shall *direct employees* to stay clear of the area beneath a suspended container.

**1917.71(i)(1)**—Each employee involved in VTL operations shall be *trained* and competent in the safety-related work practices, safety procedures, and other requirements in this section that pertain to their respective job assignments.

**1917.71(i)(5)**—The employer shall *ensure that the crane operator* pauses the lift when the vertically coupled containers have just been lifted above the supporting surface to assure that each interbox connector is properly engaged.

**1917.71(j)(2)**—The employer shall develop, implement, and maintain a **written** plan for transporting vertically connected containers. The **written plan shall establish procedures** to ensure safe operating and turning speeds and shall address all conditions in the terminal that could affect the safety of VTL-related operations, *including communication and coordination among all employees involved in these operations*.

## Recordkeeping

**1917.71(b)(1)**—The employer shall ascertain from the carrier whether a container to be hoisted is loaded or empty. Empty containers shall be identified before loading or discharge in such a manner as will inform every supervisor and foreman on the site and in charge of loading or discharging, or every crane or other hoisting equipment operator and signalman, if any, that such container is empty. *Methods of identification may include cargo plans, manifests or markings on the container*.

**1917.71(b)(2)**—In the case of a loaded container:

**1917.71(b)(2)(ii)**—The *cargo stowage plan or equivalent permanently recorded* display serving the same purpose, containing the actual gross weight and the serial number or other positive identification of that specific container, shall be provided to the crane or other hoisting equipment operator and signalman, if any, and to every supervisor and foreman on the site and in charge of the operation.

**1917.71(i)(8)**—The employer shall ensure that each interbox connector used in a VTL operation:

- **1917.71(i)(8)(iv)**—Has been *tested* and **certificated** by a competent authority authorized under Sec. 1918.11 of this chapter (for interbox connectors that are part of a vessel's gear) or § 1917.50 [*Certification of Marine Terminal Material Handling Devices*] (for other interbox connectors):
- **1917.71(i)(8)(v)**—Has a **certificate that is available for inspection** and that attests that the interbox connector meets the strength criteria given in *paragraph (i)(8)(iv)[Vertical Tandem Lifts]* of this section; and
- **1917.71(i)(8)(vi)**—*Is clearly and durably marked* with its safe working load for lifting and an identifying *number or mark* that will enable it to be associated with its **test certificate**.

**1917.71(j)(2)**—The employer shall develop, implement, and maintain a **written** plan for transporting vertically connected containers. The **written plan shall establish procedures** to ensure safe operating and turning speeds and shall address all conditions in the terminal that could affect the safety of VTL-related operations, *including communication and coordination among all employees involved in these operations*.

## Inspections and Tests

**1917.71(b)(3)**—Every outbound loaded container which is received at a marine terminal ready to load aboard a vessel without further consolidation or loading shall be *weighed to obtain the actual gross weight*, either at the terminal or

elsewhere, before being hoisted.

**1917.71(b)(4)(i)**—When container weighing scales are located at a marine terminal, any outbound container with a load consolidated at that terminal shall be *weighed to obtain an actual weight before being hoisted*.

**1917.71(b)(7)**—The *weight of loaded inbound containers from foreign ports shall be determined by weighing or by the method of calculation described in paragraph (b)(4)(ii) of this section or by shipping documents*.

**1917.71(f)(5)**—Each tractor shall have all brake air lines connected when pulling trailers equipped with air brakes and shall have the *brakes tested before commencing operations*.

**1917.71(g)(1)**—Intermodal containers shall be *inspected for defects* in structural members or fittings before handling.

**1917.71(i)(8)**—The employer shall ensure that each interbox connector used in a VTL operation:

- **1917.71(i)(8)(iv)**—Has been *tested* and **certificated** by a competent authority authorized under Sec. 1918.11 of this chapter (for interbox connectors that are part of a vessel's gear) or § 1917.50 [*Certification of Marine Terminal Material Handling Devices*] (for other interbox connectors):
- **1917.71(i)(8)(v)**—Has a **certificate** that is available for inspection and that attests that the interbox connector meets the strength criteria given in *paragraph (i)(8)(iv)[Vertical Tandem Lifts]* of this section; and
- **1917.71(i)(8)(vi)**—*Is clearly and durably marked* with its safe working load for lifting and an identifying *number or mark* that will enable it to be associated with its **test certificate**.

**1917.71(i)(9)**—The employer shall ensure that each container and interbox connector used in a VTL and each corner casting to which a connector will be coupled is *inspected immediately before use in the VTL*.

**1917.71(i)(9)(i)**—Each employee *performing the inspection* shall be capable of detecting defects or weaknesses and be able to assess their importance in relation to the safety of VTL operations.

**1917.71(i)(9)(ii)**—The *inspection of each interbox connector* shall include: a *visual examination* for obvious structural defects, such as cracks; a check of its physical operation to determine that the lock is fully functional with adequate spring tension on each head; and a check for excessive corrosion and deterioration.

**1917.71(i)(9)(iii)**—The *inspection of each container and each of its corner castings* shall include: a *visual examination* for obvious structural defects, such as cracks; a check for excessive corrosion and deterioration; and a visual examination to ensure that the opening to which an interbox connector will be connected has not been enlarged, that the welds are in good condition, and that it is free from ice, mud or other debris.

**1917.71(i)(9)(iv)**—The employer shall *establish a system* to ensure that each *defective or damaged interbox connector is removed from service*.

**1917.71(i)(9)(v)**—An interbox connector that has been *found to be defective or damaged* shall be removed from service and may not be used in VTL operations until repaired.

**1917.71(i)(9)(vi)**—A container with a corner casting that *exhibits any of the problems listed in paragraph (i)(9)(iii) of this section* may not be lifted in a VTL.

## **Other**

**1917.71(b)(8)**—Any scale used within the United States to weigh containers for the purpose of the requirements of this section shall *meet the accuracy standards of the state or local public authority in which the scale is located*.

## **Programs, Policies and Procedures**

**1917.71(i)(1)**—Each employee involved in VTL operations shall be trained and competent in the *safety-related work practices, safety procedures*, and other requirements in this section that pertain to their respective job assignments.

**1917.71(i)(9)(iv)**—The employer shall *establish a system* to ensure that each defective or damaged interbox connector is removed from service.

**1917.71(j)(2)**—The employer shall *develop, implement, and maintain a written plan* for transporting vertically connected containers. The **written plan** shall *establish procedures* to ensure safe operating and turning speeds and shall address all conditions in the terminal that could affect the safety of VTL-related operations, including communication and



coordination among all employees involved in these operations.

**1917.71(k)**—Safe work zone. The employer shall *establish a safe work zone* within which employees may not be present when vertically connected containers are in motion.

**1917.71(k)(2)**—The *written transport plan* required by *paragraph (j)(2) [Transporting Vertically Coupled Containers]* of this section shall *include the safe work zone and procedures* to ensure that employees are not in this zone when a VTL is in motion.

### **Certification**

**1917.71(i)(8)**—The employer shall ensure that each interbox connector used in a VTL operation:

- **1917.71(i)(8)(iv)**—Has been *tested* and *certificated* by a competent authority authorized under Sec. 1918.11 of this chapter (for interbox connectors that are part of a vessel's gear) or § 1917.50 [*Certification of Marine Terminal Material Handling Devices*] (for other interbox connectors):
- **1917.71(i)(8)(v)**—Has a *certificate that is available for inspection* and that attests that the interbox connector meets the strength criteria given in *paragraph (i)(8)(iv)[Vertical Tandem Lifts]* of this section; and
- **1917.71(i)(8)(vi)**—*Is clearly and durably marked* with its safe working load for lifting and an identifying *number or mark* that will enable it to be associated with its *test certificate*.

### **Competent Person**

**1917.71(i)(8)**—The employer shall ensure that each interbox connector used in a VTL operation:

- **1917.71(i)(8)(iv)**—Has been *tested* and *certificated* by a competent authority authorized under Sec. 1918.11 of this chapter (for interbox connectors that are part of a vessel's gear) or § 1917.50 [*Certification of Marine Terminal Material Handling Devices*] (for other interbox connectors).

### **Qualified Person**

**1917.71(j)(1)**—Equipment other than cranes used to transport vertically connected containers shall be either specifically designed for this application or *evaluated by a qualified engineer* and determined to be capable of operating safely in this mode of operation.

## **1917.73—TERMINAL FACILITIES HANDLING MENDADEN AND SIMILAR SPECIES OF FISH**

**Scope/Application:** *This section applies to specialized terminals.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—labeled cabinet
- Training and Communications—instructing employees
- Inspections and Tests—testing tanks
- Qualified Person—designed personnel

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

**1917.73(c)**—At least four units of respiratory protective equipment consisting of supplied-air respirators or self-contained breathing apparatus complying with the requirements of 1910.134 [*Respiratory Protection*] of this chapter shall be available in a *suitably labeled cabinet* for immediate use in case of emergency caused by oxygen deficiency or hydrogen sulfide. Any employee entering a tank in an emergency shall, in addition to respiratory protective equipment, wear a lifeline and safety harness to facilitate rescue. At least two other employees, similarly equipped, shall be continuously stationed outside the tank to observe and to provide rescue services.

### **Training and Communications**

**1917.73(d)**—The plant superintendent and foremen shall be *trained and knowledgeable* about the hazards of hydrogen sulfide and oxygen deficiency. They shall be *trained in the use of appropriate respiratory and other protective equipment, and in rescue procedures*. Other supervisory plant personnel shall be *informed of these hazards and instructed* in the necessary safety measures, including use of respiratory and rescue equipment.

## **Inspections and Tests**

**1917.73(a)(2)**—Before employees enter a dock tank, it shall first be drained, rinsed and *tested for hydrogen sulfide and oxygen deficiency*. Employees shall not enter the tank when the hydrogen sulfide level exceeds 20 ppm or oxygen content is less than 19.5 percent, except in emergencies.

**1917.73(a)(3)**—*Tests* shall be conducted by designated personnel with *suitable test equipment* and respiratory protective equipment complying with the provisions of *1910.134 [Respiratory Protection]* of this chapter.

### **Qualified Person**

**1917.73(a)(3)**—*Tests shall be conducted by designated personnel* with suitable test equipment and respiratory protective equipment complying with the provisions of *1910.134 [Respiratory Protection]* of this chapter.

## 29 CFR 1917 Subpart E—Personal Protection

### 1917.91—EYE AND FACE PROTECTION

**Scope/Application:** *This section applies to personal protection.*

#### STANDARD HIGHLIGHTS

- Other—consensus standards

#### Other

**1917.91(a)(1)**—The employer shall ensure that each affected employee uses appropriate eye and/or face protection where there are exposures to eye and/or face hazards. Such equipment shall comply with *American National Standards Institute, ANSI Z-87.1-1989, “Practice for Occupational and Educational Eye and Face Protection.”*

**1917.91(a)(1)(i)**—The employer shall ensure that each affected employee uses protective eye and face protection devices that comply with any of the following consensus standards:

- **1917.91(a)(1)(i)(A)**—*ANSI Z87.1-2003, “American National Standard Practice for Occupational and Educational Eye and Face Protection,”* which is incorporated by reference in § 1917.3;
- **1917.91(a)(1)(i)(B)**—*ANSI Z87.1-1989 (R-1998), “American National Standard Practice for Occupational and Educational Eye and Face Protection,”* which is incorporated by reference in § 1917.3; or
- **1917.91(a)(1)(i)(C)**—*ANSI Z87.1-1989, “American National Standard Practice for Occupational and Educational Eye and Face Protection,”* which is incorporated by reference in § 1917.3.

### 1917.93—HEAD PROTECTION

**Scope/Application:** *This section applies to personal protection.*

#### STANDARD HIGHLIGHTS

- Other—consensus standards

#### Other

**1917.93(b)(1)**—The employer must ensure that head protection complies with any of the following consensus standards:

- **1917.93(b)(1)(i)**—*American National Standards Institute (ANSI) Z89.1-2009, “American National Standard for Industrial Head Protection,”* incorporated by reference in Sec. 1917.3;
- **1917.93(b)(1)(ii)**—*American National Standards Institute (ANSI) Z89.1-2003, “American National Standard for Industrial Head Protection,”* incorporated by reference in Sec. 1917.3; or
- **1917.93(b)(1)(iii)**—*American National Standards Institute (ANSI) Z89.1-1997, “American National Standard for Personnel Protection—Protective Headwear for Industrial Workers—Requirements,”* incorporated by reference in Sec. 1917.3.

### 1917.94—FOOT PROTECTION

**Scope/Application:** *This section applies to personal protection.*

#### STANDARD HIGHLIGHTS

- Other—consensus standards

#### Other

**1917.94(b)**—Such equipment shall comply with *American National Standards Institute, ANSI Z-41-1991, “American National Standard for Personal Protection-Protective Footwear.”*

**1917.94(b)(1)**—The employer must ensure that protective footwear complies with any of the following consensus standards:

- **1917.94(b)(1)(i)**—*ASTM F-2412-2005, “Standard Test Methods for Foot Protection,”* and *ASTM F-2413-2005, “Standard Specification for Performance Requirements for Protective Footwear,”* which are incorporated by

reference in § 1917.3;

- **1917.94(b)(1)(ii)**—ANSI Z41-1999, “American National Standard for Personal Protection—Protective Footwear,” which is incorporated by reference in § 1917.3; or
- **1917.94(b)(1)(iii)**—ANSI Z41-1991, “American National Standard for Personal Protection—Protective Footwear,” which is incorporated by reference in § 1917.3.

### **1917.95—OTHER PROTECTIVE MEASURES**

**Scope/Application:** *This section applies to personal protection.*

#### **STANDARD HIGHLIGHTS**

- Other—consensus standards
- Signs, Markings and Tags—PFDs marked

#### **Other**

**1917.95(b)(2)**—PFDs (life preservers, life jackets, or work vests) worn by each affected employee must be *United States Coast Guard (USCG) approved pursuant to 46 CFR part 160 (Type I, II, III, or V PFD)* and marked for use as a work vest, for commercial use, or for use on vessels.

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

**1917.95(b)(2)**—PFDs (life preservers, life jackets, or work vests) worn by each affected employee must be *United States Coast Guard (USCG) approved pursuant to 46 CFR part 160 (Type I, II, III, or V PFD)* and marked for use as a work vest, for commercial use, or for use on vessels.

## 29 CFR 1917 Subpart F—Terminal Facilities

### 1917.111—MAINTENANCE AND LOAD LIMITS

*Scope/Application:* This section applies to terminal facilities.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—safe load limits

#### Signs, Markings and Tags

1917.111(b)—Maximum safe load limits, in pounds per square foot (kilograms per square meter), of floors elevated above ground level, and pier structures over the water shall be *conspicuously posted* in all cargo areas.

### 1917.113—CLEARANCE HEIGHTS

*Scope/Application:* This section applies to terminal facilities.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—safe load limits

#### Signs, Markings and Tags

1917.113—Clearance heights shall be *prominently posted* where the height is insufficient for vehicles and equipment.

### 1917.115—PLATFORMS AND SKIDS

*Scope/Application:* This section applies to terminal facilities.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—safe load limits

#### Signs, Markings and Tags

1917.115(c)—Platforms and skids shall be strong enough to bear the loads handled and shall be maintained in safe condition. Safe working loads, which shall be *posted or marked* on or adjacent to platforms and skids, shall have a minimum safety factor of five for any part, based upon maximum anticipated static loading conditions and the ultimate strength of the construction material.

### 1917.116—ELEVATORS AND ESCALATORS

*Scope/Application:* This section applies to terminal facilities.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—safe load limits
- Qualified Person—designated person
- Inspections and Tests—monthly and annual inspections
- Recordkeeping—annual inspections

#### Signs, Markings and Tags

1917.116(e)—Elevators and escalators shall be thoroughly inspected at intervals not exceeding one year. Additional *monthly inspections* for satisfactory operation shall be conducted by designated persons. *Records* of the results of the latest annual elevator inspections shall be *posted* in elevators. *Records of annual escalator inspections shall be posted in the vicinity of the escalator* or be available at the terminal.

1917.116(g)—The elevator's or escalator's *maximum load limits shall be posted* and not exceeded. Elevator load limits shall be *posted conspicuously* both inside and outside of the car.

#### Qualified Person

1917.116(e)—Elevators and escalators shall be thoroughly inspected at intervals not exceeding one year. Additional monthly inspections for satisfactory operation shall be *conducted by designated persons*. *Records* of the results of the latest *annual elevator inspections* shall be *posted* in elevators. *Records of annual escalator inspections shall be posted in the vicinity of the escalator* or be available at the terminal.

**1917.116(h)**—Elevators shall be *operated only by designated persons* except for automatic or door interlocking elevators which provide full shaft door closing and automatic car leveling.

### **Inspections and Tests**

**1917.116(e)**—Elevators and escalators shall be *thoroughly inspected at intervals not exceeding one year. Additional monthly inspections for satisfactory operation* shall be conducted by designated persons. **Records** of the results of the latest annual elevator inspections shall be **posted** in elevators. **Records** of annual escalator inspections shall be **posted** in the vicinity of the escalator or be available at the terminal.

### **Recordkeeping**

**1917.116(e)**—Elevators and escalators shall be thoroughly inspected at intervals not exceeding one year. Additional monthly inspections for satisfactory operation shall be conducted by designated persons. **Records of the results of the latest annual elevator inspections shall be posted in elevators. Records of annual escalator inspections shall be posted in the vicinity of the escalator or be available at the terminal.**

## **1917.117—MANLIFTS**

**Scope/Application:** *This section applies to terminal facilities.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—warning signs
- Qualified Person—designated person
- Inspections and Tests—weekly and monthly inspections
- Recordkeeping—inspections
- Programs, Policies and Procedures—manufacturer’s specifications

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

**1917.117(b)**—Inspection **records**. Inspection **records** shall be kept for at least one year. The **record** of the *most recent inspection shall be posted in the vicinity of the manlift or in the terminal.*

**1917.117(d)**—Instructions. Manlift use *instructions shall be conspicuously posted.*

**1917.117(e)**—*Top floor warning sign* and light. An *illuminated sign* and red light that are visible to the user shall be provided under the top floor opening of the manlift to warn the user to get off at that floor.

**1917.117(f)**—*Bottom floor warning sign*. A *sign visible to descending passengers* shall be provided to warn them to get off at the bottom floor.

### **Qualified Person**

**1917.117(a)**—Inspection. Manlifts shall be inspected monthly by a *designated person*. Safety switches shall be checked weekly. Manlifts found to be unsafe shall not be operated until repaired.

**Note to Paragraph (a):** *Reference sections (a)(1) through (a)(22) for specific inspection items.*

### **Inspections and Tests**

**1917.117(a)**—Inspection. Manlifts shall be *inspected monthly* by a designated person. *Safety switches shall be checked weekly.* Manlifts found to be unsafe shall not be operated until repaired.

**Note to Paragraph (a):** *Reference sections (a)(1) through (a)(22) for specific inspection items.*

### **Recordkeeping**

**1917.117(b)**—Inspection records. *Inspection records shall be kept for at least one year. The record of the most recent inspection shall be posted in the vicinity of the manlift or in the terminal.*

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

**1917.117(l)**—Maintenance. Manlifts shall be equipped, maintained, and used *in accordance with the manufacturer’s specifications*, which shall be available at the terminal.

## 1917.118—FIXED LADDERS

**Scope/Application:** *This section applies to terminal facilities.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—instructions available for inspections
- Recordkeeping—manufacturer’s instructions
- Programs, Policies and Procedures—manufacturer’s specifications

### Inspections and Tests

1917.118(e)(4)—Where used, ladder safety devices shall:

- **1917.118(e)(4)(i)**—Be installed and maintained in accordance with the manufacturer’s **instructions**, which shall be *available for inspection*;

### Recordkeeping

1917.118(e)(4)—Where used, ladder safety devices shall:

- **1917.118(e)(4)(i)**—Be installed and maintained *in accordance with the manufacturer’s instructions*, which shall be *available for inspection*;

### Programs, Policies and Procedures

1917.118(e)(4)—Where used, ladder safety devices shall:

- **1917.118(e)(4)(i)**—Be *installed and maintained in accordance with the manufacturer’s instructions*, which shall be available for inspection;

## 1917.119—PORTABLE LADDERS

**Scope/Application:** *This section applies to terminal facilities.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspection of ladders
- Other—consensus standards
- Training and Communications—instructing employees
- Signs, Markings and Tags—tagging unsafe ladders

### Inspections and Tests

1917.119(e)(1)—The employer shall maintain portable ladders in safe condition. *Ladders with the following defects* shall not be used and either shall be tagged as unusable if kept on the premises or shall be removed from the worksite:

**Note to paragraph (e)(1):** *Reference sections (e)(1)(i) through (e)(1)(v) for specific defects*

1917.119(e)(2)—Ladders shall be *inspected for defects prior to each day’s use, and after any occurrence, such as a fall, which could damage the ladder.*

### Other

1917.119(c)—*Standards for manufactured portable ladders.* Portable manufactured ladders obtained after January 21, 1998 shall bear identification indicating that they meet the appropriate ladder construction requirements of the following standards:

*ANSI A14.1-1990 Safety Requirements for Portable Wood Ladders*

*ANSI A14.2-1990 Safety Requirements for Portable Metal Ladders*

*ANSI A14.5-1992 Safety Requirements for Portable Reinforced Plastic Ladders*

### Training and Communications

1917.119(f)(10)—The employer shall *direct that ladders* shall be placed so that employees climbing are not exposed to injury from projecting objects or doors that open toward the ladder.

## Signs, Markings and Tags

**1917.119(c)**—Standards for manufactured portable ladders. Portable manufactured ladders obtained after January 21, 1998 shall *bear identification* indicating that they meet the appropriate ladder construction requirements of the ANSI standards.

*Note to Paragraph (c): Reference paragraph (c) for a list of ANSI standards]*

**1917.119(e)(1)**—The employer shall maintain portable ladders in safe condition. *Ladders with the following defects* shall not be used and either shall be tagged as unusable if kept on the premises or shall be removed from the worksite:

*Note to paragraph (e)(1): Reference sections (e)(1)(i) through (e)(1)(v) for specific defects*

## 1917.122—EMPLOYEE EXITS

*Scope/Application: This section applies to terminal facilities.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tagging unsafe ladders

## Signs, Markings and Tags

**1917.122(a)**—Employee exits shall be *clearly marked*.

**1917.122(b)**—If an employee exit is not visible from employees work stations, *directional signs indicating routes to the exit shall be posted*.

## 1917.123—ILLUMINATION

*Scope/Application: This section applies to terminal facilities.*

### STANDARD HIGHLIGHTS

- Other—consensus
- Inspections and Tests—measured light intensity

## Other

**1917.123(a)**—Working and walking areas shall be illuminated. Unless conditions described in the regulations of the *United States Coast Guard (33 CFR 126.15(1) and (n), and 33 CFR 154.570)* exist in the case of specific operations, illumination in active work areas (for example, cargo transfer points) shall be of an average minimum light intensity of 5 foot-candles. The illumination in other work areas (for example, farm areas) shall be of an average minimum light intensity of 1 foot-candle except for security purposes when a minimum light intensity of 1/2 foot-candle shall be maintained. Where occasional work tasks require more light than that which is consistently and permanently provided, supplemental lighting shall be used.

**Footnote(9):** The United State Coast Guard, at 33 CFR 126.15(1) and (n), and 33 CFR 154.570 sets out requirements for illumination at “designated waterfront facilities” and “large oil transfer facilities.”

## Inspections and Tests

**1917.123(b)**—The lighting intensity shall be *measured at the task/working surface* in the plane in which the task/working surface is present.

## 1917.125—GUARDING TEMPORARY HAZARDS

*Scope/Application: This section applies to terminal facilities.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tagging unsafe ladders

## Signs, Markings and Tags



**1917.125**—Ditches, pits, excavations and surfaces in poor repair shall be guarded by *readily visible barricades*, rails or other equally effective means.

### **1917.126—RIVER BANKS**

*Scope/Application:* This section applies to terminal facilities.

#### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—tagging unsafe ladders

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

**1917.126(b)**—Where working surfaces at river banks slope so steeply that an employee could slip or fall into the water, the outer perimeter of the working surface shall be *protected by posting* or other portable protection such as roping off. In these situations, employees must wear a personal flotation device meeting the requirements of *1917.95(b) [Other Protective Measures]*.

### **1917.128—SIGNS AND MARKINGS**

*Scope/Application:* This section applies to terminal facilities.

#### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—tagging unsafe ladders

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

**1917.128(a)**—General. *Signs required by this part shall be clearly worded and legible*, and shall contain a key word or legend indicating the reason for the sign.

**1917.128(b)**—Specific. Every marine terminal shall have *conspicuously posted* signs as follows:

- **1917.128(b)(1)**—Locations of first aid facilities;
- **1917.128(b)(2)**—Locations of telephones;
- **1917.128(b)(3)**—Telephone numbers of the close ambulance service, hospital or other source of medical attention, police, fire department, and emergency squad (if any); and
- **1917.128(b)(4)**—Locations of firefighting and emergency equipment and fire exits.

## 29 CFR 1917 Subpart G—Related Terminal Operations and Equipment

### 1917.151—MACHINE GUARDING

**Scope/Application:** *This section applies to related terminal operations and equipment.*

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tagging out machines
- Qualified Person—designated person
- Training and Communications—instructing employees

#### Signs, Markings and Tags

**1917.151(b)(7)**—The power supply to machines shall be turned off, locked out, and *tagged out* during repair, adjustment, or servicing.

**1917.151(e)(5)**—The employer shall direct that employees perform ripping and ploughing against the saw turning direction. Rotation direction and an indication of the end of the saw to be used shall be *conspicuously marked on the hood*.

#### Qualified Person

**1917.151(b)(9)**—Only *designated employees* shall maintain or repair machinery and equipment.

#### Training and Communications

**1917.151(e)(5)**—The employer shall *direct that employees* perform ripping and ploughing against the saw turning direction. Rotation direction and an indication of the end of the saw to be used shall be conspicuously marked on the hood.

### 1917.152—WELDING, CUTTING AND HEATING (HOT WORK)

**Scope/Application:** *This section applies to related terminal operations and equipment.*

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tagging out cylinders
- Qualified Person—designated person
- Training and Communications—instructing employees
- Inspections and Tests—testing atmosphere, hoses, torches, containers

#### Signs, Markings and Tags

**1917.152(d)(2)(v)**—Leaking fuel gas cylinder valves shall be closed and the gland nut tightened. If the leak continues, the *cylinder shall be tagged*, removed from service, and moved to a location where the leak will not be hazardous. If a regulator attached to a valve stops a leak, the cylinder need not be removed from the workplace but *shall be tagged* and may not be used again before it is repaired;

#### Qualified Person

**1917.152(b)**—Hot work in confined spaces. Hot work shall not be performed in a confined space until a *designated person* has tested the atmosphere and determined that it is not hazardous.

**1917.152(c)(7)(ii)**—On or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a *designated person* has tested the atmosphere inside the equipment or tanks and determined that it is not hazardous;

**1917.152(c)(8)(i)**—Drums, containers or hollow structures that have contained flammable or combustible substances shall either be filled with water or cleaned, and shall then be ventilated. A *designated person* shall test the atmosphere and determine that it is not hazardous before hot work is performed on or in such structures.

**1917.152(g)(1)**—Before hot work is commenced on surfaces covered by a preservative coating of unknown flammability, a test shall be made by a *designated person* to determine the coating's flammability. Preservative coatings shall be considered highly flammable when scrapings burn with extreme rapidity.

#### Training and Communications

**1917.152(c)(4)**—When the hot work operation is such that normal fire prevention precautions are not sufficient, addi-

tional personnel shall be assigned to guard against fire during hot work and for a sufficient time after completion of the work to ensure that no fire hazard remains. The employer shall *instruct all employees* involved in hot work operations as to potential fire hazards and the use of firefighting equipment.

**1917.152(f)(2)(ii)**—Employees in the space shall wear supplied air respirators in accordance with 1910.134 [*Respiratory Protection*] and a standby on the outside shall *maintain communication with employees inside the space* and shall be equipped and prepared to provide emergency aid.

### **Inspections and Tests**

**1917.152(b)**—Hot work in confined spaces. Hot work shall not be performed in a confined space until a designated person has *tested the atmosphere* and determined that it is not hazardous.

**1917.152(c)(7)(ii)**—On or in equipment or tanks that have contained flammable gas or liquid or combustible liquid or dust-producing material, until a designated person has *tested the atmosphere* inside the equipment or tanks and determined that it is not hazardous;

**1917.152(c)(8)(i)**—Drums, containers or hollow structures that have contained flammable or combustible substances shall either be filled with water or cleaned, and shall then be ventilated. A *designated person* shall *test the atmosphere* and determine that it is not hazardous before hot work is performed on or in such structures.

**1917.152(d)(3)(iii)**—Hose shall be *inspected before use*. Hose subjected to flashback or showing evidence of severe wear or damage shall be *tested to twice the normal working pressure* but not less than 200 p.s.i. (1378.96 kPa) before reuse. Defective hose shall not be used.

**1917.152(d)(4)(ii)**—Torches shall be *inspected before each use* for leaking shut-off valves, hose couplings and tip connections. Torches with such defects shall not be used.

**1917.152(g)(1)**—Before hot work is commenced on surfaces covered by a preservative coating of unknown flammability, a *test shall be made* by a designated person to determine the coating's flammability. Preservative coatings shall be considered highly flammable when scrapings burn with extreme rapidity.

## **1917.153—SPRAY PAINTING**

*Scope/Application: This section applies to related terminal operations and equipment.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—no smoking signs
- Other—subpart S, Part 1910
- Inspections and Tests—hoses and couplings

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

**1917.153(c)(9)**—Smoking shall be prohibited and “*No Smoking*” signs shall be **posted** in spraying and paint storage areas.

### **Other**

**1917.153(d)(12)**—Wiring, motors and equipment in a spray booth shall be of approved explosion-proof type for *Class I, Group D locations and conform to subpart S of Part 1910 of this chapter for Class I, Division 1, Hazardous Locations*. Wiring, motors and equipment within 20 feet (6.1m) of any interior spraying area and not separated by vapor-tight partitions shall not produce sparks during operation and shall *conform to the requirements of subpart S of Part 1910 of this chapter for Class I, Division 2, Hazardous Locations*.

### **Inspections and Tests**

**1917.153(c)(3)**—Hoses and couplings shall be *inspected before use*. Hoses showing deterioration, leakage or weakness in the carcass or at the couplings shall be removed from service.

## **1917.156—FUEL HANDLING AND STORAGE**

*Scope/Application: This section applies to related terminal operations and equipment.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—identify shut-off device
- Inspections and Tests—examining containers

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

**1917.156(a)(8)**—Liquid fuel dispensing devices shall be provided with an easily accessible and *clearly identified shut-off device*, such as a switch or circuit breaker, to shut off the power in an emergency.

### **Inspections and Tests**

**1917.156(b)(3)(iii)**—Containers shall be *examined before recharging and again before reuse* for the following:

*Note to Paragraph (b)(3)(iii): Reference sections (b)(3)(iii)(A) through (b)(3)(iii)(E) for specific items to be examined.*

## **1917.157—BATTERY CHARGING AND CHANGING**

**Scope/Application:** *This section applies to related terminal operations and equipment.*

### **STANDARD HIGHLIGHTS**

- Qualified Person—designated person

### **Qualified Person**

**1917.157(a)**—Only *designated persons* shall change or charge batteries.

