



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



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## Foreword

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

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

Josh Dobson  
*Commissioner of Labor*

## Overview

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

The information in this guide is provided voluntarily by the N.C. Department of Labor's Education, Training and Technical Assistance Bureau 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 919-707-7846. You may also want to visit their website at [www.labor.nc.gov/safety-and-health/occupational-safety-and-health/safety-and-health-consultation-program](http://www.labor.nc.gov/safety-and-health/occupational-safety-and-health/safety-and-health-consultation-program).

For training events, publications, PowerPoint presentations and standard interpretations, please contact the Education, Training and Technical Assistance Bureau at 919-707-7876 or access the ETTA website at [www.labor.nc.gov/safety-and-health/occupational-safety-and-health](http://www.labor.nc.gov/safety-and-health/occupational-safety-and-health).



## How to Use This Industry Guide

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

Section 2 contains state-specific standards, Section 3 contains recordkeeping standards, and Section 4 contains construction industry standards. These sections are broken out by subpart and sections within the subpart that have special requirements. Each section will contain a “**Scope/Application**” that explains the scope or application of the standard (who 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 “**Scope/Application.**”

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

***Please note:** If a standard is not referenced in this guide, a special requirement was not found for that particular rule.*

# SECTION 1

## 13 NORTH CAROLINA ADMINISTRATIVE CODE

### CHAPTER 7—OFFICE OF OCCUPATIONAL SAFETY AND HEALTH

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

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

## 13 NORTH CAROLINA ADMINISTRATIVE CODE

### CHAPTER 7—OFFICE OF OCCUPATIONAL SAFETY AND HEALTH

#### SUBCHAPTER 7F—STANDARDS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
7F .0200—Construction Standards	X										X
• 1910.1030—Bloodborne Pathogens	X		X		X	X	X		X	X	
7F .0600—Communication Tower Standards	X	X	X	X	X			X	X	X	
7F .0700—Blasting and Use of Explosives	X	X	X	X	X		X	X	X	X	

## 29 CFR PART 1904—RECORDKEEPING

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

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

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART C—GENERAL SAFETY AND HEALTH PROVISIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.20—General Safety and Health Provisions	X	X			X			X	X	X	
1926.21—Safety Training and Education	X				X						
1926.24—Fire Protection and Prevention	X										
1926.25—Housekeeping	X										
1926.33—Access to Employee Exposure and Medical Records											X
• 1910.1020— Access to Employee Exposure and Medical Records			X		X						
1926.34—Means of Egress										X	
1926.35—Employee Emergency Action Plans	X		X		X						

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART D—OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.50—Medical Services and First Aid		X	X	X	X					X	
1926.51—Sanitation	X									X	
1926.52—Occupational Noise Exposure	X										
1926.53—Ionizing Radiation					X			X			X
• 1910.1096—Ionizing Radiation		X	X		X					X	
1926.54—Nonionizing Radiation			X		X				X	X	
1926.55—Gases, Vapors, Fumes, Dusts, and Mists	X							X	X		
1926.57—Ventilation	X	X	X		X				X		
1926.59—Hazard Communication											X
• 1910.1200—Hazard Communication	X		X		X				X	X	
1926.60—Methylenedianiline	X	X	X		X	X	X		X	X	X
1926.61—Retention of DOT Markings, Placards, and Labels											X
• 1910.1201—Retention of DOT Markings, Placards, and Label										X	
1926.62—Lead	X	X	X		X	X	X	X	X	X	
1926.64—Process Safety Management of Highly Hazardous Chemicals	X	X	X	X	X	X			X		
1926.65—Hazardous Waste Operations and Emergency Response	X	X	X	X	X	X	X	X	X	X	
1926.66—Criteria for Design and Construction of Spray Booths		X									
1926.97—Electrical Protective Equipment	X	X	X	X						X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART E—PERSONAL PROTECTIVE EQUIPMENT AND LIFE SAVING EQUIPMENT

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.101—Hearing Protection								X			
1926.103—Respiratory Protection											X
• 1910.134—Respiratory Protection	X	X	X	X	X		X		X	X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART F—FIRE PROTECTION AND PREVENTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.150—Fire Protection	X	X	X		X					X	
1926.151—Fire Prevention	X									X	
1926.152—Flammable Liquids		X	X		X					X	
1926.153—Liquefied Petroleum Gas (LP-Gas)		X									

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART G—SIGNS, SIGNALS, AND BARRICADES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.200—Accident Prevention Signs and Tags										X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART H—MATERIALS HANDLING, STORAGE, USE, AND DISPOSAL

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.250—General Requirements for Storage										X	
1926.251—Rigging Equipment for Material Handling		X	X	X				X		X	
1926.252—Disposal of Waste Materials										X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART I—TOOLS—HAND AND POWER

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.302—Power-Operated Hand Tools	X	X	X		X						
1926.303—Abrasive Wheels and Tools		X									
1926.304—Woodworking Tools										X	
1926.305—Jack-Lever and Ratchet, Screw, and Hydraulic		X								X	
1926.306—Air Receivers		X									
1926.307—Mechanical Power-Transmission Apparatus		X									

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART J—WELDING AND CUTTING

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.351—Arc Welding and Cutting		X			X						
1926.352—Fire Prevention					X						
1926.353—Ventilation and Protection in Welding, Cutting, and Heating					X						
1926.354—Welding, Cutting, and Heating in Way of Preservative Coatings		X						X			

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART K—ELECTRICAL

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.403—General Requirements			X	X						X	
1926.404—Wiring Design and Protection	X	X	X					X		X	
1926.408—Special Systems									X	X	
1926.416—General Requirements					X					X	
1926.417—Lockout and Tagging of Circuits										X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART L—SCAFFOLDS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.451—General Requirements		X	X		X			X	X		
1926.452—Additional Requirements Applicable to Specific Types of Scaffolds		X	X						X		
1926.453—Aerial Lifts		X	X	X					X		
1926.454—Training requirements	X	X			X			X	X		

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART M—FALL PROTECTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.501—Duty to Have Fall Protection	X										
1926.502—Fall Protection Systems Criteria and Practices	X	X	X	X				X	X		
1926.503—Training Requirements	X		X	X	X			X			

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART N—HELICOPTERS, HOISTS, ELEVATORS, AND CONVEYORS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.551—Helicopters	X	X			X				X		
1926.552—Material Hoists, Personnel Hoists, and Elevators		X	X	X				X	X	X	
1926.554—Overhead Hoists		X	X							X	
1926.555—Conveyors		X								X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART O—MOTOR VEHICLES, MECHANIZED EQUIPMENT, AND MARINE OPERATIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.600—Equipment		X							X		
1926.601—Motor Vehicles		X									
1926.602—Material Handling Equipment		X	X		X					X	X
1926.603—Pile Driving Equipment									X		
1926.604—Site Clearing					X						

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART P—EXCAVATIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.651—Specific Excavation Requirements		X	X					X			
1926.652—Requirements for Protective Systems			X		X				X		

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART Q—CONCRETE AND MASONRY CONSTRUCTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.701—General Requirements			X						X	X	
1926.702—Requirements for Equipment and Tools										X	
1926.703—Requirements for Cast-in-Place Concrete		X	X						X		
1926.705—Requirements for Lift-Slab Operations	X		X					X	X	X	
1926.706—Requirements for Masonry Construction										X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART R—STEEL ERECTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.752—Site Layout, Site-Specific Erection Plan and Construction Sequence	X	X	X						X		
1926.753—Hoisting and Rigging	X	X	X	X	X			X	X		
1926.754—Structural Steel Assembly								X			
1926.755—Column Anchorage		X	X					X			
1926.756—Beams and Columns			X					X	X		
1926.757—Open Web Steel Joists			X						X		
1926.758—Systems-Engineered Metal Buildings			X						X		
1926.760—Fall Protection		X			X				X	X	
1926.761—Training	X				X				X		

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART S—UNDERGROUND CONSTRUCTION, CAISSONS, COFFERDAMS, AND COMPRESSED AIR

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.800—Underground Construction	X	X	X	X	X	X		X	X	X	
1926.801—Caissons		X								X	
1926.802—Cofferdams										X	
1926.803—Compressed Air	X		X		X	X	X	X	X	X	

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART T—DEMOLITION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.850—Preparatory Operations		X	X		X			X		X	
1926.851—Stairs, Passageways, and Ladders		X									
1926.859—Mechanical Demolition		X						X			

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART U—BLASTING AND THE USE OF EXPLOSIVES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.900—General Provisions			X	X				X		X	
1926.901—Blaster Qualifications			X		X		X	X	X		
1926.902—Surface Transportation of Explosives							X		X	X	
1926.903—Underground Transportation of Explosives		X	X	X							

1926.904—Storage of Explosives and Blasting Agents											X
1926.905—Loading of Explosives or Blasting Agents	X		X							X	
1926.906—Initiation of Explosive Charges—Electric Blasting		X									
1926.908—Use of Detonating Cord		X									
1926.909—Firing the Blast			X						X	X	
1926.910—Inspection After Blasting		X									
1926.911—Misfires									X		

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART V—POWER TRANSMISSION AND DISTRIBUTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.950—General	X	X	X		X				X	X	
1926.951—Medical Services and First Aid					X						
1926.952—Job Briefing	X				X				X		
1926.953—Enclosed Spaces	X	X			X	X			X		
1926.954—Personal Protective Equipment	X	X							X		
1926.955—Portable Ladders and Platforms	X										
1926.957—Live-Line Tools		X									
1926.958—Materials Handling and Storage									X		
1926.959—Mechanical Equipment	X	X							X		
1926.960—Working on or Near Exposed Energized Parts		X							X		
1926.961—Deenergizing Lines and Equipment for Employee Protection	X				X				X	X	
1926.962—Grounding for the Protection of Employees	X	X									
1926.963—Testing and Test Facilities	X	X			X				X	X	
1926.964—Overhead Lines and Live-Line Barehand Work	X	X			X						
1926.965—Underground Electrical Installations	X	X			X				X		
1926.966—Substations					X				X	X	
1926.967—Special Conditions		X								X	



## 29 CFR PART 1926—CONSTRUCTION

### SUBPART W—ROLLOVER PROTECTIVE STRUCTURES; OVERHEAD PROTECTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1000—Rollover Protective Structures (ROPS) for Material Handling Equipment										X	
1926.1001—Minimum Performance Criteria for Rollover Protective Structures for Designated Scrapers, Loaders, Dozers, Graders, and Crawler Tractors	X	X	X	X							
1926.1002—Protective Frames (ROPS) for Wheel-Type Agricultural and Industrial Tractors Used in Construction	X	X	X	X							
1926.1003—Overhead Protection for Operators of Agricultural and Industrial Tractors	X	X									

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART X—LADDERS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1053—Ladders		X						X		X	
1926.1060—Training Requirements	X				X			X			

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART Y—COMMERCIAL DIVING OPERATIONS

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1076—Qualifications of Dive Team											X
• 1910.410—Qualifications of Dive Team					X				X		
1926.1080—Safe Practices Manual											X
• 1910.420—Safe Practices Manual	X		X								
1926.1081—Pre-Dive Procedures											X
• 1910.421—Pre-Dive Procedures	X	X	X		X				X	X	
1926.1083—Post-Dive Procedures											X
• 1910.423—Post-Dive Procedures	X		X		X						
1926.1090—Equipment											X
• 1910.430—Equipment	X	X	X								
1926.1091—Recordkeeping Requirements											X
• 1910.440—Recordkeeping Requirements			X								

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART Z—TOXIC AND HAZARDOUS SUBSTANCES

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1101—Asbestos	X	X	X	X	X	X	X	X	X	X	
1926.1103—13 Carcinogens											X
• 1910.1003—13 Carcinogens	X		X		X		X		X	X	
1926.1104—Alpha-Naphthylamine											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1106—Methyl Chloromethyl Ether											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1107—3,3'-Dichlorobenzidine (and its salts)											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1108—Bis-Chloromethyl Ether											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1109—Beta-Naphthylamine											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1110—Benzidine											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1111—4-Aminodiphenyl											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1112—Ethyleneimine											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1113—beta-Propiolactone											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1114—2-Acetylaminoozobenzene											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1115—4-Dimethylaminoozobenzene											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1116—N-Nitrosodimethylamine											X
• 1910.1003—Alpha-Naphthylamine	X		X		X		X		X	X	
1926.1117—Vinyl Chloride											X
• 1910.1017—Vinyl Chloride	X		X		X	X	X		X	X	
1926.1118—Inorganic Arsenic											X
• 1910.1018—Inorganic Arsenic	X		X		X	X	X		X	X	
1926.1126—Chromium (VI)	X		X		X	X	X		X	X	
1926.1127—Cadmium	X	X	X		X	X	X	X	X	X	
1926.1128—Benzene											X
• 1910.1028—Benzene	X		X		X	X	X		X	X	
1926.1129—Coke Oven Emissions											X
• 1910.1029—Coke Oven Emissions	X	X	X	X	X	X	X		X	X	
1926.1144—1,2-Dibromo-3-Chloropropane											X
• 1910.1044—1,2-Dibromo-3-Chloropropane	X		X		X	X	X		X	X	
1926.1145—Acrylonitrile											X
• 1910.1045—Acrylonitrile	X	X	X		X	X	X		X	X	
1926.1147—Ethylene Oxide											X
• 1910.1047—Ethylene Oxide	X		X		X	X	X		X	X	
1926.1148—Formaldehyde											X

• 1910.1048—Formaldehyde	X	X	X		X	X	X		X	X	
1926.1152—Methylene Chloride											X
• 1910.1052—Methylene Chloride	X		X		X	X	X		X	X	
1926.1153—Respirable Crystalline Silica	X	X	X		X	X	X	X	X		

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART A A—CONFINED SPACES IN CONSTRUCTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1203—General Requirements	X	X	X	X	X	X		X	X	X	
1926.1204—Permit-Required Confined Space Program	X	X	X		X	X			X		
1926.1205—Permitting Process	X		X						X		
1926.1206—Entry Permit	X	X	X		X	X			X		
1926.1207—Training	X		X		X				X		
1926.1208—Duties of Authorized Entrants					X				X		
1926.1209—Duties of Attendants	X				X				X		
1926.1210—Duties of Entry Supervisors	X	X	X		X				X		
1926.1211—Rescue and Emergency Services	X		X	X	X				X		
1926.1212—Employee Participation	X		X						X		
1926.1213—Provision of Documents to Secretary			X								

## 29 CFR PART 1926—CONSTRUCTION

### SUBPART CC—CRANES AND DERRICKS IN CONSTRUCTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1402—Ground Conditions					X						
1926.1403—Assembly/Disassembly — Selection of Manufacturer or Employer Procedures	X		X								
1926.1404—Assembly/Disassembly—General Requirements (Applies to All Assembly and Disassembly Operations)	X	X	X		X			X	X		
1926.1406—Assembly/Disassembly — Employer Procedures—General Requirements	X								X		
1926.1407—Power Line Safety (Up to 350 kV) Assembly and Disassembly	X				X				X	X	
1926.1408—Power Line Safety (Up to 350 kV)—Equipment Operations	X				X				X	X	
1926.1409—Power Line Safety (Over 350 kV)									X		
1926.1410—Power Line Safety (All Voltages)—Equipment Operations Closer Than the Table A Zone	X		X		X				X	X	
1926.1411—Power Line Safety—While Traveling Under or Near Power Lines With No Load					X				X		

1926.1412—Inspections		X	X					X	X		
1926.1413—Wire Rope—Inspection		X	X					X	X		
1926.1414—Wire Rope—Selection and Installation Criteria		X	X						X		
1926.1416—Operational Aids										X	
1926.1417—Operation	X		X		X			X	X	X	
1926.1418—Authority to Stop Operation									X		
1926.1419—Signals—General Requirements					X				X		
1926.1420—Signals—Radio, Telephone or Other Electronic Transmission of Signals		X									
1926.1421—Signals—Voice Signals—Additional Requirements					X						
1926.1422—Signals—Hand Signal Chart										X	
1926.1423—Fall Protection		X			X			X	X		
1926.1424—Work Area Control	X				X				X	X	
1926.1425—Keeping Clear of the Load					X				X		
1926.1427—Operator Qualification and Certification	X	X	X	X	X				X		
1926.1428—Signal Person Qualifications		X	X		X				X		
1926.1429—Qualifications of Maintenance and Repair Employees									X		
1926.1430—Training	X		X	X	X			X	X	X	

1926.1431—Hoisting Personnel		X			X			X	X	X	
1926.1432—Multiple—Crane/Derrick Lifts— Supplemental Requirements	X				X			X	X		
1926.1433—Design, Construction and Testing		X	X						X	X	
1926.1434—Equipment Modifications			X						X	X	
1926.1435—Tower Cranes	X	X	X	X				X	X		
1926.1436—Derricks		X	X		X			X	X	X	
1926.1437—Floating Cranes/Derricks and Land Cranes/Derricks on Barges	X	X	X		X			X	X	X	
1926.1441—Equipment With a Rated Hoisting/Lifting Capacity of 2,000 Pounds or Less	X	X	X		X				X	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. General Statute (NCGS) 95, Article 22, which is titled “Safety and Health Programs and Committees.”*

#### STANDARD HIGHLIGHTS

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

#### Programs, Plans and Procedures

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

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

- (1) 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.
- (2) 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.
- (3) 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.
- (4) **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.
- (5) A **written checklist** of all potential hazards to *be inspected during the quarterly inspections* required pursuant to G.S. 95-252(c)(4)d, if applicable, including, but not limited to, checking for properly **marked** doors (including exit doors and doors not leading to an exit); properly working fire extinguishers; unlisted hazardous substances, improperly located hazardous substances, or hazardous substances for which there are no **safety data sheets**; doorways or exit pathways that are cluttered; improperly grounded equipment and exposed live wiring and parts; and unguarded machinery. Each item on the aforementioned **written checklist** shall be checked during the *quarterly inspections* and a **copy of the list shall be retained** by the employer for not less than *two years*. All conditions or items deemed to be out of compliance shall be immediately abated, unless circumstances beyond the control of the employer requires a longer period of time.

(6) The employer *shall conduct an annual self-audit* of all required safety and health programs. **Written findings and a statement** of remedial actions taken shall be **retained** for not less than two years. Companies with less than 11 employees that are not required to have safety and health committees *shall appoint a company safety officer* to conduct the *annual self-audit*.

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

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

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

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

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

## Inspections and Tests

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

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



## Recordkeeping

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

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

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

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

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



## Training and Communications

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

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

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

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

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

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

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

## Subchapter 07F—Standards

### SECTION 7F .0200—CONSTRUCTION STANDARDS

**Scope/Application:** *The provisions for the Occupational Safety and Health Standards for Construction, Title 29 of the Code of Federal Regulations Part 1926 promulgated as of April 18, 2012, and exclusive of subsequent amendments, are incorporated by reference except as modified or amended in 13 NCAC 07F .0202 through .0207.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—fall protection measures, bloodborne pathogens program
- Other—Subpart R, Steel Erection, 1910.1030, Bloodborne Pathogens

#### Programs, Plans and Procedures

**7F .0205—Steel Erection—Subpart R—Steel Erection**—additions and amendments to 29 CFR 1926.750 *Scope, through 1926.754 Structural steel assembly.*

- (b)(2) There may be activities that occur during and are part of steel erection where conventional fall protection methods may not offer adequate protection for employees. The employer has the burden of *establishing and determining when to implement employee fall protection measures* as described in 1926.760 or the more protective measures described in 1926.502 “*Fall Protection Systems Criteria and Practices*”. Where non-traditional steel or iron workers (employees not meeting requirements of 1926.761(c)) [Training] are engaged in leading edge work activities six (6) feet or more above lower levels, those employees shall be protected from falling by guardrail systems, personal fall arrest systems or safety nets. Such leading edge work activities include, but are not limited to off loading, stacking, laying out and fastening steel floor decking and metal and non-metal roof decking; positioning and securing exterior curtain walls, window walls, exterior siding systems; and moving from point to point while performing these activities.

**7F .0207—Toxic and Hazardous Substances—Subpart Z—Toxic and Hazardous Substances**—incorporation of the existing standard for Bloodborne Pathogens, 29 CFR 1910.1030, excluding subparagraph (e) HIV and HBV Research Laboratories and Production Facilities, into the Safety & Health Regulations for Construction at 29 CFR 1926.1130. Final rule as published in 56 FR (December 6, 1991) pages 64175–64182, including Appendix A—Hepatitis B Vaccine Declination (Mandatory)—with corrections as published in 57 FR (July 1, 1992) page 29206, and with the following revision to the definition of Occupational Exposure under subsection (b) Definitions: “Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of collateral first aid duties by an employee in the areas of construction, alteration, or repair, including painting and decorating.”

#### Other

**7F .0205—Steel Erection—Subpart R—Steel Erection**—additions and amendments to 29 CFR 1926.750 *Scope, through 1926.754 Structural steel assembly.*

- (b)(2) There may be activities that occur during and are part of steel erection where conventional fall protection methods may not offer adequate protection for employees. The employer has the burden of *establishing and determining when to implement employee fall protection measures* as described in 1926.760 or the more protective measures described in 1926.502 “*Fall Protection Systems Criteria and Practices*”. Where non-traditional steel or iron workers (employees not meeting requirements of 1926.761(c)) [Training] are engaged in leading edge work activities six (6) feet or more above lower levels, those employees shall be protected from falling by guardrail systems, personal fall arrest systems or safety nets. Such leading edge work activities include, but are not limited to off loading, stacking, laying out and fastening steel floor decking and metal and non-metal roof decking; positioning and securing exterior curtain walls, window walls, exterior siding systems; and moving from point to point while performing these activities.

**F .0207—Toxic and Hazardous Substances—Subpart Z—Toxic and Hazardous Substances—incorporation of the existing standard for Bloodborne Pathogens, 29 CFR 1910.1030, excluding subparagraph (e) HIV and HBV Research Laboratories and Production Facilities, into the Safety & Health Regulations for Construction at 29 CFR 1926.1130.** Final rule as published in 56 FR (December 6, 1991) pages 64175–64182, including *Appendix A—Hepatitis B Vaccine Declination (Mandatory)*—with corrections as published in 57 FR (July 1, 1992) page 29206, and with the following revision to the definition of Occupational Exposure under subsection (b) Definitions: “Occupational Exposure means reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious *materials* that may result from the performance of collateral first aid duties by an employee in the areas of construction, alteration, or repair, including painting and decorating.”

**Note:** *The requirements applicable to construction work are identical to those set forth in 1910.1030—Bloodborne Pathogens of this chapter.*

## 1910.1030—BLOODBORNE PATHOGENS

**Scope/Application:** *This section applies to all occupational exposure to blood or other potentially infectious materials as defined by paragraph (b) of this section.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—work controls, exposure control program, gloving policy, written schedules, hepatitis B vaccinations
- Recordkeeping—retention requirements, sharps injury log
- Training and Communications—initial and annual training
- Exposure Monitoring—exposure control program, exposure determination
- Medical Surveillance—evaluations after exposure, information provided to the physician, written opinions
- Qualified Person—healthcare professional
- Signs, Markings and Tags—labels, posted signs

### Programs, Plans and Procedures

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section shall establish a **written Exposure Control Plan** designed to eliminate or minimize employee exposure. *[Reference paragraph (c)(1) for specific information.]*

**1910.1030(c)(1)(iv)**—The **Exposure Control Plan** shall be reviewed and updated at least annually and whenever necessary to reflect new or *modified tasks and procedures* which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

**1910.1030(d)(2)**—*Engineering and work practice controls shall be used to eliminate or minimize employee exposure. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.*

**1910.1030(d)(3)(ix)(D)**—*If an employer in a volunteer blood donation center judges that routine gloving for all phlebotomies is not necessary then the employer shall:*

**1910.1030(d)(3)(ix)(D)(1)**—*Periodically reevaluate this policy.*

**1910.1030(d)(4)(ii)**—General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate **written schedule** for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and *tasks or procedures* being performed in the area.

**1910.1030(f)(1)(i)**—The employer shall make available the hepatitis B vaccine and vaccination series to all employees who have occupational exposure, and post-exposure *evaluation* and follow-up to all employees who have had an exposure incident.

**1910.1030(f)(2)(i)**—Hepatitis B vaccination shall be made available after the employee has received the training required in paragraph (g)(2)(vii)(I) [Information and Training] and within 10 working days of initial assignment to all employees who have occupational exposure unless the employee has previously received the complete hepatitis B vaccination series, antibody testing has revealed that the employee is immune, or the vaccine is contraindicated for medical reasons.

**1910.1030(f)(2)(iv)**—The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer **sign the statement** in appendix A [Hepatitis B Vaccine Declination].

**1910.1030(g)(2)(i)**—The employer shall train each employee with occupational exposure in accordance with the requirements of this section. Such training must be provided at no cost to the employee and during working hours. The employer shall institute a **training program** and ensure employee participation in the **program**. [Reference paragraph (h)(1) for specific information.]

## **Recordkeeping**

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by paragraph (b) [Definitions] of this section shall establish a **written Exposure Control Plan** designed to eliminate or minimize employee exposure. [Reference paragraph (c)(1) for specific information.]

**1910.1030(c)(2)(i)**—Each employer who has an employee(s) with occupational exposure as defined by paragraph (b) [Definitions] of this section shall **prepare an exposure determination**.

**1910.1030(d)(4)(ii)**—General. Employers shall ensure that the worksite is maintained in a clean and sanitary condition. The employer shall determine and implement an appropriate **written schedule** for cleaning and method of decontamination based upon the location within the facility, type of surface to be cleaned, type of soil present, and tasks or procedures being performed in the area.

**1910.1030(f)(2)(iv)**—The employer shall assure that employees who decline to accept hepatitis B vaccination offered by the employer **sign the statement** in appendix A [Hepatitis B Vaccine Declination].

**1910.1030(f)(5)**—**Healthcare Professional's Written Opinion**. The employer shall obtain and provide the employee with a copy of the evaluating **healthcare professional's written opinion** within 15 days of the completion of the evaluation.

**1910.1030(f)(6)**—**Medical Recordkeeping**. Medical records required by this standard shall be **maintained** in accordance with paragraph (h)(1) [Medical Records] of this section.

**1910.1030(h)(1)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee with occupational exposure, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1030(h)(1)(iv)**—The employer shall **maintain the records** required by paragraph (h) [Medical Records] for at least the duration of employment plus 30 years in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1030(h)(4)**—**Transfer of Records**. The employer shall comply with the requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1030(h)(5)(i)**—The employer shall establish and **maintain a sharps injury log** for the recording of percutaneous injuries from contaminated sharps. The information in the **sharps injury log** shall be **recorded** and maintained in such manner as to protect the confidentiality of the injured employee.

**1910.1030(h)(5)(iii)**—The **sharps injury log** shall be **maintained** for the period required by 29 CFR 1904.33 [Record-keeping—Retention and Updating].

## **Training and Communications**

**1910.1030(f)(4)(i)**—The employer shall ensure that the **healthcare professional** responsible for the employee's Hepatitis B vaccination is provided a **copy of this regulation**.



**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*. [Reference paragraph (f)(4) for specific information.]

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days of the completion of the evaluation*.

**1910.1030(g)(2)(i)**—The employer *shall train each employee* with occupational exposure in accordance with the requirements of this section. Such *training* must be provided at no cost to the employee and during working hours. The employer *shall institute a training program and ensure employee participation in the program*. [Reference paragraph (h)(1) for specific information.]

**1910.1030(g)(2)(ii)(A)**—*At the time of initial assignment to tasks where occupational exposure may take place.*

**1910.1030(g)(2)(ii)(B)**—*At least annually thereafter.*

**1910.1030(g)(2)(v)**—Employers *shall provide additional training when changes such as modification of tasks or procedures or institution of new tasks or procedures* affect the employee’s occupational exposure. The additional training may be limited to addressing the new exposures created.

### **Exposure Monitoring**

**1910.1030(c)(1)(i)**—Each employer having an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall establish a written Exposure Control Plan* designed to eliminate or minimize employee exposure. [Reference paragraph (c)(1) for specific information.]

**1910.1030(c)(1)(iv)**—The **Exposure Control Plan** *shall be reviewed and updated at least annually* and whenever necessary to reflect new or *modified tasks and procedures* which affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

**1910.1030(c)(2)(i)**—Each employer who has an employee(s) with occupational exposure as defined by *paragraph (b) [Definitions]* of this section *shall prepare an exposure determination*.

### **Medical Surveillance**

**1910.1030(f)(3)**—**Post-exposure Evaluation and Follow-up**. Following a **report** of an exposure incident, the employer *shall make immediately available to the exposed employee a confidential medical evaluation and follow-up, and additional elements*.

**1910.1030(f)(4)(i)**—The employer *shall ensure* that the **healthcare professional** responsible for the employee’s Hepatitis B vaccination is *provided a copy of this regulation*.

**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*. [Reference paragraph (f)(4) for specific information.]

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days of the completion of the evaluation*.

### **Qualified Person**

**1910.1030(f)(4)(i)**—The employer *shall ensure* that the **healthcare professional** responsible for the employee’s Hepatitis B vaccination is *provided a copy of this regulation*.

**1910.1030(f)(4)(ii)**—The employer *shall ensure* that the **healthcare professional** evaluating an employee after an exposure incident is *provided information*.

**1910.1030(f)(5)**—**Healthcare Professional’s Written Opinion**. The employer *shall obtain and provide the employee with a copy of the evaluating healthcare professional’s written opinion within 15 days of the completion of the evaluation*.

## Signs, Markings and Tags

**1910.1030(d)(2)(xiv)(A)**—A readily observable **label** in accordance with paragraph (g)(1)(i)(H) [Labels] shall be **attached** to the equipment stating which portions remain contaminated.

**1910.1030(d)(4)(iii)(B)(1)(iii)**—**Labeled or color-coded** in accordance with paragraph (g)(1)(i) [Labels] of this standard (containers).

**1910.1030(g)(1)(i)(A)**—Warning **labels** shall be **affixed** to containers of regulated waste, refrigerators and freezers containing blood or other potentially infectious material; and other containers used to store, transport or ship blood or other potentially infectious materials, except as provided in paragraph (g)(1)(i)(E), (F) and (G) [Labels and Signs].

**1910.1030(g)(1)(i)(E)**—Red bags or red containers *may be substituted for labels*.

## SECTION 07F .0600—COMMUNICATION TOWER STANDARDS

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

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

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Inspections and Tests**

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

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

(1) *Initially and daily for each site prior to permitting employees to climb the structure;*

(2) *When safety and health **information** or change in workplace conditions indicates that a new or increased hazard may be present.*

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

(2) All climbing facilities shall be *visually inspected daily at the tower base by a competent person* for rust, corrosion, deterioration, or other hazards. Additionally, the employer shall ensure that the climbing facilities are *visually inspected* for these items, as it is ascended, to the elevation point where work is being performed. If any such hazard is identified during this inspection, employees shall not use the climbing facility until such hazards are abated.

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

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

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

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

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

(B) In addition to the annual inspection, the employer shall designate a competent person who shall visually inspect the gin pole and rigging prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired before use continues;

(C) During each inspection, the qualified or competent person shall inspect the legs and bracing members for bends or distortion;

(D) During each inspection, the qualified or competent person shall inspect the straightness tolerances for the overall assembly (including leg and bracing members);

(E) During each inspection, the qualified or competent person shall visually inspect the welds for quality, deformation, cracks, rust, or pitting or loss of cross sectional area;

(F) During each inspection, the qualified or competent person shall inspect the members for excessive rust or pitting or loss of cross sectional area;

(G) During each inspection, the qualified or competent person shall inspect the sling attachment points for distortion, wear, cracks, and rust;

(I) During each inspection, the qualified or competent person shall inspect side plates on rooster heads for distortion or other damage;

(J) During each inspection, the qualified or competent person shall inspect all attachment hardware, including rigging and parts such as cables, slings, and sling attachment points, shackles, hooks, and sockets for wear, distortion, cracks, and rust.

## Recordkeeping

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

(1) Initially and daily for each site prior to permitting employees to climb the structure;

(2) When safety and health **information** or change in workplace conditions indicates that a new or increased hazard may be present.

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

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

(A) Obtain **verification** from the *third-party rescue team or service* that it is able to respond to a rescue summons in a timely manner;



(B) Obtain **verification** from the third-party rescue team or service that it is proficient with *rescue-related tasks* and equipment as they relate to rescuing climbers from elevated heights on communication structures.

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

**(4) Inspections.**

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

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

**(2) Gin Pole Use.**

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

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

(1) **Training Records.** All **material** related to the **employer's training and education program**, pursuant to 13 NCAC 07F .0609 [Training].

(2) **Medical Records and Non-Ionizing Radiation Exposure Records.** All **medical records** (in accordance to 29 CFR 1910.1020(d)(1)(i)) [Access to Employee Exposure and Medical Records] and **material** related to each analysis using **exposure or medical records** (in accordance with 29 CFR 1910.1020(d)(1)(iii) [Access to Employee Exposure and Medical Records].

(3) **Equipment Inspections and Testing Records.** All **material** related to the **modification, repair, test, calibration or maintenance service** of all equipment.

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

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

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

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

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

(2) A **copy of the training lesson plan** for each topic of instruction *shall be maintained* by the employer.

(3) The **certification record** shall be prepared at the completion of the training required by this Rule and *shall be maintained for the duration of the employee's employment.*

(4) The **most current certification record** *shall be kept available for review* by the Deputy Commissioner of Labor for Occupational Safety and Health or his designee, upon request.

(5) An employer may accept **training records or certificates** for previous training if the employer *verifies that all training and knowledge is current and applicable to the new employee's job duties.*

## Certification

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

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

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

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

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

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

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

## Training and Communications

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

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

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

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

(1) The employer shall ensure that each employee under the **fall protection plan** has been trained as a **qualified climber**.

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

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

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

(A) Ensure at least *two trained and designated rescue employees* are on site when employees are working at heights over six feet on the tower, provided however, where there are only two employees on site, then an employer may comply with the requirements of this Part if one employee *is a trained and designated rescue employee and one employee has been employed for less than nine months and has received **documented orientation*** from the employer outlining steps to take in an emergency.

(C) Train designated rescue employees so they are proficient in the use and maintenance of PPE and high angle rescue equipment needed to *conduct elevated rescues*.

(D) Train designated rescue employees to perform assigned rescue duties to ensure that they become competent to perform such duties, including conducting simulated rescue operations *at least once every 12 months*.

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

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

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

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

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

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

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

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

(2) The **program** shall enable each employee to recognize the hazards of falling and *shall train* each employee in the *procedures to be followed* in order to minimize these hazards.

(3) The employer *shall ensure that each employee has been trained by or under the supervision of a qualified person* in specific areas. [Reference Section 07F .0609—Fall Protection Training for specific requirements.]

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

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

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

(2) Employers shall ensure that each affected employee who works in an electromagnetic energy environment with potential RF exposure in excess of the general population/uncontrolled MPE limits stated in 47 CFR 1.1310 *has access to and understands the specific site information* related to the RF energy and RF fields present at each individual site.

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

### **Competent Person**

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

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

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

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

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

(1) *All climbing jobs shall be planned by a competent person.*

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

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

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

(D) *Train designated rescue employees to perform assigned rescue duties to ensure that they become competent to perform such duties, including conducting simulated rescue operations at least once every 12 months.*

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

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

(B) *In addition to the annual inspection, the employer shall designate a competent person who shall visually inspect the gin pole and rigging prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired before use continues.*

(C) *During each inspection, the qualified or competent person shall inspect the legs and bracing members for bends or distortion.*

- (D) *During each inspection, the qualified or competent person shall inspect the straightness tolerances for the overall assembly (including leg and bracing members).*
- (E) *During each inspection, the qualified or competent person shall visually inspect the welds for quality, deformation, cracks, rust, or pitting or loss of cross sectional area.*
- (F) *During each inspection, the qualified or competent person shall inspect the members for excessive rust or pitting or loss of cross sectional area.*
- (G) *During each inspection, the qualified or competent person shall inspect the sling attachment points for distortion, wear, cracks, and rust.*
- (H) *During each inspection, the qualified or competent person shall ensure that proper bolts are utilized and all associated hardware is in good condition.*
- (I) *During each inspection, the qualified or competent person shall inspect side plates on rooster heads for distortion or other damage.*
- (J) *During each inspection, the qualified or competent person shall inspect all attachment hardware, including rigging and parts such as cables, slings, and sling attachment points, shackles, hooks, and sockets for wear, distortion, cracks, and rust.*
- (K) *During each inspection, the qualified or competent person shall ensure that all problems identified during the inspection are corrected before placing the gin pole into service.*

## Qualified Person

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

#### (4) Inspections.

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



(J) *During each inspection, the qualified or competent person shall inspect all attachment hardware, including rigging and parts such as cables, slings, and sling attachment points, shackles, hooks, and sockets for wear, distortion, cracks, and rust.*

(K) *During each inspection, the qualified or competent person shall ensure that all problems identified during the inspection are corrected before placing the gin pole into service.*

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

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

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

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

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

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

## **Signs, Markings and Tags**

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

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

(I) **Rigging Equipment.**

(C) *Only alloy chains **marked** by the manufacturer with an 8, T, or an A, rated for lifting, shall be used;*

(D) *Only quenched and tempered hooks and shackles shall be used. The **manufacturer's load rating** shall be **stamped** on the product.*

## **SECTION 7F .0700—BLASTING AND USE OF EXPLOSIVES**

**Scope/Application:** *The provisions of Subpart U of Title 29, Part 1926 of the Code of Federal Regulations promulgated as of March 7, 2005, and exclusive of subsequent amendments, are incorporated by reference except as modified or amended in 13 NCAC 07F .0701 through .0716.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—procedures
- Inspections and Tests—stray current survey, inspections
- Recordkeeping—inventory
- Certification—maintain on site
- Training and Communications—fire extinguishers, qualifications
- Medical Surveillance—blaster qualifications
- Competent Person—evaluations
- Qualified Person—blaster-in-charge, flagman
- Signs, Markings and Tags—signs, barricades, flags

## Programs, Plans and Procedures

**7F .0708—Loading of Explosives or Blasting Agents**—Additions and amendments to 29 CFR 1926.905 [*Loading of Explosives or Blasting Agents*] apply throughout the Rules in this Section as follows:

- (a) *Procedures that permit safe and efficient loading shall be established by the Blaster-in-Charge or the employer before loading is started.*

## Inspections and Tests

**7F .0709—Initiation of Explosive Charges-Electric Blasting**—Additions and amendments to 29 CFR 1926.906 [*Initiation of Explosive Charges-Electric Blasting*] apply throughout the Rules in this Section as follows:

- (b) If the presence of extraneous electricity is possible, the blaster *shall conduct a stray current survey*. No holes shall be loaded using electric detonators until the danger of extraneous electricity is eliminated.
- (q) *A blaster shall test blasting circuits. [Reference Section 07F .0709—Initiation of Explosive Charges for specific requirements.]*

**7F .0711—Use of Detonating Cord and Shock Tube**—Additions and amendments to 29 CFR 1926.908 [*Use of Detonating Cord and Shock Tube*] apply throughout the Rules in this Section as follows:

- (g) All detonating cord connections, shock tube connections and splices *shall be inspected* before firing the blast.

**7F .0713—Inspection After Blasting**—Additions and amendments to 29 CFR 1926.910 [*Inspection After Blasting*] apply throughout the **Rules** in this Section as follows:

- (a) Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to dissipate before returning to the blast site. Subsequently, the *blaster shall inspect* the blast site and surrounding rubble for signs of misfires. If a misfire is found, employee access to the blast area shall be controlled pursuant to 1926.911. Where fumes, fire, or dust are a potential hazard (e.g., in tunnels), the muck pile shall be wetted down prior to general employees returning to the blast site.

**7F .0714—Misfires**—Additions and amendments to 29 CFR 1926.911 [*Misfires*] apply throughout the Rules in this Section as follows:

- (b) No work shall be done except that necessary to remove the hazard of the misfire. Only those employees necessary to do the work shall enter the potential blast area. Only the *Blaster-in-Charge, and the absolute minimum number of competent, personnel* (as defined in 29 CFR 1926 Subparts L and P), necessary to assess the situation shall approach the hole to *inspect the misfire*.

## Recordkeeping

**7F .0703—General Provisions**—Additions and amendments to 29 CFR 1926.900 [*General Provisions*] apply throughout the **Rules** in this Section as follows:

- (d) All explosives shall be accounted for at all times. Explosives not being used and not attended shall be kept in a magazine or container that meets the U.S. Bureau of Alcohol, Tobacco and Firearms (hereafter, ATF) storage and access requirements contained in 27 CFR Part 55 [*ATF Explosive Rulings and Procedures*], which is incorporated herein by reference, including any subsequent amendments and editions. Each employer *shall maintain an inventory and use record of all explosives* in that employer's possession. The employer, or *employer authorized person*, shall comply with all applicable **local, State and federal laws and regulations** requiring **notification** of any loss, theft, or unauthorized entry into a magazine or container.



- (k) Precautions shall be taken to prevent accidental discharge of electric detonators from current induced by radar, radio transmitters including 2-way radios and mobile telephones, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:

- (3)(i) The *prominent display of adequate signs*, warning against the use of mobile radio transmitters, (e.g., telephones and 2-way radios) on all roads within 1,000 feet of electric blasting operations. If adherence to the 1,000-foot distance would create an operational handicap, then a *competent person (as defined in 29 CFR 1926 Subparts L and P)* shall be consulted to evaluate the particular situation, and alternative provisions may be made which are designed to prevent any premature firing of electric detonators. A *description of any such alternatives shall be reduced to writing and shall be certified by the competent person consulted as meeting the purposes of this subdivision. The description shall be maintained at the construction during the duration of the work, and shall be available* for inspection by representatives of the Commissioner of Labor.

**7F .0704—Blaster Qualifications.** Additions and amendments to 29 CFR 1926.901 [Blaster Qualifications] apply throughout the Rules in this Section as follows:

- (d) Blasters shall be required by the employer to *furnish evidence satisfactory to the employer of competency* in handling explosives and performing in a safe manner the type of blasting that will be required.

**7F .0708—Loading of Explosives or Blasting Agents—**Additions and amendments to 29 CFR 1926.905 [Loading of Explosives or Blasting Agents] apply throughout the Rules in this Section as follows:

- (t) The blaster shall keep an accurate, *up-to-date record* of explosives, blasting agents, and blasting supplies used in each blast and shall keep an accurate *running inventory* of all explosives and blasting agents in the blaster's custody.

## Certification

**7F .0703—General Provisions—**Additions and amendments to 29 CFR 1926.900 [General Provisions] apply throughout the Rules in this Section as follows:

- (k) Precautions shall be taken to prevent accidental discharge of electric detonators from current induced by radar, radio transmitters including 2-way radios and mobile telephones, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:

- (3)(i) The *prominent display of adequate signs*, warning against the use of mobile radio transmitters, (e.g., telephones and 2-way radios) on all roads within 1,000 feet of electric blasting operations. If adherence to the 1,000-foot distance would create an operational handicap, then a *competent person (as defined in 29 CFR 1926 Subparts L and P)* shall be consulted to evaluate the particular situation, and alternative provisions may be made which are designed to prevent any premature firing of electric detonators. A *description of any such alternatives shall be reduced to writing and shall be certified by the competent person consulted as meeting the purposes of this subdivision. The description shall be maintained at the construction during the duration of the work, and shall be available* for inspection by representatives of the Commissioner of Labor.

## Training and Communications

**7F .0704—Blaster Qualifications.** Additions and amendments to 29 CFR 1926.901 [Blaster Qualifications] apply throughout the Rules in this Section as follows:

- (c) Blasters *shall be qualified, by reason of training, knowledge, or experience*, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of ***state, federal and local laws and regulations*** which pertain to explosives.
- (e) Blasters *shall be knowledgeable* in the use of each type of blasting method used.
- (f) Pursuant to 29 CFR 1926.21(b) [Safety Training and Education], the employer shall instruct each employee in the recognition and avoidance of unsafe conditions and the ***regulations*** applicable to the employee's work and work environment.

**7F .0705—Surface Transportation of Explosives**—Additions and amendments to 29 CFR 1926.902 [Surface Transportation of Explosives] apply throughout the Rules in this Section as follows:

- (b) Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a licensed driver. The driver *shall be familiar with* the ***local, state, and federal regulations*** governing the transportation of explosives.
- (i) Each vehicle used for transportation of explosives shall be equipped with a fully charged fire extinguisher, in good condition (as described in 29 CFR 1926.150). An extinguisher, approved by a ***nationally recognized testing laboratory***, of not less than 10-ABC rating will meet the minimum requirement. The driver *shall be trained in the use of the extinguisher on the vehicle*.

#### Medical Surveillance

**7F .0704—Blaster Qualifications.** Additions and amendments to 29 CFR 1926.901 [Blaster Qualifications] apply throughout the Rules in this Section as follows:

- (b) Blasters and others authorized to handle or transport explosive materials or conduct blast site activities *shall be in sufficiently good physical condition* to perform the work safely and not be addicted to, or under the influence of, narcotics, intoxicants, or similar types of drugs.

#### Competent Person

**7F .0703—General Provisions**—Additions and amendments to 29 CFR 1926.900 [General Provisions] apply throughout the Rules in this Section as follows:

- (k) Precautions shall be taken to prevent accidental discharge of electric detonators from current induced by radar, radio transmitters including 2-way radios and mobile telephones, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:
  - (3)(i) The *prominent display of adequate signs*, warning against the use of mobile radio transmitters, (e.g., telephones and 2-way radios) on all roads within 1,000 feet of electric blasting operations. If adherence to the 1,000-foot distance would create an operational handicap, then a *competent person (as defined in 29 CFR 1926 Subparts L and P) shall be consulted to evaluate* the particular situation, and alternative provisions may be made which are designed to prevent any premature firing of electric detonators. *A description of any such alternatives shall be reduced to writing and shall be certified by the competent person consulted as meeting the purposes of this subdivision. The description shall be maintained at the construction during the duration of the work, and shall be available* for inspection by representatives of the Commissioner of Labor.

#### Qualified Person

**7F .0703—General Provisions**—Additions and amendments to 29 CFR 1926.900 [General Provisions] apply throughout the Rules in this Section as follows:

- (a) The employer *shall permit only persons qualified pursuant to §1926.901 [Blaster Qualifications]* to handle and use explosives. A blaster *shall be in charge of each blasting operation; hereafter, referred to as the Blaster-in-Charge.*
- (n) Delivery and issue of explosives *shall only be made by and to authorized persons* (as defined in 27 CFR Part 55) and into magazines or temporary storage or handling areas that meet the **ATF storage requirements** contained in 27 CFR Part 55 *[ATF Explosive Rulings and Procedures]*.

**7F .0704—Blaster Qualifications.** Additions and amendments to 29 CFR 1926.901 *[Blaster Qualifications]* apply throughout the Rules in this Section as follows:

- (c) Blasters *shall be qualified, by reason of training, knowledge, or experience,* in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of **state, federal and local laws and regulations** which pertain to explosives.

**7F .0708—Loading of Explosives or Blasting Agents—**Additions and amendments to 29 CFR 1926.905 *[Loading of Explosives or Blasting Agents]* apply throughout the Rules in this Section as follows:

- (t) The blasters *shall keep an accurate, up-to-date **record** of explosives, blasting agents, and blasting supplies used in each blast and shall keep an accurate **running inventory*** of all explosives and blasting agents in the blaster's custody.

**7F .0709—Initiation of Explosive Charges-Electric Blasting.** Additions and amendments to 29 CFR 1926.906 *[Initiation of Explosive Charges-Electric Blasting]* apply throughout the Rules in this Section as follows:

- (b) If the presence of extraneous electricity is possible, the blaster *shall conduct a stray current survey.* No holes shall be loaded using electric detonators until the danger of extraneous electricity is eliminated.
- (q) A blaster *shall test blasting circuits. [Reference Section 07F .0709—Initiation of Explosive Charges for specific requirements.]*
- (s) The blaster shall assure that all connections are made from the bore hole back to the source of firing current, and that the leading wires remain shorted, except during testing, and *not connected to the blasting machine or other source of current until the blast is to be fired. Only the blaster, or a qualified person* (as described in 1926.900(a)—*General Provisions* and 1926.901—*Blaster Qualifications*) under the direct control of the blaster, shall make lead wire connections or fire the shot.

**7F .0712—Firing the Blast—**Additions and amendments to 29 CFR 1926.909 *[Firing the Blast]* apply throughout the Rules in this Section as follows:

- (a) The *Blaster-in-Charge shall establish a **code** of blasting signals and all blast site employees shall familiarize themselves with and conform to the **code**.*
- (c) *Flagmen shall be safely stationed* on highways which pass through the blast area so as to stop traffic during blasting.

**7F .0714—Misfires—**Additions and amendments to 29 CFR 1926.911 *[Misfires]* apply throughout the **Rules** in this Section as follows:

- (b) No work shall be done except that necessary to remove the hazard of the misfire. Only those employees necessary to do the work shall enter the potential blast area. Only the *Blaster-in-Charge, and the absolute minimum number of competent, personnel* (as defined in 29 CFR 1926 Subparts L and P), necessary to assess the situation shall approach the hole to *inspect the misfire.*

**7F .0715—Underwater Blasting**—Additions and amendments to 29 CFR 1926.912 [*Underwater Blasting*] apply throughout the Rules in this Section as follows:

- (a) In underwater blasting, no shot shall be fired without *the approval of the Blaster-in-Charge*.
- (h) Prior to firing the blast, the *blaster shall determine the method(s)* that will be used for detecting misfires and take preparatory steps (e.g., noting obvious indications of misfire, attaching float(s) that will be released by the firing, staging underwater cameras, or other appropriate means). Misfires shall be handled in accordance with the requirements of 1926.911 [*Misfires*].

### Signs, Markings and Tags

**7F .0703—General Provisions**—Additions and amendments to 29 CFR 1926.900 [*General Provisions*] apply throughout the Rules in this Section as follows:

- (k) Precautions shall be taken to prevent accidental discharge of electric detonators from current induced by radar, radio transmitters including 2-way radios and mobile telephones, lightning, adjacent powerlines, dust storms, or other sources of extraneous electricity. These precautions shall include:
  - (3)(i) The *prominent display of adequate signs*, warning against the use of mobile radio transmitters, (e.g., telephones and 2-way radios) on all roads within 1,000 feet of electric blasting operations. If adherence to the 1,000-foot distance would create an operational handicap, then a *competent person (as defined in 29 CFR 1926 Subparts L and P) shall be consulted to evaluate* the particular situation, and alternative provisions may be made which are designed to prevent any premature firing of electric detonators. *A description of any such alternatives shall be reduced to writing and shall be certified by the competent person consulted as meeting the purposes of this subdivision. The description shall be maintained at the construction during the duration of the work, and shall be available* for inspection by representatives of the Commissioner of Labor.
- (u) To guard against unauthorized entry or initiation of a blast, a blast site shall be attended if loading is suspended or loaded holes are awaiting firing. Additionally, the blast site *shall be barricaded, posted, and flagged* as necessary to prevent unauthorized access.

**7F .0705—Surface Transportation of Explosives.** Additions and amendments to 29 CFR 1926.902 [*Surface Transportation of Explosives*] apply throughout the Rules in this Section as follows:

- (h) Every motor vehicle or conveyance used for transporting explosives *shall be marked or placarded on both sides, the front, and the rear* with the word “Explosives” in red letters, not less than 4 inches in height, on white background. The motor vehicle or conveyance may *also display, in such a manner that it will be readily visible* from all directions, a red flag 18 inches by 30 inches, with the word “Explosives” *painted, stamped, or sewed* thereon, in white letters, at least 6 inches in height.

**7F .0706—Underground Transportation of Explosives**—Additions and amendments to 29 CFR 1926.903 [*Underground Transportation of Explosives*] apply throughout the Rules in this Section as follows:

- (m) Any powder car or conveyance used for transporting explosives or blasting agents *shall bear a reflecting sign on each side* with the word “Explosives”. The sign’s letters shall be a minimum of 4 inches in height and shall be on a background of sharply contrasting color.

**7F .0708—Loading of Explosives or Blasting Agents**—Additions and amendments to 29 CFR 1926.905 [*Loading of Explosives or Blasting Agents*] apply throughout the Rules in this Section as follows:

- (s) Areas in which loading is suspended or loaded holes are awaiting firing *shall be attended, and barricaded, posted, or flagged* as needed to guard against unauthorized entry or initiation.



# SECTION 3

## 29 CFR 1904 Subparts B–F—Recordkeeping

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

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

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

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

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

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

**1904.32(a)(5)**—*Post the summary.*

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

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

**1904.41(a)(1)**—*Annual electronic submission of OSHA Form 300A Summary of Work Related Injuries and Illnesses* by establishments with 250 or more employees. If your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to keep *records*, then you must *electronically submit* information from *OSHA Form 300A Summary of Work Related Injuries and Illnesses* to OSHA or OSHA's designee. You *must submit* the information once a year, no later than the date listed in *paragraph (c)* of this section of the year after the calendar year covered by the *form* (for example, 2019 for the 2018 form).

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

## Recordkeeping

**1904.1(a)(1)**—Partial Exemption for Employers With 10 or Fewer Employees—If your company had ten (10) or fewer employees at all times during the last calendar year, you do not need to keep **OSHA injury and illness records** unless OSHA or the BLS informs you in **writing** that you must keep **records** under § 1904.41 [Annual OSHA Injury and Illness Survey of Ten or More Employers] or § 1904.42 [Requests From the Bureau of Labor Statistics for Data]. However, as required by § 1904.39 [Reporting Fatalities and Multiple Hospitalization Incidents to OSHA], all employers covered by the OSH Act must report to OSHA any workplace incident that results in a fatality or the hospitalization of three or more employees.

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

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

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

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

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

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

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

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

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

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

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

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

**1904.41(a)(1)**—*Annual electronic submission of OSHA Form 300A Summary of Work Related Injuries and Illnesses* by establishments with 250 or more employees. If your establishment had 250 or more employees at any time during the previous calendar year, and this part requires your establishment to keep **records**, then you must *electronically submit* information from **OSHA Form 300A Summary of Work Related Injuries and Illnesses to OSHA** or OSHA's designee. You *must submit* the information once a year, no later than the date listed in *paragraph (c)* of this section of the year after the calendar year covered by the form (for example, 2019 for the 2018 form).

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

## Certification

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

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

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

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

## Training and Communications

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

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

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

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

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

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



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

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

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

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

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

## Signs, Markings and Tags

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

**1904.32(a)(5)**—*Post the summary.*

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

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

# SECTION 4

## 29 CFR 1926 Subpart C—General Safety and Health Provisions

### 1926.20—GENERAL SAFETY AND HEALTH PROVISIONS

**Scope/Application:** *Section 107 of the Act requires that it shall be a condition of each contract which is entered into under legislation subject to Reorganization Plan Number 14 of 1950 (64 Stat. 1267), as defined in 1926.12, and is for construction, alteration, and/or repair, including painting and decorating, that no contractor or subcontractor for any part of the contract work shall require any laborer or mechanic employed in the performance of the contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health or safety.*

*The standards contained in this part [1926] shall apply with respect to employments performed in a workplace in a State, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, Trust Territory of the Pacific Islands, Wake Island, Outer Continental Shelf lands defined in the Outer Continental Shelf Lands Act, Johnston Island, and the Canal Zone.*

*If a particular standard is specifically applicable to a condition, practice, means, method, operation, or process, it shall prevail over any different general standard which might otherwise be applicable to the same condition, practice, means, method, operation, or process.*

*On the other hand, any standard shall apply according to its terms to any employment and place of employment in any industry, even though particular standards are also prescribed for the industry to the extent that none of such particular standards applies.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—initiate and maintain programs, training program
- Inspections and Tests—frequent and regular inspections
- Training and Communications—qualified employees, training program
- Competent Person—inspections
- Qualified Person—qualified
- Signs, Markings and Tags—equipment, tools, machines and materials identified as unsafe

#### Programs, Plans and Procedures

**1926.20(b)(1)**—It shall be the responsibility of the employer *to initiate and maintain such **programs*** as may be necessary to comply with this part.

**1926.20(f)(2)**—*Training. **Standards** in this part requiring training on hazards and related matters, such as standards requiring that employees receive training or that the employer train employees, provide training to employees, or institute or implement a **training program**, impose a separate compliance duty with respect to each employee covered by the requirement. The employer must train each affected employee in the manner required by the standard, and each failure to train an employee may be considered a separate violation.*

#### Inspections and Tests

**1926.20(b)(2)**—*Such **programs** shall provide for frequent and regular inspections* of the job sites, materials, and equipment to be made by *competent persons* designated by the employers.

#### Training and Communications

**1926.20(b)(4)**—The employer shall permit only those *employees qualified by training or experience* to operate equipment and machinery.

**1926.20(f)(2)—Training.** *Standards in this part requiring training on hazards and related matters, such as standards requiring that employees receive training or that the employer train employees, provide training to employees, or institute or implement a **training program**, impose a separate compliance duty with respect to each employee covered by the requirement. The employer must train each affected employee in the manner required by the standard, and each failure to train an employee may be considered a separate violation.*

### **Competent Person**

**1926.20(b)(2)—***Such **programs** shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by *competent persons* designated by the employers.*

### **Qualified Person**

**1926.20(b)(4)—**The employer shall permit only those *employees qualified by training or experience* to operate equipment and machinery.

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

**1926.20(b)(3)—**The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this part is prohibited. *Such machine, tool, material, or equipment shall either be identified as unsafe by **tagging or locking** the controls to render them inoperable or shall be physically removed from its place of operation.*

## **1926.21—SAFETY TRAINING AND EDUCATION**

***Scope/Application:*** *General requirements. The Secretary shall, pursuant to section 107(f) of the Act, establish and supervise programs for the education and training of employers and employees in the recognition, avoidance and prevention of unsafe conditions in employments covered by the act.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—training programs, procedures
- Training and Communications—instruct employees

### **Programs, Plans and Procedures**

**1926.21(b)(1)—**The employer *should avail himself of the **safety and health training programs*** the Secretary provides.

**1926.21(b)(4)—**In job site areas where harmful plants or animals are present, employees who may be exposed *shall be instructed* regarding the potential hazards, and how to avoid injury, and the *first aid procedures* to be used in the event of injury.

### **Training and Communications**

**1926.21(b)(2)—**The employer *shall instruct each employee* in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.

**1926.21(b)(3)—**Employees required to handle or use poisons, caustics, and other harmful substances *shall be instructed* regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene, and personal protective measures required.

**1926.21(b)(4)**—In job site areas where harmful plants or animals are present, employees who may be exposed *shall be instructed* regarding the potential hazards, and how to avoid injury, and the *first aid procedures* to be used in the event of injury.

**1926.21(b)(5)**—Employees required to handle or use flammable liquids, gases, or toxic materials *shall be instructed* in the safe handling and use of these *materials* and made aware of the specific requirements contained in *Subpart D [Occupational Health and Environmental Controls]*, *Subpart F [Fire Protection and Prevention]* and other applicable subparts of this part.

## **1926.24—FIRE PROTECTION AND PREVENTION**

**Scope/Application:** *The employer shall be responsible for the development and maintenance of an effective fire protection and prevention program at the job site throughout all phases of the construction, repair, alteration, or demolition work. The employer shall ensure the availability of the fire protection and suppression equipment required by Subpart F [Fire Protection and Prevention] of this part.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—fire protection and prevention program at job site

### **Programs, Plans and Procedures**

**1926.24**—The employer *shall be responsible for the development and maintenance of an effective **fire protection and prevention program*** at the job site throughout all phases of the construction, repair, alteration, or demolition work. The employer shall ensure the availability of the fire protection and suppression equipment required by *Subpart F [Fire Protection and Prevention]* of this part.

## **1926.25—HOUSEKEEPING**

**Scope/Application:** *During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—housekeeping done at regular and frequent intervals

### **Programs, Plans and Procedures**

**1926.25(b)**—Combustible scrap and debris *shall be removed at regular intervals* during the course of construction. Safe means shall be provided to facilitate such removal.

**1926.25(c)**—Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc. shall be equipped with covers. Garbage and other waste *shall be disposed of at frequent and regular intervals*.

## 1926.33—ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1020 [Access to Employee Exposure and Medical Records] of this chapter.*

### 1910.1020—ACCESS TO EMPLOYEE EXPOSURE AND MEDICAL RECORDS

**Scope/Application:** *The purpose of this section is to provide employees and their designated representatives a right of access to relevant exposure and medical records; and to provide representatives of the Assistant Secretary a right of access to these records in order to fulfill responsibilities under the Occupational Safety and Health Act. Access by employees, their representatives, and the Assistant Secretary is necessary to yield both direct and indirect improvements in the detection, treatment, and prevention of occupational disease. Each employer is responsible for assuring compliance with this section, but the activities involved in complying with the access to medical records provisions can be carried out, on behalf of the employer, by the **physician** or other health care personnel in charge of employee medical records. This section applies to all employee exposure and medical records, and analyses thereof, of such employees, whether or not the records are mandated by specific occupational safety and health standards. The requirements apply to all industries and employers.*

#### STANDARD HIGHLIGHTS

- Recordkeeping—retention requirements, safety data sheets
- Training and Communications—inform employees

#### Recordkeeping

**1910.1020(d)(1)(i)**—Employee **medical records**. The **medical record** for each employee shall be preserved and **maintained** for at least the duration of employment plus thirty (30) years.

**1910.1020(d)(1)(ii)**—Employee **exposure records**. Each employee **exposure record** shall be preserved and **maintained** for at least thirty (30) years.

**1910.1020(d)(1)(ii)(A)**—**Background data** to environmental (workplace) monitoring or measuring, such as **laboratory reports** and **worksheets**, need only be **retained** for one (1) year so long as the **sampling results**, the collection methodology (**sampling plan**), a **description** of the **analytical and mathematical methods** used, and a summary of other **background data** relevant to interpretation of the **results obtained**, are **retained** for at least thirty (30) years.

**1910.1020(d)(1)(ii)(B)**—**Safety data sheets** and paragraph (c)(5)(iv) [Employee Exposure Record] concerning the identity of a substance or agent need not be **retained** for any specified period as long as some **record** of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used is **retained** for at least thirty (30) years. [Reference **Safety data sheets** must be **kept** for those chemicals currently in use that are effected by the Hazard Communication Standard in accordance with 29 CFR 1910.1200(g) [Hazard Communication].]

**1910.1020(d)(1)(ii)(C)**—**Biological monitoring results** designated as **exposure records** by specific occupational safety and health standards shall be preserved and **maintained** as required by the specific standard.

**1910.1020(d)(1)(iii)**—Analyses using **exposure or medical records**. Each analysis using **exposure or medical records** shall be preserved and **maintained** for at least thirty (30) years.

**1910.1020(e)(1)(i)**—Whenever an employee or designated representative requests access to a **record**, the employer shall assure that access is provided in a reasonable time, place, and manner. If the employer cannot reasonably *provide access to the record within fifteen (15) working days*, the employer shall *within the fifteen (15) working days* apprise the employee or designated representative requesting the **record** of the reason for the delay and the earliest date when the **record** can be made **available**.

**1910.1020(g)(1)**—Upon an employee's first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section specific information. [Reference paragraph (g)(1) for specific information.]

**1910.1020(g)(2)**—Each employer shall keep a **copy** of this **section** and its appendices, and make **copies** readily **available**, upon request, to employees. The employer shall also distribute to current employees any **informational materials** concerning this section which are made **available** to the employer by the Assistant Secretary of Labor for Occupational Safety and Health.



**1910.1020(h)(1)**—Whenever an employer is ceasing to do business, the employer *shall transfer all **records** subject to this section to the successor employer. The successor employer shall receive and **maintain** these **records**.*

**1910.1020(h)(2)**—Whenever an *employer is ceasing to do business and there is no successor employer* to receive and **maintain** the **records** subject to this standard, the employer *shall notify affected current employees of their rights of access to **records** at least three (3) months prior to the cessation of the employer’s business.*

### **Training and Communications**

**1910.1020(g)(1)**—*Upon an employee’s first entering into employment, and at least annually thereafter, each employer shall inform current employees covered by this section specific information. [Reference paragraph (g)(1) for specific information.]*

**1910.1020(h)(2)**—Whenever an *employer is ceasing to do business and there is no successor employer* to receive and **maintain** the **records** subject to this standard, the employer *shall notify affected current employees of their rights of access to **records** at least three (3) months prior to the cessation of the employer’s business.*

## **1926.34—MEANS OF EGRESS**

**Scope/Application:** *This section applies to every building or structure exits to be so arranged and maintain as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied.*

**Exceptions:** *No lock or fastening to prevent free escape from the inside of any building shall be installed except in mental, penal, or corrective institutions where supervisory personnel is continually on duty and effective provisions are made to remove occupants in case of fire or other emergency.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—marked exits

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

**1926.34(b)**—“Exit **marking**.” Exits shall be **marked** by a readily visible **sign**. Access to exits shall be **marked** by readily visible **signs** in all cases where the exit or way to reach it is not immediately visible to the occupants.

## **1926.35—EMPLOYEE EMERGENCY ACTION PLANS**

**Scope/Application:** *This section applies to all emergency action plans required by a particular OSHA standard.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—written emergency action plan
- Recordkeeping—written plan
- Training and Communications—review plan initially and after changes

### **Programs, Plans and Procedures**

**1926.35(a)**—“Scope and application.” This section *applies to all **emergency action plans** required by a particular OSHA standard. The **emergency action plan** shall be in **writing** (except as provided in the last sentence of paragraph (e)(3) of this section) and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies. [Reference paragraph (b) for program elements.]*

**1926.35(c)(1)**—The employer *shall establish an employee alarm system which complies with § 1926.159 [Employer Alarm Systems].*

**1926.35(d)**—“Evacuation.” The employer *shall establish in the **emergency action plan*** the types of evacuation to be used in emergency circumstances.

**1926.35(e)(3)**—The employer *shall review with each employee upon initial assignment those parts of the **plan** which the employee must know to protect the employee in the event of an emergency. The **written plan** shall be **kept** at the workplace and made **available** for employee review. For those employers with 10 or fewer employees the **plan** may be communicated orally to employees and the employer need not **maintain** a **written plan**.*

## **Recordkeeping**

**1926.35(a)**—“Scope and application.” This section *applies to all **emergency action plans** required by a particular OSHA standard. The **emergency action plan** shall be in **writing** (except as provided in the last sentence of paragraph (e)(3) of this section) and shall cover those designated actions employers and employees must take to ensure employee safety from fire and other emergencies. [Reference paragraph (b) for program elements.]*

**1926.35(e)(3)**—The employer *shall review with each employee upon initial assignment those parts of the plan which the employee must know to protect the employee in the event of an emergency. The **written plan** shall be kept at the workplace and made **available** for employee review. For those employers with 10 or fewer employees the **plan** may be communicated orally to employees and the employer need not **maintain** a **written plan**.*

## **Training and Communications**

**1926.35(e)(1)**—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.*

**1926.35(e)(2)**—The employer *shall review the **plan** with each employee covered by the **plan** at the following times:*

**1926.35(e)(2)(i)**—*Initially when the **plan** is developed.*

**1926.35(e)(2)(ii)**—*Whenever the employee’s responsibilities or designated actions under the **plan** change.*

**1926.35(e)(2)(iii)**—*Whenever the **plan** is changed.*

**1926.35(e)(3)**—The employer *shall review with each employee upon initial assignment those parts of the **plan** which the employee must know to protect the employee in the event of an emergency. The **written plan** shall be **kept** at the workplace and made **available** for employee review. For those employers with 10 or fewer employees the **plan** may be communicated orally to employees and the employer need not **maintain** a **written plan**.*



## 29 CFR 1926 Subpart D—Occupational Health and Environmental Controls

### 1926.50—MEDICAL SERVICES AND FIRST AID

**Scope/Application:** *This section applies to all employers to insure the availability of medical personnel for advice and consultation on matters of occupational health. Provisions shall be made prior to commencement of the project for prompt medical attention in case of serious injury.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—first aid kit checked initially and weekly
- Recordkeeping—documentation for first aid training
- Certification—first aid training
- Training and Communications—first aid training, verification, first aid certificate
- Signs, Markings and Tags—posting emergency phone numbers

#### Inspections and Tests

**1926.50(d)(2)**—The contents of the *first aid kit* shall be placed in a weatherproof container with individual sealed packages for each type of item, and *shall be checked by the employer before being sent out on each job and at least weekly on each job* to ensure that the expended items are replaced.

#### Recordkeeping

**1926.50(c)**—In the absence of an infirmary, clinic, hospital, or **physician**, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, *a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite* to render first aid.

#### Certification

**1926.50(c)**—In the absence of an infirmary, clinic, hospital, or **physician**, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, *a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite* to render first aid.

#### Training and Communications

**1926.50(c)**—In the absence of an infirmary, clinic, hospital, or **physician**, that is reasonably accessible in terms of time and distance to the worksite, which is available for the treatment of injured employees, *a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite* to render first aid.

#### Signs, Markings and Tags

**1926.50(f)**—In areas where 911 is not available, the **telephone numbers** of the **physicians**, hospitals, or ambulances *shall be conspicuously posted*.

## 1926.51—SANITATION

**Scope/Application:** *This section applies to all places of employment as it related to potable and nonpotable water, food handling, and restroom facilities.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—extermination program
- Signs, Markings and Tags—signs posted

#### Programs, Plans and Procedures

**1926.51(h)**—*Vermin control.* Every enclosed workplace shall be so constructed, equipped, and maintain, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin. A *continuing and effective extermination program* shall be instituted where their presence is detected.

#### Signs, Markings and Tags

**1926.51(b)(1)**—Outlets for nonpotable water, such as water for industrial or firefighting purposes only, *shall be identified by signs* meeting the requirements of *subpart G [Signs, Signal and Barricades]* of this part, to indicate clearly that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

## 1926.52—OCCUPATIONAL NOISE EXPOSURE

**Scope/Application:** *This section applies to employee protection against the effects of noise exposure shall be provided when the sound levels exceed those shown in Table D-2 [Permissible Noise Exposures] of this section when measured on the A-scale of a standard sound level meter at slow response.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—administrative and engineering controls, hearing conservation program

#### Programs, Plans and Procedures

**1926.52(b)**—*When employees are subjected to sound levels exceeding those listed in Table D-2 [Permissible Noise Exposures] of this section, feasible administrative or engineering controls shall be utilized.* If such controls fail to reduce sound levels within the levels of the table, personal protective equipment as required in *subpart E*, shall be provided and used to reduce sound levels within the levels of the table.

**1926.52(d)(1)**—In all cases where the sound levels exceed the values shown herein [*Table D-2—Permissible Noise Exposures*], a *continuing, effective hearing conservation program* shall be administered.

## 1926.53—IONIZING RADIATION

**Scope/Application:** *In construction and related activities involving the use of sources of ionizing radiation, the pertinent provisions of the Nuclear Regulatory Commission Standards for Protection Against Radiation (10 CFR part 20), relating to protection against occupational radiation exposure, shall apply.*

### STANDARD HIGHLIGHTS

- Training and Communications—trained competent person
- Competent Person—specially trained
- Other—Reference 1910.1096

### Training and Communications

**1926.53(b)**—Any activity which involves the use of radioactive *materials* or X-rays, whether or not under license from the Nuclear Regulatory Commission, *shall be performed by competent persons specially trained in the proper and safe operation of such equipment.* In the case of *materials* used under **Commission license**, only persons actually **licensed**, or *competent persons* under direction and supervision of the **licensee**, *shall perform such work.*

### Competent Person

**1926.53(b)**—Any activity which involves the use of radioactive *materials* or X-rays, whether or not under license from the Nuclear Regulatory Commission, *shall be performed by competent persons specially trained in the proper and safe operation of such equipment.* In the case of *materials* used under **Commission license**, only persons actually **licensed**, or *competent persons* under direction and supervision of the **licensee**, *shall perform such work.*

### Other

[The requirements applicable to construction work under *paragraphs (c) through (r)* of this section are identical to those set forth at *paragraphs (a) through (p)* of 1910.1096—Ionizing Radiation of this chapter.]

## 1910.1096—IONIZING RADIATION

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

### STANDARD HIGHLIGHTS

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

### Inspections and Tests

**1910.1096(f)(3)(i)**—*Initial tests, inspections, and checks of the signal-generating system shall be made to verify that the fabrication and installation were made in accordance with **design plans and specifications** and to develop a thorough knowledge of the performance of the system and all components under normal and hostile conditions.*

**1910.1096(f)(3)(ii)**—*Once the system has been placed in service, periodic tests, inspections, and checks shall be made to minimize the possibility of malfunction.*

**1910.1096(f)(3)(iii)**—*Following significant alterations or revisions to the system, tests and checks similar to the initial installation tests shall be made.*

**1910.1096(f)(3)(vi)**—*In addition to the initial startup and operating tests, periodic scheduled performance tests and status checks must be made to insure that the system is at all times operating within design limits and capable of the required response.*

**1910.1096(f)(3)(vii)**—*Periodic tests shall be scheduled on the basis of need, experience, difficulty, and disruption of operations. The entire system should be operationally tested at least quarterly.*

## **Recordkeeping**

**1910.1096(b)(2)(iii)**—The employer ***maintains adequate past and current exposure records*** which show that the addition of such a dose will not cause the individual to exceed the amount authorized in this subparagraph. As used in this subparagraph *Dose to the whole body* shall be deemed to include any dose to the whole body, gonad, active bloodforming organs, head and trunk, or lens of the eye.

**1910.1096(i)(3)**—Each employer to whom this section applies ***shall post a current copy of its provisions and a copy of the operating procedures*** applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these ***documents*** on the way to and from their place of employment, or shall keep such ***documents available*** for examination of employees upon request.

**1910.1096(m)(1)**—In addition to any ***notification*** required by *paragraph (1)* of this section each employer ***shall make a report in writing within 30 days to the Assistant Secretary of Labor*** or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; or under *paragraph (p)(2) [Nuclear Regulatory Commission Licenses]* of this section, or the requirements of the laws and regulations of States named in *paragraph (p)(3) [Nuclear Regulatory Commission Licenses]* of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each ***report*** required under this paragraph shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

**1910.1096(m)(2)**—In any case where an employer is required pursuant to the provisions of this paragraph to report to the U.S. Department of Labor any exposure of an individual to radiation or to concentrations of radioactive material, the employer ***shall also notify such individual of the nature and extent of exposure. Such notice shall be in writing*** and shall contain the following ***statement***: “You should preserve this ***report*** for future reference.”

**1910.1096(n)(1)**—Every employer ***shall maintain records of the radiation exposure*** of all employees for whom personnel monitoring is required under *paragraph (d) [Precautionary Procedures and Personal Monitoring]* of this section and advise each of his employees of his individual exposure ***on at least an annual basis***.

**1910.1096(n)(2)**—Every employer ***shall maintain records in the same units used in tables in paragraph (b) [Exposure of Individuals to Radiation in Restricted Areas]*** of this section and *appendix B to 10 CFR Part 20*.

**1910.1096(o)(1)**—At the request of a former employee, an employer ***shall furnish to the employee a report of the employee's exposure to radiation*** as shown in ***records maintained*** by the employer pursuant to *paragraph (n)(1) [Records]* of this section. ***Such report shall be furnished within 30 days from the time the request is made, and shall cover each calendar quarter of the individual's employment involving exposure to radiation or such lesser period as may be requested by the employee. The report shall also include the results of any calculations and analysis of radioactive material deposited in the body of the employee. The report shall be in writing and contain the following statement: “You should preserve this report for future reference.”***

## **Training and Communications**

**1910.1096(f)(3)(viii)**—All employees whose work may necessitate their presence in an area covered by the signal ***shall be made familiar*** with the actual sound of the signal-preferably as it sounds at their work location. Before placing the system into operation, all employees normally working in the area ***shall be made acquainted*** with the signal by actual demonstration at their work locations.

**1910.1096(i)(2)**—All individuals working in or frequenting any portion of a radiation area ***shall be informed*** of the occurrence of radioactive materials or of radiation in such portions of the radiation area; ***shall be instructed*** in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure; ***shall be instructed*** in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and ***shall be advised*** of reports of radiation exposure which employees may request pursuant to the regulations in this section.

**1910.1096(l)(1)**—*Immediate notification.* Each employer shall immediately notify the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

**1910.1096(l)(1)(i)**—*Exposure of the whole body* of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual to 150 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation.

**1910.1096(l)(1)(ii)**—*The release of radioactive material in concentrations which*, if averaged over a period of 24 hours, would exceed 5,000 times the limit specified for such materials in Table II of appendix B to 10 CFR part 20.

**1910.1096(l)(2)**—*Twenty-four hour notification.* Each employer shall within 24 hours following its occurrence notify the Assistant Secretary of Labor or his duly authorized representative for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and applicable regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, by telephone or telegraph of any incident involving radiation which may have caused or threatens to cause:

**1910.1096(l)(2)(i)**—*Exposure of the whole body* of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation.

**1910.1096(m)(1)**—In addition to any **notification** required by paragraph (1) of this section each employer shall make a **report in writing** within 30 days to the Assistant Secretary of Labor or his duly authorized representative, for employees not protected by the Nuclear Regulatory Commission by means of 10 CFR part 20; or under paragraph (p)(2) [Nuclear Regulatory Commission Licenses] of this section, or the requirements of the laws and regulations of States named in paragraph (p)(3) [Nuclear Regulatory Commission Licenses] of this section, of each exposure of an individual to radiation or concentrations of radioactive material in excess of any applicable limit in this section. Each **report** required under this paragraph shall describe the extent of exposure of persons to radiation or to radioactive material; levels of radiation and concentration of radioactive material involved, the cause of the exposure, levels of concentrations; and corrective steps taken or planned to assure against a recurrence.

**1910.1096(m)(2)**—In any case where an employer is required pursuant to the provisions of this paragraph to report to the U.S. Department of Labor any exposure of an individual to radiation or to concentrations of radioactive material, the employer shall also notify such individual of the nature and extent of exposure. Such notice shall be in **writing** and shall contain the following **statement**: “You should preserve this **report** for future reference.”

**1910.1096(o)(1)**—At the request of a former employee, an employer shall furnish to the employee a **report** of the employee’s exposure to radiation as shown in **records maintained** by the employer pursuant to paragraph (n)(1) [Records] of this section. Such **report** shall be furnished within 30 days from the time the request is made, and shall cover each calendar quarter of the individual’s employment involving exposure to radiation or such lesser period as may be requested by the employee. The **report** shall also include the **results** of any calculations and analysis of radioactive material deposited in the body of the employee. The **report** shall be in **writing** and contain the following **statement**: “You should preserve this report for future reference.”

## **Signs, Markings and Tags**

**1910.1096(e)(2)**—*Radiation area.* Each radiation area shall be conspicuously **posted** with a **sign or signs** bearing the radiation caution symbol described in subparagraph (1) of this paragraph.

**1910.1096(e)(3)(i)**—Each high radiation area shall be conspicuously **posted** with a **sign or signs** bearing the radiation caution symbol.

**1910.1096(i)(3)**—Each employer to whom this section applies shall **post** a current **copy** of its provisions and a **copy** of the **operating procedures** applicable to the work conspicuously in such locations as to insure that employees working in or frequenting radiation areas will observe these **documents** on the way to and from their place of employment, or shall keep such **documents available** for examination of employees upon request.



## 1926.54—NONIONIZING RADIATION

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

### STANDARD HIGHLIGHTS

- Recordkeeping—proof of qualifications
- Training and Communications—qualified and trained person
- Qualified Person—trained
- Signs, Markings and Tags—posting placards, labeling

#### Recordkeeping

**1926.54(b)**—*Proof of qualification of the laser equipment operator shall be **available** and in possession of the operator at all times.*

#### Training and Communications

**1926.54(a)**—*Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment.*

#### Qualified Person

**1926.54(a)**—*Only qualified and trained employees shall be assigned to install, adjust, and operate laser equipment.*

#### Signs, Markings and Tags

**1926.54(d)**—*Areas in which lasers are used shall be **posted** with standard laser **warning placards**.*

**1926.54(i)**—*Laser equipment shall bear a **label** to indicate maximum output.*

## 1926.55—GASES, VAPORS, FUMES, DUSTS AND MISTS

**Scope/Application:** *This section applies employees to exposure to inhalation, ingestion, skin absorption, or contact with any material or substance at a concentration above those specified in the “Threshold Limit Values of Airborne Contaminants for 1970” of the American Conference of Governmental Industrial Hygienists, shall be avoided. See Appendix A [Gases, Vapors, Fumes, Dusts, and Mists] to this section.*

**Exception:** *Paragraphs (a) and (b) of this section do not apply to the exposure of employees to airborne asbestos, tremolite, anthophyllite, or actinolite dust. Whenever any employee is exposed to airborne asbestos, tremolite, anthophyllite, or actinolite dust, the requirements of § 1910.1101 or § 1926.58 of this title shall apply.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—administrative and engineering controls
- Competent Person—industrial hygienist
- Qualified Person—competent hygienist, qualified person

#### Programs, Plans and Procedures

**1926.55(b)**—*To achieve compliance with paragraph (a) [Gases, Vapors, Fumes, Dusts, and Mists] of this section, administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or 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 technical measures used for this purpose must first 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 Sec. 1926.103 [Respiratory Protection].*

## Competent Person

**1926.55(b)**—To achieve compliance with *paragraph (a) [Gases, Vapors, Fumes, Dusts, and Mists]* of this section, *administrative or engineering controls must first be implemented whenever feasible*. When such controls are not feasible to achieve full compliance, protective equipment or *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 *technical measures* used for this purpose must first 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 *Sec. 1926.103 [Respiratory Protection]*.

## Qualified Person

**1926.55(b)**—To achieve compliance with *paragraph (a) [Gases, Vapors, Fumes, Dusts, and Mists]* of this section, *administrative or engineering controls must first be implemented whenever feasible*. When such controls are not feasible to achieve full compliance, protective equipment or *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 *technical measures* used for this purpose must first 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 *Sec. 1926.103 [Respiratory Protection]*.

## 1926.57—VENTILATION

**Scope/Application:** *Whenever hazardous substances such as dusts, fumes, mists, vapors, or gases exist or are produced in the course of construction work, their concentrations shall not exceed the limits specified in Sec. 1926.55(A) [Gases, Vapors, Fumes, Dusts and Mists]. When ventilation is used as an engineering control method, the system shall be installed and operated according to the requirements of this section.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—respirator program
- Inspections and Tests—regular inspections, records
- Recordkeeping—hood static pressure records
- Training and Communications—standby trained person
- Qualified Person—industrial hygienist

### Programs, Plans and Procedures

**1926.57(f)(5)(iv)**—*A respiratory protection program as defined and described in Sec. 1926.103 [Respiratory Protection], shall be established* wherever it is necessary to use respiratory protective equipment.

### Inspections and Tests

**1926.57(f)(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.

**1926.57(i)(8)(i)**—The required airflow shall be maintained at all times during which gas, mist, or vapor is emitted from the tank, and at all times the tank, the draining, or the drying area is in operation or use. When the system is first installed, the airflow from each hood shall be measured by means of a pitot traverse in the exhaust duct and corrective action taken if the flow is less than that required. When the proper flow is obtained, the hood static pressure *shall be measured and recorded*. At intervals of not more than 3 months operation, or after a prolonged shutdown period, the hoods and duct system shall be inspected for evidence of corrosion or damage. In any case where the airflow is found to be less than required, it shall be increased to the required value. (Information on airflow and static pressure measurement and calculations may be found in *American National Standard Fundamental Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960*, or in the manual, *Industrial Ventilation*, published by the American Conference of Governmental Industrial Hygienists.)



## Recordkeeping

**1926.57(i)(8)(i)**—The required airflow shall be maintained at all times during which gas, mist, or vapor is emitted from the tank, and at all times the tank, the draining, or the drying area is in operation or use. When the system is first installed, the airflow from each hood shall be measured by means of a pitot traverse in the exhaust duct and corrective action taken if the flow is less than that required. When the proper flow is obtained, the hood static pressure *shall be measured and recorded. At intervals of not more than 3 months operation, or after a prolonged shutdown period, the hoods and duct system shall be inspected* for evidence of corrosion or damage. In any case where the airflow is found to be less than required, it shall be increased to the required value. (Information on airflow and static pressure measurement and calculations may be found in *American National Standard Fundamental Governing the Design and Operation of Local Exhaust Systems, Z9.2-1960*, or in the *manual, Industrial Ventilation*, published by the American Conference of Governmental Industrial Hygienists.)

## Training and Communications

**1926.57(i)(11)(v)**—If, in emergencies, such as rescue work, it is necessary to enter a tank which may contain a hazardous atmosphere, suitable respirators, such as self-contained breathing apparatus; hose mask with blower, if there is a possibility of oxygen deficiency; or a gas mask, selected and operated in accordance with *paragraph (i)(9)(vi)* of this section, shall be used. If a contaminant in the tank can cause dermatitis, or be absorbed through the skin, the employee entering the tank shall wear protective clothing. *At least one trained standby employee, with suitable respirator, shall be present* in the nearest uncontaminated area. The standby employee *must be able to communicate with the employee* in the tank and be able to haul him out of the tank with a lifeline if necessary.

**1926.57(i)(9)(i)**—All employees working in and around open-surface tank operations *must be instructed* as to the hazards of their respective jobs, and in the personal protection and *first aid procedures* applicable to these hazards.

## Qualified Person

**1926.57(i)(9)(vi)**—When, during the emergencies specified in *paragraph (i)(11)(v)* of this section, employees must be in areas where concentrations of air contaminants are greater than the limits set by *paragraph (i)(2)(iii)* of this section or oxygen concentrations are less than 19.5 percent, they must use respirators that reduce their exposure to a level below these limits or that provide adequate oxygen. Such respirators must also be provided in **marked, quickly-accessible storage compartments** built for this purpose when the possibility exists of accidental release of hazardous concentrations of air contaminants. Respirators must be **approved** by **NIOSH** under 42 CFR part 84, selected by a *competent industrial hygienist or other technically-qualified source*, and used in accordance with 29 CFR 1926.103 [*Respiratory Protection*].

## 1926.59—HAZARD COMMUNICATION

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1200 [Hazard Communication] of this chapter.*

## 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, Plans and Procedures—written hazard communication program
- Recordkeeping—safety data sheets readily available, update in 3 months
- Training and Communications—initial training
- Qualified Person—physician
- Signs, Markings and Tags—chemicals labeled, written materials, update in 3 months

### Programs, Plans and Procedures

**1910.1200(e)(1)**—Employers shall develop, implement, and ***maintain*** at each workplace, a ***written hazard communication program*** which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for ***labels*** and other forms of warning, ***safety data sheets***, and employee ***information*** and training will be met. [Reference paragraph (e) for specific information.]

**1910.1200(e)(5)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the ***written hazard communication program*** may be kept at the primary workplace facility.

**1910.1200(g)(2)**—The chemical manufacturer or importer ***preparing the safety data sheet*** shall ensure that it is in English (although the employer may ***maintain copies*** in other languages as well), and includes at least the following section numbers and headings, and associated ***information*** under each heading, in the order listed (See Appendix D to §1910.1200—Safety Data Sheets, for the specific content of each section of the ***safety data sheet***). [Reference paragraph (g)(2) for specific information.]

**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the ***safety data sheet***, the chemical manufacturer, importer or employer ***preparing the safety data sheet*** shall mark it to indicate that no applicable information was found.

**1910.1200(g)(4)**—Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may ***prepare one safety data sheet*** to apply to all of these similar mixtures.

**1910.1200(g)(5)**—The chemical manufacturer, importer or employer ***preparing the safety data sheet*** shall ensure that the ***information*** provided accurately reflects the scientific ***evidence*** used in making the hazard classification. If the chemical manufacturer, importer or employer ***preparing the safety data sheet*** becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new ***information*** shall be added to the ***safety data sheet*** within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the ***information*** to the ***safety data sheet*** before the chemical is introduced into the workplace again.

**1910.1200(g)(6)(i)**—Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate ***safety data sheet*** with their initial shipment, and with the first shipment after a ***safety data sheet*** is updated.

**1910.1200(g)(6)(iii)**—If the ***safety data sheet*** is not provided with a shipment that has been ***labeled*** as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible.

**1910.1200(g)(10)**—***Safety data sheets*** may be ***kept*** in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the ***required information*** is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

## Recordkeeping

**1910.1200(e)(1)**—Employers shall develop, implement, and **maintain** at each workplace, a **written hazard communication program** which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for **labels** and other forms of warning, **safety data sheets**, and employee **information** and training will be met. [Reference paragraph (e) for specific information.]

**1910.1200(e)(5)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **written hazard communication program** may be kept at the primary workplace facility.

**1910.1200(f)(7)**—The employer may use **signs, placards, process sheets, batch tickets, operating procedures, or other such written materials** in lieu of **affixing labels** to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the **information** required by paragraph (f)(6) [Workplace Labeling] of this section to be on a **label**. The employer shall ensure the **written materials** are readily accessible to the employees in their work area throughout each work shift.

**1910.1200(g)(2)**—The chemical manufacturer or importer **preparing the safety data sheet** shall ensure that it is in English (although the employer may **maintain copies** in other languages as well), and includes at least the following section numbers and headings, and associated **information** under each heading, in the order listed (See Appendix D to §1910.1200—Safety Data Sheets, for the specific content of each section of the **safety data sheet**). [Reference paragraph (g)(2) for specific information.]

**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the **safety data sheet**, the chemical manufacturer, importer or employer **preparing the safety data sheet** shall mark it to indicate that no applicable information was found.

**1910.1200(g)(5)**—The chemical manufacturer, importer or employer **preparing the safety data sheet** shall ensure that the **information recorded** accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer **preparing the safety data sheet** becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the **safety data sheet** within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the **safety data sheet** before the chemical is introduced into the workplace again.

**1910.1200(g)(8)**—The employer shall **maintain in the workplace copies** of the required **safety data sheets** for each hazardous chemical, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s). (Electronic access, microfiche, and other alternatives to **maintaining paper copies of the safety data sheets** are permitted as long as no barriers to immediate employee access in each workplace are created by such options.)

**1910.1200(g)(9)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the **safety data sheets** may be kept at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required **information** in an emergency.

**1910.1200(g)(10)**—**Safety data sheets** may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required **information** is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work area(s).

**1910.1200(g)(11)**—**Safety data sheets** shall also be made readily available, upon request, to designated representatives, the Assistant Secretary, and the Director, in accordance with the requirements of 29 CFR 1910.1020(e) [Access to Records].

**1910.1200(i)(2)**—Where a treating **physician** or **nurse** determines that a medical emergency exists and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating **physician or nurse**, regardless of the existence of a **written statement of need** or a **confidentiality agreement**. The chemical manufacturer, importer, or employer may require a **written statement of need and confidentiality agreement**, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets] of this section, as soon as circumstances permit.

**1910.1200(i)(3)**—*In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, or percentage composition otherwise permitted to be withheld under paragraph (i)(1) [Trade Secrets] of this section, to a **health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse)** providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:*

**1910.1200(i)(3)(i)**—*The **request** is in **writing**.*

**1910.1200(i)(3)(iii)(v)**—*The **health professional**, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, **agree in a written confidentiality agreement** that the **health professional**, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) [Trade Secrets] of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.*

**1910.1200(i)(7)**—*If the chemical manufacturer, importer, or employer **denies a written request** for disclosure of a specific chemical identity or percentage composition, the denial must:*

**1910.1200(i)(7)(i)**—*Be provided to the health professional, employee, or designated representative, **within thirty days of the request**.*

**1910.1200(i)(8)**—*The **health professional**, employee, or designated representative whose **request for information** is denied under paragraph (i)(3) [Trade Secrets] of this section may refer the request and the **written denial** of the request to OSHA for consideration.*

## **Training and Communications**

**1910.1200(f)(7)**—*The employer may use **signs, placards, process sheets, batch tickets, operating procedures, or other such written materials** in lieu of **affixing labels** to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the **information** required by paragraph (f)(6) [Workplace Labeling] of this section to **be on a label**. The employer shall ensure the **written materials** are readily **accessible to** the employees in their work area throughout each work shift.*

**1910.1200(g)(6)(ii)**—*The chemical manufacturer or importer shall either provide **safety data sheets** with the shipped containers or send them to the distributor or employer prior to or at the time of the shipment;*

**1910.1200(g)(6)(iv)**—*The chemical manufacturer or importer shall also provide distributors or employers with a **safety data sheet** upon request.*

**1910.1200(g)(7)(i)**—*Distributors shall ensure that **safety data sheets**, and updated **information**, are provided to other distributors and employers with their initial shipment and with the first shipment after a **safety data sheet** is updated.*

**1910.1200(g)(7)(ii)**—*The distributor shall either provide **safety data sheets** with the shipped containers, or send them to the other distributor or employer prior to or at the time of the shipment;*

**1910.1200(g)(7)(iii)**—*Retail distributors selling hazardous chemicals to employers having a commercial account shall provide a **safety data sheet** to such employers upon request, and shall **post a sign** or otherwise inform them that a **safety data sheet** is available.*

**1910.1200(g)(7)(iv)**—*Wholesale distributors selling hazardous chemicals to employers over-the-counter may also **provide safety data sheets** upon the request of the employer at the time of the over-the-counter purchase, and shall **post a sign** or otherwise inform such employers that a **safety data sheet** is available.*

**1910.1200(g)(7)(v)**—*If an employer without a commercial account purchases a hazardous chemical from a retail distributor not required to have **safety data sheets** on file (i.e., the retail distributor does not have commercial accounts and does not use the materials), the retail distributor shall provide the employer, upon request, with the name, address, and telephone number of the chemical manufacturer, importer, or distributor from which a **safety data sheet** can be obtained.*

**1910.1200(g)(7)(vi)**—*Wholesale distributors shall also provide **safety data sheets** to employers or other distributors upon request.*



**1910.1200(g)(7)(vii)**—Chemical manufacturers, importers, and distributors need not provide *safety data sheets* to retail distributors that have informed them that the retail distributor does not sell the product to commercial accounts or open the sealed container to use it in their own workplaces.

**1910.1200(g)(9)**—Where employees must travel between workplaces during a workshift, i.e., their work is carried out at more than one geographical location, the *safety data sheets* may be **kept at the primary workplace facility**. In this situation, the employer shall ensure that employees *can immediately obtain the required information in an emergency*.

**1910.1200(g)(10)**—*Safety data sheets may be kept in any form, including operating procedures*, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the *required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees* when they are in their work area(s).

**1910.1200(h)(1)**—Employers shall provide employees with effective **information** and training on hazardous chemicals in their work area *at the time of their initial assignment, and whenever a new chemical hazard the employees have not previously been trained about is introduced into their work area*. **Information** and training may be designed to cover categories of hazards (e.g., flammability, carcinogenicity) or specific chemicals. Chemical-specific **information** must always be **available** through labels and *safety data sheets*. [Reference paragraph (h) for specific information.]

**1910.1200(i)(2)**—Where a treating **physician or nurse** determines that a medical emergency exists and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating **physician or nurse**, regardless of the existence of a **written statement of need** or a **confidentiality agreement**. The chemical manufacturer, importer, or employer may require a **written statement of need and confidentiality agreement**, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets] of this section, as soon as circumstances permit.

**1910.1200(i)(3)**—*In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, or percentage composition otherwise permitted to be withheld under paragraph (i)(1) [Trade Secrets] of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:*

**1910.1200(i)(3)(i)**—*The request is in writing.*

**1910.1200(i)(3)(iii)(v)**—The **health professional**, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, *agree in a written confidentiality agreement* that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) [Trade Secrets] of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

**1910.1200(i)(7)**—If the chemical manufacturer, importer, or employer *denies a written request* for disclosure of a specific chemical identity or percentage composition, the denial must:

**1910.1200(i)(7)(i)**—Be provided to the **health professional**, employee, or designated representative, *within thirty days of the request*.

**1910.1200(i)(7)(ii)**—Be in **writing**.

**1910.1200(i)(8)**—The **health professional**, employee, or designated representative whose request for **information** is denied under paragraph (i)(3) [Trade Secrets] of this section may refer the request and the **written denial** of the request to OSHA for consideration.

**1910.1200(i)(9)**—When a **health professional**, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) [Trade Secrets] of this section, OSHA shall consider the **evidence**.

**1910.1200(i)(12)**—Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer *shall, upon request, disclose to the Assistant Secretary any **information** which this section requires the chemical manufacturer, importer, or employer to make **available**. Where there is a trade secret claim, *such claim shall be made no later than at the time the **information** is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.**

### Qualified Person

**1910.1200(i)(2)**—Where a *treating **physician** or **nurse** determines that a medical emergency exists* and the specific chemical identity and/or specific percentage of composition of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity or percentage composition of a trade secret chemical to that treating **physician** or **nurse**, *regardless of the existence of a **written statement of need** or a **confidentiality agreement**. The chemical manufacturer, importer, or employer may require a **written statement of need** and **confidentiality agreement**, in accordance with the provisions of paragraphs (i)(3) and (4) [Trade Secrets] of this section, as soon as circumstances permit.*

**1910.1200(i)(3)(iii)(v)**—The **health professional**, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, *agree in a **written confidentiality agreement** that the **health professional**, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) [Trade Secrets] of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.*

**1910.1200(i)(8)**—The **health professional**, employee, or designated representative whose *request for **information** is denied under paragraph (i)(3) [Trade Secrets] of this section may refer the request and the **written denial** of the request to OSHA for consideration.*

**1910.1200(i)(9)**—When a **health professional**, employee, or designated representative *refers the **denial** to OSHA under paragraph (i)(8) [Trade Secrets] of this section, OSHA shall consider the **evidence**.*

### Signs, Markings and Tags

**1910.1200(f)(5)**—Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace *is **labeled, tagged, or marked** in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.*

**1910.1200(f)(6)**—Workplace **labeling**. Except as provided in paragraphs (f)(7) and (f)(8) of this section, the employer shall ensure that each container of hazardous chemicals in the workplace *is **labeled, tagged or marked**.*

**1910.1200(f)(7)**—The employer *may use **signs, placards, process sheets, batch tickets, operating procedures, or other such written materials** in lieu of affixing **labels** to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the **information** required by paragraph (f)(6) [Workplace Labeling] of this section to be on a **label**. The employer shall ensure the **written materials** are readily accessible to the employees in their work area throughout each work shift.*

**1910.1200(f)(9)**—The employer shall not remove or deface existing **labels** on incoming containers of hazardous chemicals, unless the container *is **immediately marked** with the required information.*

**1910.1200(f)(10)**—The employer shall ensure that *workplace **labels** or other forms of warning are legible, in English, and prominently displayed on the container; or readily **available** in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the **material** presented, as long as the information is presented in English as well.*

**1910.1200(f)(11)**—Chemical manufacturers, importers, distributors, or employers who become newly aware of any significant information regarding the hazards of a chemical *shall revise the **labels** for the chemical within six months of becoming aware of the new **information**, and shall ensure that **labels** on containers of hazardous chemicals shipped after that time contain the new **information**. If the chemical is not currently produced or imported, the chemical manufacturer, importer, distributor, or employer shall add the **information** to the **label** before the chemical is shipped or introduced into the workplace again.*



**1910.1200(g)(3)**—If no relevant information is found for any sub-heading within a section on the *safety data sheet*, the chemical manufacturer, importer or employer *preparing the safety data sheet shall mark* it to indicate that no applicable information was found.

**1910.1200(g)(6)(iii)**—If the *safety data sheet* is not provided with a shipment that has been **labeled** as a hazardous chemical, the distributor or employer shall obtain one from the chemical manufacturer or importer as soon as possible.

**1910.1200(g)(7)(iii)**—Retail distributors selling hazardous chemicals to employers having a commercial account *shall provide a safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a safety data sheet is available.*

**1910.1200(g)(7)(iv)**—Wholesale distributors selling hazardous chemicals to employers over-the-counter *may also provide safety data sheets upon the request of the employer at the time of the over-the-counter purchase, and shall post a sign or otherwise inform such employers that a safety data sheet is available.*

## **1926.60—METHYLENEDIANILINE**

**Scope/Application:** *This section applies to all construction work as defined in 29 CFR 1910.12(b) [Construction Work], in which there is exposure to MDA, including but not limited to the following: Construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain MDA; Installation or the finishing of surfaces with products containing MDA; MDA spill/emergency cleanup at construction sites; and Transportation, disposal, storage, or containment of MDA or products containing MDA on the site or location at which construction activities are performed.*

**Exception:** *Except as provided in paragraphs (a)(7) [Scope] and (f)(5) [Additional Monitoring] of this section, this section 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. Except as provided in paragraphs (a)(7) [Scope] of this section, this section 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. Except as provided in paragraphs (a)(7) [Scope] of this section, this section 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, except for the provisions of 29 CFR 1910.1200 [Hazard Communication] and paragraph (e) of this section. Except as provided in paragraphs (a)(7) [Scope] of this section, this section does not apply to materials in any form which contain less than 0.1 percent MDA by weight or volume. Except as provided in paragraphs (a)(7) [Scope] of this section, this section does not apply to “finished articles containing MDA.”*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—emergency plan, fire prevention plan, compliance program, respirator program, housekeeping program, medical surveillance program, hazard communication program
- Inspections and Tests—visual examinations of clothing, regular inspections
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—contractors, launderers, hazard communication
- Exposure Monitoring—documentation, initial, three months, and six months
- Medical Surveillance—initial and annual, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, posting, labels, warnings
- Other—29 CFR 1910.38—Emergency Action Plan, 1910.39—Fire Prevention Plan

## Programs, Plans and Procedures

**1926.60(e)(1)(i)**—A **written plan** for emergency situations shall be developed for each construction operation where there is a possibility of an emergency. The **plan** shall include procedures where the employer identifies emergency escape routes for his employees at each construction site before the construction operation begins. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1926.60(e)(1)(iii)**—The **plan** shall specifically include provisions for alerting and evacuating affected employees as well as the applicable elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, “**Emergency action plans**” and “**Fire prevention plans**,” respectively.

**1926.60(e)(2)**—Alerting employees. Where there is the possibility of employee exposure to MDA due to an emergency, means shall be developed to promptly alert employees who have the potential to be directly exposed. Affected employees not engaged in correcting emergency conditions shall be evacuated immediately in the event that an emergency occurs. Means shall also be developed for alerting other employees who may be exposed as a result of the emergency.

**1926.60(h)(1)(i)**—The employer shall use one or any combination of the following control methods to achieve compliance with the permissible exposure limits prescribed by paragraph (c) [Permissible Exposure Limits] of this section:

**1926.60(h)(1)(i)(C)**—Use of work practices.

**1926.60(h)(1)(i)(D)**—Other engineering controls such as isolation and enclosure that the Assistant Secretary can show to be feasible.

**1926.60(h)(5)(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 (h)(1) [Engineering Controls and Work Practices and Respirators] of this section, and by use of respiratory protection where permitted under this section.

**1926.60(h)(5)(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**.

**1926.60(i)(2)**—**Respirator program**. The employer must implement a **respiratory protection program** in accordance with § 1910.134(b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1926.60(l)(1)**—**Hazard communication**. The employer shall include Methylenedianiline (MDA) 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 MDA** and **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (l)(3) [Information and Training] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; liver effects; and skin sensitization.

**1926.60(m)(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.

**1926.60(n)(1)(i)**—The employer shall make **available a medical surveillance program** for employees exposed to MDA under certain circumstances. [Reference paragraph (n)(1)(i) for specific circumstances.]

## Inspections and Tests

**1926.60(f)(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. [Reference paragraph (f)(8) for corrective action.]

**1926.60(f)(8)(iii)**—*Maintain records of the corrective actions* in accordance with paragraph (o) [Recordkeeping] of this section.

**1926.60(j)(2)(v)**—Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of decontamination areas or the workplace for cleaning, maintenance, or disposal, shall bear **labels** warning of the hazards of MDA.

**1926.60(j)(4)(i)**—The employer shall ensure that employees' work clothing is examined periodically for rips or tears that may occur during performance of work.

**1926.60(m)(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.

## Recordkeeping

**1926.60(a)(7)**—Where products containing MDA are exempted under paragraphs (a)(2) through (a)(6) [Scope and Application] 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 (o) [Recordkeeping] of this section.

**1926.60(f)(1)(iii)**—Where the employer can **document** that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.

**1926.60(f)(2)(i)**—Where the employer can demonstrate, on the basis of **objective data**, that the MDA-containing product or material being handled cannot cause exposures above the standard's action level, even under worst-case release conditions.

**1926.60(f)(2)(ii)**—The employer has **historical monitoring or other data** demonstrating that exposures on a particular job will be below the action level.

**1926.60(f)(7)(i)**—The employer must, as soon as possible but no later than 5 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. [Reference paragraph (f)(7)(i) for corrective action requirements.]

**1926.60(f)(8)(iii)**—*Maintain records of the corrective actions* in accordance with paragraph (o) [Recordkeeping] of this section.

**1926.60(h)(5)(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 (h)(1) [Engineering Controls and Work Practices and Respirators] of this section, and by use of respiratory protection where permitted under this section.

**1926.60(l)(1)**—*Hazard communication.* The employer shall include Methylenedianiline (MDA) 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 MDA and safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (l)(3) [Information and Training] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; liver effects; and skin sensitization.

**1926.60(l)(3)(ii)**—In addition to the **information** required under 29 CFR 1910.1200 [Hazard Communication], the employer shall provide additional **information** pertaining to this section. [Reference paragraph (l)(3)(ii) for specific information.]

**1926.60(l)(4)(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**.

**1926.60(l)(4)(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**.

**1926.60(n)(7)(i)**—The employer shall **provide information** to the examining **physician**. [Reference paragraph (n)(7)(i) for specific information.]

**1926.60(n)(7)(ii)**—The employer shall **provide the foregoing information** to a second **physician** under this section upon request either by the second **physician**, or by the employee. [Reference paragraph (n)(7)(ii) for specific information.]

**1926.60(n)(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**. The **written opinion** shall include specific information. [Reference paragraph (n)(8)(i) for specific information.]

**1926.60(o)(1)(i)**—Where the employer has relied on **objective data** that demonstrate that products made from or containing MDA are not capable of releasing MDA or do not present a dermal exposure problem under the expected conditions of processing, use, or handling to exempt such operations from the initial monitoring requirements under *paragraph (f)(2) [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. [Reference paragraph (o)(1)(i) for specific record information.]

**1926.60(o)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1926.60(o)(2)(i)**—Where the employer has relied on **historical monitoring data** that demonstrate that exposures on a particular job will be below the action level to exempt such operations from the initial monitoring requirements under *paragraph (f)(2) [Initial Monitoring]* of this section, the employer shall **establish and maintain an accurate record of historical monitoring data** reasonably relied upon in support of the exception. [Reference paragraph (o)(2)(ii) for specific record information.]

**1926.60(o)(2)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **historical monitoring data**.

**1926.60(o)(4)(i)**—The employer shall keep an accurate **record** of all **measurements** taken to monitor employee exposure to MDA. [Reference paragraph (o)(4)(iii) for specific record information.]

**1926.60(o)(4)(iii)**—The employer shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1926.33 [Access to Employee Exposure and Medical Records].

**1926.60(o)(5)(i)**—The employer shall **establish and maintain an accurate record** for each employee subject to medical surveillance by *paragraph (n)—Medical Surveillance* of this section, in accordance with 29 CFR 1926.33 [Access to Employee Exposure and Medical Records]. [Reference paragraph (o)(5)(iii) for specific record information.]

**1926.60(o)(5)(iii)**—The employer shall ensure that this **record** is **maintain** for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1926.33 [Access to Employee Exposure and Medical Records].

**1926.60(o)(6)**—**Training records**. The employer shall **maintain all employee training records** for one (1) year beyond the last date of employment.



**1926.60(o)(7)(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**.

**1926.60(o)(7)(ii)**—The employer, upon request, shall make any **exposure records** required by paragraphs (f) [Exposure Monitoring] and (n) [Medical Surveillance] of this section **available** for examination and **copying** to affected employees, former employees, designated representatives, and the Assistant Secretary, in accordance with 29 CFR 1926.33(a)(e) and (g)-(i) 29 CFR 1926.33 [Access to Employee Exposure and Medical Records].

**1926.60(o)(7)(iii)**—The employer, upon request, shall make employee **medical records** required by paragraphs (n) [Medical Surveillance] and (o) [Recordkeeping] of this section **available** for examination and **copying** to the subject employee, anyone having the specific **written consent** of the subject employee, and the Assistant Secretary, in accordance with 29 CFR 1926.33 [Access to Employee Exposure and Medical Records].

**1926.60(o)(8)**—*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].

**1926.60(o)(8)(ii)**—Whenever the employer ceases to do business and *there is no successor employer to receive and retain the records for the prescribed period, the employer shall notify the Director at least 90 days prior to disposal* and, upon request, transmit them to the Director

## **Training and Communications**

**1926.60(d)**—*Communication among employers.* On multi-employer worksites, an employer performing work involving the application of MDA or materials containing MDA for which establishment of one or more regulated areas is required shall *inform other employers* on the site of the nature of the employer's work with MDA and of the existence of, and requirements pertaining to, regulated areas.

**1926.60(j)(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.

**1926.60(j)(3)(v)**—The employer shall *inform* any person who launders or cleans protective clothing or equipment contaminated with MDA of the potentially harmful effects of exposure.

**1926.60(l)(1)**—*Hazard communication.* The employer shall include Methylenedianiline (MDA) 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 MDA and **safety data sheets**, and is *trained* in accordance with the provisions of HCS and paragraph (l)(3) [Information and Training] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; liver effects; and skin sensitization.

**1926.60(l)(3)(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.

**1926.60(l)(3)(ii)**—In addition to the **information** required under 29 CFR 1910.1200 [Hazard Communication], the employer shall provide additional **information** pertaining to this section. [Reference paragraph (l)(3)(ii) for specific information.]

**1926.60(l)(4)(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**.

**1926.60(l)(4)(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**.

## Exposure Monitoring

**1926.60(f)(1)(iii)**—Where the employer can **document** that exposure levels are equivalent for similar operations in different work shifts, the employer shall only be required to determine representative employee exposure for that operation during one shift.

**1926.60(f)(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 unless:

**1926.60(f)(2)(i)**—Where the employer can demonstrate, on the basis of **objective data**, that the MDA-containing product or material being handled cannot cause exposures above the standard's action level, even under worst-case release conditions; or

**1926.60(f)(2)(ii)**—The employer has **historical monitoring** or other **data** demonstrating that exposures on a particular job will be below the action level.

**1926.60(f)(3)(i)**—If the monitoring required by paragraph (f)(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 monitoring for each such employee at least every six (6) months.

**1926.60(f)(3)(ii)**—If the monitoring required by paragraph (f)(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.

**1926.60(f)(3)(iv)**—The employer may alter the monitoring schedule from every three months to every six months for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee exposure has decreased to below the PELs but above the action level.

**1926.60(f)(5)**—*Additional monitoring.* The employer shall institute the exposure monitoring required under paragraph (f)(2) [Initial Monitoring] and (f)(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.

**1926.60(f)(7)(i)**—The employer must, as soon as possible but no later than 5 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. [Reference paragraph (f)(7)(i) for corrective action requirements.]

## Medical Surveillance

**1926.60(n)(1)(i)**—The employer shall make **available a medical surveillance program** for employees exposed to MDA under certain circumstances. [Reference paragraph (n)(1)(i) for specific circumstances.]

**1926.60(n)(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 (n)(1)(i) [Medical Surveillance] of this section with a medical examination including certain elements. [Reference paragraph (n)(2)(i) for specific information.]

**1926.60(n)(2)(i)(D)**—Additional tests as necessary in the opinion of the **physician**.

**1926.60(n)(3)(i)**—The employer shall provide each employee covered by this section with a **medical examination** at least annually following the initial examination. These periodic examinations shall include at least certain elements. [Reference paragraph (n)(3)(i) for specific elements.]



**1926.60(n)(4)—Emergency examinations.** If the employer determines that the employee has been exposed to a potentially hazardous amount of MDA in an emergency situation under *paragraph (e) [Emergency Situations]* of this section, the employer *shall provide medical examinations* in accordance with *paragraph (n)(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 (n)(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.

**1926.60(n)(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 liver function tests. *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.

**1926.60(n)(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*.

**1926.60(n)(7)(i)—**The employer shall provide **information** to the examining **physician**. [*Reference paragraph (n)(7)(i) for specific information.*]

**1926.60(n)(7)(ii)—**The employer *shall provide the foregoing information to a second physician* under this section upon request either by the second **physician**, or by the employee. [*Reference paragraph (n)(7)(ii) for specific information.*]

**1926.60(n)(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*. The **written opinion** shall include specific information. [*Reference paragraph (n)(8)(i) for specific information.*]

## **Qualified Person**

**1926.60(n)(7)(i)—**The employer shall provide **information** to the examining **physician**. [*Reference paragraph (n)(7)(i) for specific information.*]

**1926.60(n)(7)(ii)—**The employer *shall provide the foregoing information to a second physician* under this section upon request either by the second **physician**, or by the employee. [*Reference paragraph (n)(7)(ii) for specific information.*]

**1926.60(n)(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*. The **written opinion** shall include specific information. [*Reference paragraph (n)(8)(i) for specific information.*]

## **Signs, Markings and Tags**

**1926.60(g)(2)—Demarcation.** *Regulated areas shall be demarcated* from the rest of the workplace in a manner that minimizes the number of persons potentially exposed.

**1926.60(j)(2)(v)—**Containers of MDA-contaminated protective work clothing or equipment which are to be taken out of decontamination areas or the workplace for cleaning, maintenance, or disposal, *shall bear labels warning of the hazards of MDA*.

**1926.60(l)(1)**—*Hazard communication.* The employer shall include Methylenedianiline (MDA) 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 MDA and **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (l)(3) [Information and Training] of this section. The employer shall ensure that at least the following hazards are addressed: Cancer; liver effects; and skin sensitization.

**1926.60(l)(2)(i)(A)**—The employer shall **post** and maintain legible **signs demarcating** regulated areas and entrances or access-ways to regulated areas that bear the following **legend**.

**1926.60(l)(2)(ii)(A)**—The employer shall ensure that **labels** or other appropriate **forms** of warning are **provided** for containers of MDA within the workplace.

#### Other

**Note:** The requirements applicable to construction work are identical to those set forth in 1910.38.—Emergency Action Plan for 1926.60—Methylenedianiline.

### 1910.38—EMERGENCY ACTION PLAN

**Scope/Application:** An employer must have an emergency action plan whenever an OSHA standard in this part requires one. The requirements in this section apply to each such emergency action plan. The following standards require an emergency action plan:

1910.66(e)(9)—Powered Platforms for Building Maintenance

1910.119(n)—Process Safety Management

1910.160(c)(1)—Fixed Extinguishing Systems, General

1910.272(d)—Grain Handling

1910.1047(h)(1)(iii)—Ethylene Oxide

1910.1050(d)(1)(iii)—Methylenedianiline

1910.1051(j)—1,3-Butadiene

#### STANDARD HIGHLIGHTS

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

#### Programs, Plans and Procedures

**1910.38(b)**—**Written** and oral **emergency action plans**. An **emergency action plan** must be in **writing**, kept in the workplace, and **available** to employees for review. However, an employer with 10 or fewer employees may communicate the **plan** orally to employees.

**1910.38(c)**—**Minimum elements** of an **emergency action plan**. An **emergency action plan** must include at a minimum:

**1910.38(c)(1)**—Procedures for reporting a fire or other emergency;

**1910.38(c)(2)**—Procedures for emergency evacuation, including type of evacuation and exit route assignments;

**1910.38(c)(3)**—*Procedures to be followed by employees who remain to operate critical plant operations before they evacuate;*

**1910.38(c)(4)**—*Procedures to account for all employees after evacuation;*

**1910.38(c)(5)**—*Procedures to be followed by employees performing rescue or medical duties; and*

**1910.38(c)(6)**—*The name or job title of every employee who may be contacted by employees who need more information about the **plan** or an explanation of their duties under the **plan**.*

## **Recordkeeping**

**1910.38(b)**—*Written and oral **emergency action plans**. A **emergency action plan** must be in **writing**, be kept in the workplace, and be made **available** to employees for review. However, an employer with 10 or fewer employees may communicate the **plan** orally to employees. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]*

## **Training and Communications**

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

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

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

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

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

## **Other**

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

**1910.157(g)(1)**—*Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an **educational program** to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.*

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

**1910.157(g)(3)**—*Portable Fire Extinguishers. The employer shall provide employees who have been designated to use fire fighting equipment as part of an **emergency action plan** with training in the use of the appropriate equipment.*

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

**Note:** *The requirements applicable to construction work are identical to those set forth in 1910.39.—Fire Prevention Plan for 1926.60—Methylenedianiline.*

## 1910.39—FIRE PREVENTION PLAN

**Scope/Application:** *An employer must have a fire prevention plan when an OSHA standard in this part requires one. The requirements in this section apply to each such fire prevention plan. The following standards require a fire prevention plan:*

*1910.1047(h)(1)(iii)—Ethylene Oxide*

*1910.1050(d)(1)(iii)—Methylenedianiline*

*1910.1051(j)—1,3-Butadiene*

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

**1910.39(b)—Written and oral fire prevention plans.** *A fire prevention plan must be in **writing**, be kept in the workplace, and be made **available** to employees for review. However, an employer with 10 or fewer employees may communicate the **plan** orally to employees. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]*

**1910.39(c)—Minimum elements of a fire prevention plan.** *A fire prevention plan must include:*

**1910.39(c)(1)**—*A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard;*

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

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

### Recordkeeping

**1910.39(b)—Written and oral fire prevention plans.** *A fire prevention plan must be in **writing**, be kept in the workplace, and be made **available** to employees for review. However, an employer with 10 or fewer employees may communicate the **plan** orally to employees. [Reference paragraph (c) for specific minimum elements of a fire prevention plan.]*

**1910.39(c)(1)**—*A list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.*

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

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

### Training and Communications

**1910.39(d)—Employee information.** *An employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed. An employer must also review with each employee those parts of the **fire prevention plan** necessary for self-protection.*

### Other

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

**1910.157(g)(1)**—Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer *shall also provide an **educational program** to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.*

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

**1910.157(g)(3)**—Portable Fire Extinguishers. The employer *shall provide employees who have been designated to use fire fighting equipment as part of an **emergency action plan** with training in the use of the appropriate equipment.*

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

## **1926.61—RETENTION OF DOT MARKINGS, PLACARDS AND LABELS**

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1201 [Retention of DOT Markings, Placards and Labels] of this chapter.*

## **1910.1201—RETENTION OF DOT MARKINGS, PLACARDS AND LABELS**

**Scope/Application:** *This section applies to DOT markings, placards and labels.*

### **STANDARD HIGHLIGHTS**

- Signs, Markings and Tags—labeling, marking, placarding

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

**1910.1201(c)**—*Markings, placards and labels shall be **maintained** in a manner that ensures that they are readily visible.*

**1910.1201(d)**—For non-bulk packages which will not be reshipped, the provisions of this section are met if a **label** or other acceptable **marking** is **affixed** in accordance with the **Hazard Communication Standard** (29 CFR 1910.1200).

## **1926.62—LEAD**

**Scope/Application:** *This section applies to all construction work where an employee may be occupationally exposed to lead. All construction work excluded from coverage in the general industry standard for lead by 29 CFR 1910.1025(a)(2) [Lead] is covered by this standard. Construction work is defined as work for construction, alteration and/or repair, including painting and decorating. It includes but is not limited to the following: Demolition or salvage of structures where lead or materials containing lead are present; Removal or encapsulation of materials containing lead; New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead; Installation of products containing lead; Lead contamination/emergency cleanup; Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and Maintenance operations associated with the construction activities described in this paragraph.*



## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—compliance program, respirator program, medical surveillance program, training program, work controls, hazard communication program
- Inspections and Tests—frequent and regular inspections, mechanical ventilation evaluations
- Recordkeeping—retention requirements, records, safety data sheets
- Training and Communications—written program, inform launderer in writing, instruct physician, hazard communication
- Exposure Monitoring—initially, quarterly, and semi-annually monitoring, exposure assessment
- Medical Surveillance—program, biological monitoring, respirator use, written opinions
- Competent Person—inspections
- Qualified Person—physician
- Signs, Markings and Tags—labels, warning signs

### Programs, Plans and Procedures

**1926.62(e)(1)**—*Engineering and work practice controls.* The employer shall implement *engineering and work practice controls, including administrative controls*, to reduce and maintain employee exposure to lead to or below the permissible exposure limit to the extent that such controls are feasible. Wherever all feasible *engineering and work practices controls* that can be instituted are not sufficient to reduce employee exposure to or below the permissible exposure limit prescribed in *paragraph (c) [Permissible Exposure Limit]* of this section, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them by the use of respiratory protection that complies with the requirements of *paragraph (f) [Respiratory Protection]* of this section.

**1926.62(e)(2)(i)**—Prior to commencement of the job each employer shall establish and implement a **written compliance program** to achieve compliance with *paragraph (c) [Permissible Exposure Limit]* of this section. *[Reference paragraph (e)(2)(ii) for specific information.]*

**1926.62(e)(2)(iv)**—*Written programs shall be submitted upon request* to any affected employee or authorized employee representatives, to the Assistant Secretary and the Director, and shall be **available** at the worksite for examination and **copying** by the Assistant Secretary and the Director.

**1926.62(e)(2)(v)**—*Written programs must be revised and updated at least annually* to reflect the current status of the **program**.

**1926.62(e)(4)**—*Administrative controls.* If *administrative controls* are used as a means of reducing employees TWA exposure to lead, the employer shall establish and implement a *job rotation schedule*. *[Reference paragraph (e)(4) for specific information.]*

**1926.62(f)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with 29 CFR 1910.134(b) through (d) (except (d)(1)(iii)), and (f) through (m) *[Respiratory Protection]*, which covers each employee required by this section to use a respirator.

**1926.62(f)(2)(ii)**—If an employee has breathing difficulty during fit testing or respirator use, the employer must provide the employee with a medical examination in accordance with *paragraph (j)(3)(i)(B) [Medical Examinations and Consultations]* of this section to determine whether or not the employee can use a respirator while performing the required duty.

**1926.62(j)(1)(ii)**—The employer shall institute a **medical surveillance program** in accordance with *paragraphs (j)(2) [Biological Monitoring]* and *(j)(3) [Medical Examinations and Consultations]* of this section for all employees who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months.

**1926.62(l)(1)(i)**—*Hazard communication.* The employer shall include lead 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 lead and safety data sheets*, and is trained in accordance with the provisions of HCS and *paragraph (l) of this section*. The employer shall ensure that the hazards are addressed. *[Reference paragraph (l)(1)(i) for further information.]*



**1926.62(l)(1)(iii)**—The employer *shall provide the **training program** as initial training prior to the time of job assignment or prior to the start up date for this requirement, whichever comes last.*

**1926.62(l)(1)(iv)**—The employer *shall also provide the **training program** at least annually for each employee who is subject to lead exposure at or above the action level on any day.*

## **Inspections and Tests**

**1926.62(e)(2)(iii)**—The **compliance program** *shall provide for frequent and regular inspections of job sites, materials, and equipment to be made by a competent person.*

**1926.62(e)(3)**—Mechanical ventilation. When ventilation is used to control lead exposure, the employer *shall evaluate the mechanical performance of the system* in controlling exposure as necessary to maintain its effectiveness.

**1926.62(m)(1)(iii)**—The employer *shall ensure that **signs** required by this paragraph (m) [Signs] are illuminated and cleaned* as necessary so that the legend is readily visible.

## **Recordkeeping**

**1926.62(d)(2)(ii)**—In addition, with regard to tasks not listed in *paragraph (d)(2)(i) [Exposure Assessment]*, where the employer has any reason to believe that an employee performing the task may be exposed to lead in excess of the PEL, until the employer *performs an **employee exposure assessment** as required by paragraph (d) [Exposure Assessment]* of this section and **documents** that the employee's lead exposure is not above the PEL the employer shall treat the employee as if the employee were exposed above the PEL and shall *implement employee protective measures* as prescribed in *paragraph (d)(2)(v) [Exposure Assessment]* of this section.

**1926.62(d)(2)(iii)**—With respect to the tasks listed in this *paragraph (d)(2)(iii) [Exposure Assessment]* of this section, where lead is present, until the employer *performs an **employee exposure assessment** as required in paragraph (d) [Exposure Assessment]* of this section, and **documents** that the employee performing any of the listed tasks is not exposed in excess of 500 µg/m<sup>3</sup>, the employer shall treat the employee as if the employee were exposed to lead in excess of 500 µg/m<sup>3</sup> and *shall implement employee protective measures as prescribed in paragraph (d)(2)(v) [Exposure Assessment]* of this section. Where the employer does establish that the employee is exposed to levels of lead below 500 µg/m<sup>3</sup>, the employer may provide the exposed employee with the appropriate respirator prescribed for such use at such lower exposures, in accordance with **Table 1** of this section. *[Reference paragraph (d)(2)(iii) for specific tasks.]*

**1926.62(d)(2)(iv)**—With respect to the tasks listed in this *paragraph (d)(2)(iv) [Exposure Assessment]* of this section, where lead is present, until the employer *performs an **employee exposure assessment** as required in paragraph (d) [Exposure Assessment]* of this section and **documents** that the employee performing any of the listed tasks is not exposed to lead in excess of 2,500 µg/m<sup>3</sup> (50xPEL), the employer shall treat the employee as if the employee were exposed to lead in excess of 2,500 µg/m<sup>3</sup> and *shall implement employee protective measures as prescribed in paragraph (d)(2)(v) [Exposure Assessment]* of this section. Where the employer does establish that the employee is exposed to levels of lead below 2,500 µg/m<sup>3</sup>, the employer may provide the exposed employee with the appropriate respirator prescribed for use at such lower exposures, in accordance with **Table 1** of this section. Interim protection as described in this paragraph is required where lead containing coatings or paint are present on structures. *[Reference paragraph (d)(2)(iv) for specific tasks.]*

**1926.62(d)(3)(iv)**—*Where the employer has **objective data**, demonstrating that a particular product or material containing lead or a specific process, operation or activity involving lead cannot result in employee exposure to lead at or above the action level during processing, use, or handling, the employer may rely upon such **data** instead of implementing initial monitoring.*

**1926.62(d)(3)(iv)(A)**—The employer *shall establish and **maintain** an accurate **record documenting** the nature and relevancy of **objective data** as specified in paragraph (n)(4) [Objective Data for Exemption From Requirement for Initial Monitoring]* of this section, where used in assessing employee exposure in lieu of exposure monitoring.

**1926.62(d)(5)**—*Negative initial determination.* Where a determination, conducted under *paragraphs (d)(1), (2), and (3) [Exposure Assessment]* 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)(i) [Exposure Assessment]* 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.

**1926.62(d)(8)(ii)**—Whenever the **results** indicate that the representative employee exposure, without regard to respirators, is at or above the PEL the employer *shall include in the written notice a statement* that the employee's exposure was at or above that level and a **description** of the **corrective action** taken or to be taken to reduce exposure to below that level.

**1926.62(e)(2)(iv)**—*Written programs shall be submitted upon request* to any affected employee or authorized employee representatives, to the Assistant Secretary and the Director, and *shall be available at the worksite for examination and copying* by the Assistant Secretary and the Director.

**1926.62(g)(2)(vi)**—The employer *shall inform in writing* any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

**1926.62(l)(1)(i)**—*Hazard communication.* The employer *shall include lead 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 lead and safety data sheets, and is trained* in accordance with the provisions of HCS and *paragraph (l) of this section*. The employer shall ensure that the hazards are addressed. *[Reference paragraph (l)(1)(i) for further information.]*

**1926.62(l)(3)(i)**—The employer *shall make readily available* to all affected employees a **copy** of this **standard** and its **appendices**.

**1926.62(l)(3)(ii)**—The employer *shall provide, upon request, all materials* relating to the **employee information and training program** to affected employees and their designated representatives, and to the Assistant Secretary and the Director.

**1926.62(n)(1)(i)**—The employer *shall establish and maintain an accurate record* of all monitoring and other **data** used in conducting **employee exposure assessments** as required in *paragraph (d) [Exposure Assessment]* of this section. *[Reference paragraph (n)(1)(ii) for specific record information.]*

**1926.62(n)(1)(iii)**—The employer *shall maintain* monitoring and other **exposure assessment records** in accordance with the provisions of 29 CFR 1926.33 *[Access to Employee Exposure and Medical Records]*.

**1926.62(n)(2)(i)**—The employer *shall establish and maintain an accurate record* for each employee subject to medical surveillance as required by *paragraph (j) [Medical Surveillance]* of this section. *[Reference paragraph (n)(2)(ii) for specific record information.]*

**1926.62(n)(2)(iv)**—The employer *shall maintain or assure that the physician maintains medical records* in accordance with the provisions of 29 CFR 1926.33 *[Access to Employee Exposure and Medical Records]*.

**1926.62(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. *[Reference paragraph (n)(3)(i) for specific record information.]*

**1926.62(n)(3)(iii)**—The employer *shall maintain each medical removal record* for at least the duration of an employee's employment.

**1926.62(n)(4)(ii)**—The employer *shall maintain the record* of the **objective data** relied upon for at least 30 years.

**1926.62(n)(6)(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.

**1926.62(n)(6)(ii)**—The employer *shall also comply* with any additional requirements involving the transfer of *records* set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1926.62(g)(2)(vi)**—The employer *shall inform in writing* any person who cleans or launders protective clothing or equipment of the potentially harmful effects of exposure to lead.

**1926.62(g)(2)(vii)(B)**—Prior to June 1, 2015, employers *may include the following information* on bags or containers of contaminated protective clothing and equipment required by paragraph (g)(2)(v) in lieu of the *labeling* requirements in paragraph (g)(2)(vii)(A) of this section: **Caution:** Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable local, state, or federal regulations.

**1926.62(j)(3)(v)(B)**—The employer *shall instruct each examining and consulting physician*. [Reference paragraph (j)(3)(vi) for specific information.]

**1926.62(l)(1)(i)**—*Hazard communication*. The employer *shall include lead 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 lead and safety data sheets, and is trained* in accordance with the provisions of HCS and paragraph (l) of this section. The employer shall ensure that the hazards are addressed. [Reference paragraph (l)(1)(i) for further information.]

**1926.62(l)(1)(ii)**—The employer *shall train each employee* who is subject to exposure to lead at or above the action level on any day, or who is subject to exposure to lead compounds which may cause skin or eye irritation (e.g., lead arsenate, lead azide), in accordance with the requirements of this section. The employer shall *institute a training program* and ensure employee participation in the *program*.

**1926.62(l)(1)(iii)**—The employer *shall provide the training program* as initial training prior to the time of job assignment or prior to the start up date for this requirement, whichever comes last.

**1926.62(l)(1)(iv)**—The employer *shall also provide the training program* at least annually for each employee who is subject to lead exposure at or above the action level on any day.

**1926.62(l)(2)**—*Training program*. The employer *shall assure that each employee is trained* in specific information. [Reference paragraph (l)(2) for specific information.]

### **Exposure Monitoring**

**1926.62(d)(1)(i)**—Each employer who has a workplace or operation covered by this standard *shall initially determine if any employee may be exposed to lead* at or above the action level.

**1926.62(d)(2)(i)**—With respect to the lead related tasks listed in this paragraph (d)(2)(i) [Protection of Employees During Assessment of Exposure] of this section, where lead is present, *until the employer performs an employee exposure assessment* as required in paragraph (d) [Exposure Assessment] of this section and *documents that the employee performing any of the listed tasks is not exposed above the PEL, the employer shall treat the employee as if the employee were exposed above the PEL*, and not in excess of ten (10) times the PEL, and shall implement *employee protective measures* prescribed in paragraph (d)(2)(v) [Exposure Assessment] of this section. [Reference paragraph (d)(2)(i) for specific tasks.]

**1926.62(d)(2)(ii)**—In addition, with regard to tasks not listed in *paragraph (d)(2)(i) [Exposure Assessment]*, where the employer has any reason to believe that an employee performing the task may be exposed to lead in excess of the PEL, until the employer *performs an employee exposure assessment* as required by *paragraph (d) [Exposure Assessment]* of this section and **documents** that the employee's lead exposure is not above the PEL the employer shall treat the employee as if the employee were exposed above the PEL and shall *implement employee protective measures* as prescribed in *paragraph (d)(2)(v) [Exposure Assessment]* of this section.

**1926.62(d)(2)(iii)**—With respect to the tasks listed in this *paragraph (d)(2)(iii) [Exposure Assessment]* of this section, where lead is present, until the employer performs an **employee exposure assessment** as required in *paragraph (d) [Exposure Assessment]* of this section, and **documents** that the employee performing any of the listed tasks is not exposed in excess of 500 µg/m<sup>3</sup>, the employer shall treat the employee as if the employee were exposed to lead in excess of 500 µg/m<sup>3</sup> and shall *implement employee protective measures* as prescribed in *paragraph (d)(2)(v) [Exposure Assessment]* of this section. Where the employer does establish that the employee is exposed to levels of lead below 500 µg/m<sup>3</sup>, the employer may provide the exposed employee with the appropriate respirator prescribed for such use at such lower exposures, in accordance with Table 1 of this section. *[Reference paragraph (d)(2)(iii) for specific tasks.]*

**1926.62(d)(2)(iv)**—With respect to the tasks listed in this *paragraph (d)(2)(iv) [Exposure Assessment]* of this section, where lead is present, until the employer *performs an employee exposure assessment* as required in *paragraph (d) [Exposure Assessment]* of this section and **documents** that the employee performing any of the listed tasks is not exposed to lead in excess of 2,500 µg/m<sup>3</sup> (50xPEL), the employer shall treat the employee as if the employee were exposed to lead in excess of 2,500 µg/m<sup>3</sup> and shall *implement employee protective measures as prescribed in paragraph (d)(2)(v) [Exposure Assessment]* of this section. Where the employer does establish that the employee is exposed to levels of lead below 2,500 µg/m<sup>3</sup>, the employer may provide the exposed employee with the appropriate respirator prescribed for use at such lower exposures, in accordance with Table I of this section. Interim protection as described in this paragraph is required where lead containing coatings or paint are present on structures. *[Reference paragraph (d)(2)(iv) for specific tasks.]*

**1926.62(d)(2)(v)**—Until the employer performs an *employee exposure assessment* as required under *paragraph (d) [Exposure Assessment]* of this section and determines actual employee exposure, the employer shall *provide to employees performing the tasks described in paragraphs (d)(2)(i), (d)(2)(ii), (d)(2)(iii) and (d)(2)(iv) [Protection of Employees During Assessment of Exposure]* of this section with interim protection as follows:

**1926.62(d)(2)(v)(E)**—*Biological monitoring* in accordance with *paragraph (j)(1)(i) [Medical Surveillance]* of this section, to consist of blood sampling and analysis for lead and zinc protoporphyrin levels.

**1926.62(d)(2)(v)(F)**—*Training as required under paragraph (l)(1)(I) [Employee Information and Training]* of this section regarding 29 CFR 1926.59, *Hazard Communication*; training as required under *paragraph (1)(2)(iii) [Training Program]* of this section, *regarding use of respirators*; and training in accordance with 29 CFR 1926.21, *Safety training and education*.

**1926.62(d)(3)(i)**—Except as provided under *paragraphs (d)(3)(iii) and (d)(3)(iv) [Basis of Initial Determination]* of this section the employer shall *monitor employee exposures* and shall *base initial determinations on the employee exposure monitoring results* and any of the relevant considerations. *[Reference paragraph (d)(3)(i) for specific information.]*

**1926.62(d)(4)(i)**—Where a determination conducted under *paragraphs (d)(1), (2), and (3) [Exposure Assessment]* of this section shows the possibility of any employee exposure at or above the action level the employer shall *conduct monitoring* which is representative of the exposure for each employee in the workplace who is exposed to lead.

**1926.62(d)(6)(ii)**—If the initial determination or subsequent determination reveals employee exposure to be at or above the action level but at or below the PEL the employer shall *perform 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) [Additional Exposure Assessments]* of this section.



**1926.62(d)(6)(iii)**—If the initial determination reveals that employee exposure is above the PEL the employer *shall perform monitoring quarterly*. The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least 7 days apart, are at or 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]* of this section, except as otherwise provided in *paragraph (d)(7) [Additional Exposure Assessments]* of this section. 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) [Additional Exposure Assessments]* of this section.

## **Medical Surveillance**

**1926.62(d)(7)**—*Additional exposure assessments. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated* that may result in additional employees being exposed to lead at or above the action level or may result in employees already exposed at or above the action level being exposed above the PEL, the employer *shall conduct additional monitoring* in accordance with this paragraph.

**1926.62(d)(8)(i)**—The employer must, *as soon as possible but no later than 5 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.

**1926.62(d)(8)(ii)**—Whenever the results indicate that the representative employee exposure, without regard to respirators, is at or above the PEL the employer *shall include in the written notice a statement* that the employees exposure was at or above that level and a description of the corrective action taken or to be taken to reduce exposure to below that level.

**1926.62(f)(2)(ii)**—If an employee has breathing difficulty during fit testing or respirator use, the employer *must provide the employee with a medical examination* in accordance with *paragraph (j)(3)(i)(B) [Medical Examinations and Consultations]* of this section to determine whether or not the employee can use a respirator while performing the required duty.

**1926.62(j)(1)(i)**—The employer *shall make available initial medical surveillance* to employees occupationally exposed on any day to lead at or above the action level. Initial medical surveillance *consists of biological monitoring* in the form of blood sampling and analysis for lead and zinc protoporphyrin levels.

**1926.62(j)(1)(ii)**—The employer *shall institute a medical surveillance program* in accordance with *paragraphs (j)(2) [Biological Monitoring]* and *(j)(3) [Medical Examinations and Consultations]* of this section for all employees who are or may be exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months.

**1926.62(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 *paragraphs (j)(1)(i) and (ii) [Medical Surveillance]* of this section on a schedule. *[Reference paragraph (j)(2)(i) for specific information.]*

**1926.62(j)(2)(i)(A)**—For each employee covered under *paragraph (j)(1)(ii) [Medical Surveillance]* of this section, *at least every 2 months for the first 6 months and every 6 months thereafter;*

**1926.62(j)(2)(i)(B)**—For each employee covered under *paragraphs (j)(1)(i) or (ii) [Medical Surveillance]* of this section whose last blood sampling and analysis indicated a blood lead level at or above 40 µg/dl, *at least every two months*. This frequency shall continue until two consecutive blood samples and analyses indicate a blood lead level below 40 µg/dl.

**1926.62(j)(2)(i)(C)**—*For each employee who is removed from exposure to lead due to an elevated blood lead level at least monthly during the removal period.*

**1926.62(j)(2)(iv)(A)**—*Within five working days after the receipt of biological monitoring results, the employer shall notify each employee in writing* of his or her blood lead level.

**1926.62(j)(2)(iv)(B)**—The employer *shall notify each employee* whose blood lead level is at or above 40 µg/dl that the standard requires temporary medical removal with Medical Removal Protection benefits when an employee's blood lead level exceeds the numerical criterion for medical removal under *paragraph (k)(1)(i) [Medical Removal Protection]* of this section.

**1926.62(j)(3)(i)**—*Frequency.* The employer *shall make available medical examinations and consultations* to each employee covered under *paragraph (j)(1)(ii) [Medical Surveillance]* of this section on the following schedule:

**1926.62(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/dl. *[Reference paragraph (j)(3)(ii) for specific information.]*

**1926.62(j)(3)(i)(B)**—*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, that the employee is pregnant, or that the employee has demonstrated difficulty in breathing during a respirator fitting test or during use.

**1926.62(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.

**1926.62(j)(3)(iv)(A)**—The employer *shall provide an initial physician* conducting a medical examination or consultation under this section with additional information. *[Reference paragraph (j)(3)(iv) for specific information.]*

**1926.62(j)(3)(v)(A)**—The employer *shall obtain and furnish the employee with a copy of a written medical opinion* from each examining or consulting **physician** which contains specific information. *[Reference paragraph (j)(3)(v) for specific information.]*

**1926.62(j)(4)(ii)**—If therapeutic or diagnostic chelation is to be performed by any person in *paragraph (j)(4)(i) [Chelation]* of this section, the employer *shall assure that it be done under the supervision of a licensed physician in a clinical setting with thorough and appropriate medical monitoring and that the employee is notified in writing prior to its occurrence.*

**1926.62(k)(2)(i)**—Provision of medical removal protection benefits. The employer *shall provide an employee up to eighteen (18) months of medical removal protection* benefits on each occasion that an employee is removed from exposure to lead or otherwise limited pursuant to this section.

### Competent Person

**1926.62(e)(2)(iii)**—The **compliance program** *shall provide for frequent and regular inspections* of job sites, materials, and equipment to be *made by a competent person.*

### Qualified Person

**1926.62(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.



**1926.62(j)(3)(iv)(A)**—The employer *shall provide an initial **physician*** conducting a medical examination or consultation under this section with additional information. *[Reference paragraph (j)(3)(iv) for specific information.]*

**1926.62(j)(3)(v)(A)**—The employer *shall obtain and furnish the employee with a **copy of a written medical opinion*** from each examining or consulting **physician** which contains specific information. *[Reference paragraph (j)(3)(v) for specific information.]*

**1926.62(j)(4)(ii)**—If therapeutic or diagnostic chelation is to be performed by any person in *paragraph (j)(4)(i) [Chelation]* of this section, the employer *shall assure that it be done under the supervision of a **licensed physician** in a clinical setting with thorough and appropriate medical monitoring and that the employee is notified in **writing** prior to its occurrence.*

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

**1926.62(g)(2)(vii)(A)**—The employer shall ensure that the containers of contaminated protective clothing and equipment required by *paragraph (g)(2)(v) of this section* are **labeled**. *[Reference paragraph (g)(2)(vii)(A) for specific information.]*

**1926.62(g)(2)(vii)(B)**—Prior to June 1, 2015, employers *may include the following **information** on bags or containers of contaminated protective clothing and equipment required by paragraph (g)(2)(v) in lieu of the **labeling** requirements in paragraph (g)(2)(vii)(A) of this section. **Caution:** Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead contaminated wash water in accordance with applicable local, state, or federal regulations.*

**1926.62(l)(1)(i)**—*Hazard communication.* The employer *shall include lead 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 lead and safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (l) of this section. The employer shall ensure that the hazards are addressed. [Reference paragraph (l)(1)(i) for further information.]*

**1926.62(m)(1)(i)**—The employer *shall **post the following warning signs** in each work area where an employee's exposure to lead is above the PEL.*

**1926.62(m)(1)(iii)**—The employer *shall ensure that **signs** required by this paragraph (m) [Signs] are illuminated and cleaned as necessary so that the legend is readily visible.*

## **1926.64—PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS**

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.119 [Process Safety Management of Highly Hazardous Chemicals] of this chapter.*

## **1910.119—PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS**

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

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

## STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Inspections and Tests

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

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

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

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

## Recordkeeping

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

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

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

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

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

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

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

**1910.119(g)(1)(ii)**—*In lieu of initial training* for those employees already involved in operating a process on May 26, 1992, an employer may **certify in writing** that the employee has the **required knowledge, skills, and abilities** to safely carry out the duties and responsibilities as specified in the operating procedures.

**1910.119(g)(3)—Training documentation.** The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall **prepare a record** which contains the identity of the employee, the date of training, and the means *used to verify that* the employee understood the training.

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

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

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

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

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



**1910.119(m)(7)**—*Incident investigation reports shall be **retained** for five years.*

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

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

**1910.119(o)(5)**—*Employers shall retain the two (2) most recent **compliance audit reports**.*

### **Certification**

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

**1910.119(g)(1)(ii)**—*In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may **certify in writing** that the employee has the **required knowledge, skills, and abilities** to safely carry out the duties and responsibilities as specified in the **operating procedures**.*

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

### **Training and Communications**

**1910.119(g)(1)(i)**—*Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the **operating procedures** as specified in paragraph (f) [Operating Procedures] of this section. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and **safe work practices** applicable to the employee's job tasks. [Reference paragraph (g) for specific information.]*

**1910.119(g)(1)(ii)**—*In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may **certify in writing** that the employee has the **required knowledge, skills, and abilities** to safely carry out the duties and responsibilities as specified in the **operating procedures**.*

**1910.119(g)(2)**—*Refresher training. Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the **current operating procedures** of the process. The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.*

**1910.119(j)(3)**—*Training for process maintenance activities. The employer shall train each employee involved in maintaining the on-going integrity of process equipment in an overview of that process and its hazards and in the **procedures** applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.*

### **Exposure Monitoring**

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

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

### **Qualified Person**

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



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

## STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

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

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

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

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

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

### Recordkeeping

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

**1910.119(h)(3)(iii)**—The contract employer *shall **document** that each contract employee has received and understood the training* required by this paragraph. The contract employer shall **prepare a record** which contains the identity of the contract employee, the date of training, and the means *used to verify* that the employee understood the training. *[Reference paragraph (h) for specific record information.]*

### Training and Communications

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

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

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

**1910.119(h)(3)(ii)**—The contract employer *shall assure that each contract employee is instructed* in the known potential fire, explosion, or toxic release hazards related to his/her job and the process, and the applicable provisions of the **emergency action plan**.

**1910.119(h)(3)(iii)**—The contract employer *shall **document** that each contract employee has received and understood the training* required in this paragraph. The contract employer shall **prepare a record** which contains the identity of the contract employee, the date of training, and the means *used to verify* that the employee understood the training. *[Reference paragraph (h) for specific information.]*

## 1926.65—HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

**Scope/Application:** *This section covers the following operations, unless the employer can demonstrate that the operation does not involve employee exposure or the reasonable possibility for employee exposure to safety or health hazards: Clean-up operations required by a governmental body, whether Federal, state, local or other involving hazardous substances that are conducted at uncontrolled hazardous waste sites (including, but not limited to, the EPA's National Priority Site List (NPL), state priority site lists, sites recommended for the EPA NPL, and initial investigations of government identified sites which are conducted before the presence or absence of hazardous substances has been ascertained); Corrective actions involving clean-up operations at sites covered by the Resource Conservation and Recovery Act of 1976 (RCRA) as amended (42 U.S.C. 6901 et seq.); Voluntary clean-up operations at sites recognized by Federal, state, local or other governmental bodies as uncontrolled hazardous waste sites; Operations involving hazardous wastes that are conducted at treatment, storage, and disposal (TSD) facilities regulated by 40 CFR parts 264 and 265 pursuant to RCRA; or by agencies under agreement with U.S.E.P.A. to implement RCRA regulations; and Emergency response operations for releases of, or substantial threats of releases of, hazardous substances without regard to the location of the hazard. All provisions of paragraph (p) [Certain Operations Conducted Under the Resource Conservation and Recovery Act of 1976 (RCRA)] of this section cover any treatment, storage or disposal (TSD) operation regulated by 40 CFR parts 264 and 265 or by state law authorized under RCRA, and required to have a permit or interim status from EPA pursuant to 40 CFR 270.1 or from a state agency pursuant to RCRA.*

**Exception:** *Employers who are not required to have a permit or interim status because they are conditionally exempt small quantity generators under 40 CFR 261.5 or are generators who qualify under 40 CFR 262.34 for exemptions from regulation under 40 CFR parts 264, 265 and 270 ("excepted employers") are not covered by paragraphs (p)(1) through (p)(7) [Certain Operations Conducted Under the Resource Conservation and Recovery Act of 1976 (RCRA)] of this section. Excepted employers who are required by the EPA or state agency to have their employees engage in emergency response or who direct their employees to engage in emergency response are covered by paragraph (p)(8) [Emergency Response Program] of this section, and cannot be exempted by paragraph (p)(8)(i) [Emergency Response Plan] of this section. Excepted employers who are not required to have employees engage in emergency response, who direct their employees to evacuate in the case of such emergencies and who meet the requirements of paragraph (p)(8)(i) [Emergency Response Plan] of this section are exempt from the balance of paragraph (p)(8) [Emergency Response Program] of this section. If an area is used primarily for treatment, storage or disposal, any emergency response operations in that area shall comply with paragraph (p)(8) [Emergency Response Program] of this section. In other areas not used primarily for treatment, storage, or disposal, any emergency response operations shall comply with paragraph (q) [Emergency Response to Hazardous Substance Releases] of this section. Compliance with the requirements of paragraph (q) [Emergency Response to Hazardous Substance Releases] of this section shall be deemed to be in compliance with the requirements of paragraph (p)(8) [Emergency Response Program] of this section. Emergency response operations for releases of, or substantial threats of releases of, hazardous substances which are not covered by paragraphs (a)(1)(i) through (a)(1)(iv) [Scope] of this section must only comply with the requirements of paragraph (q) [Emergency Response to Hazardous Substance Releases] of this section.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—safety program, PPE program, spill containment program, site control program, emergency response plan, new technology programs
- Inspections and Tests—evaluations, preliminary
- Recordkeeping—retention requirements
- Certification—training
- Training and Communications—contractors, certificates
- Exposure Monitoring—prior to entry, initial, periodic
- Medical Surveillance—examinations, written opinion
- Competent Person—competency
- Qualified Person—site characterization and analysis
- Signs, Markings and Tags—labeling

## Programs, Plans and Procedures

**1926.65(b)(1)(i)**—Employers *shall develop and implement a **written safety and health program*** for their employees involved in hazardous waste operations. The **program** shall be designed to *identify, evaluate, and control safety and health hazards*, and provide for emergency response for hazardous waste operations. [Reference paragraph (b)(1)(ii) for specific elements.]

**1926.65(b)(1)(ii)**—The **written safety and health program** shall incorporate the following:

**1926.65(b)(1)(ii)(A)**—*An organizational structure.* [Reference paragraph (b)(2)(i) for specific elements.]

**1926.65(b)(1)(ii)(B)**—*A comprehensive workplan.* [Reference paragraph (b)(3) for specific elements.]

**1926.65(b)(1)(ii)(C)**—*A site-specific safety and health plan which need not repeat the employer's standard operating procedures required in paragraph (b)(1)(ii)(F) [Safety and Health Program] of this section.* [Reference paragraph (b)(4)(ii) and (d)(3) for specific information.]

**1926.65(b)(1)(ii)(D)**—The **safety and health training program**. [Reference paragraph (e)(2) for specific elements.]

**1926.65(b)(1)(ii)(E)**—The **medical surveillance program**. [Reference paragraph (f)(2) for specific information.]

**1926.65(b)(1)(ii)(F)**—The employer's *standard operating procedures* for safety and health. [Reference paragraph (d)(1) and (k)(2) for specific information.]

**1926.65(b)(1)(ii)(G)**—Any necessary interface between general **program** and site specific activities. [Reference paragraph (j) for specific information.]

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

**1926.65(b)(1)(iv)**—Contractors and sub-contractors. An employer who retains contractor or sub-contractor services for work in hazardous waste operations shall inform those contractors, sub-contractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by the employer, including those identified in the employer's **information program**.

**1926.65(b)(2)(i)**—The **organizational structure** part of the **program** shall establish the specific chain of command and specify the overall responsibilities of supervisors and employees. It shall include, at a minimum, specific elements. [Reference paragraph (b)(2)(i) for specific elements.]

**1926.65(b)(2)(ii)**—The **organizational structure** shall be reviewed and **updated** as necessary to reflect the current status of waste site operations.

**1926.65(b)(3)**—Comprehensive **workplan** part of the **site program**. The comprehensive **workplan** part of the **program** shall address the tasks and objectives of the site operations and the logistics and resources required to reach those tasks and objectives. [Reference paragraph (b)(3) for specific elements.]

**1926.65(b)(4)(i)**—General. The **site safety and health plan**, which must be **kept** on site, shall address the safety and health hazards of each phase of site operation and include the requirements and procedures for employee protection. [Reference paragraph (b)(4)(ii) for specific elements.]

**1926.65(c)(1)**—General. Hazardous waste sites shall be evaluated in accordance with this paragraph to identify specific site hazards and to determine the appropriate safety and health control procedures needed to protect employees from the identified hazards.

**1926.65(d)(1)**—General. *Appropriate site control procedures shall be implemented to control employee exposure to hazardous substances before clean-up work begins.*

**1926.65(d)(2)**—**Site control program.** *A **site control program** for protecting employees which is part of the employer's **safety and health program** required in paragraph (b) [Safety and Health Program] of this section shall be developed during the planning stages of a hazardous waste clean-up operation and modified as necessary as new information becomes available. [Reference paragraph (d)(3) for specific information.]*

**1926.65(e)(4)**—**Management and supervisor training.** *On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations shall receive 40 hours initial training, and three days of supervised field experience (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by paragraphs (e)(3)(ii) and (e)(3)(iii)) [Training] and at least eight additional hours of specialized training at the time of job assignment on such topics as, but not limited to, the employer's **safety and health program** and the associated employee **training program, personal protective equipment program, spill containment program,** and health hazard monitoring procedure and techniques.*

**1926.65(g)**—**Engineering controls, work practices, and personal protective equipment** for employee protection. *Engineering controls, work practices, personal protective equipment, or a combination of these shall be implemented in accordance with this paragraph to protect employees from exposure to hazardous substances and safety and health hazards.*

**1926.65(g)(5)**—**Personal protective equipment (PPE) program.** *A written **personal protective equipment program**, which is part of the employer's **safety and health program** required in paragraph (b) [Safety and Health Program] of this section or required in paragraph (p)(1) [Safety and Health Program] of this section and which is also a part of the site-specific **safety and health plan** shall be established. The **PPE program** shall address the elements listed below. When elements, such as *donning and doffing procedures*, are provided by the manufacturer of a piece of equipment and are attached to the **plan**, they need not be **rewritten** into the **plan** as long as they adequately address the *procedure* or element. [Reference paragraph (g)(5) for specific information.]*

**1926.65(i)**—**Informational programs.** *Employers shall develop and implement a **program**, which is part of the employer's **safety and health program** required in paragraph (b) [Safety and Health Program] of this section, to inform employees, contractors, and subcontractors (or their representative) actually engaged in hazardous waste operations of the nature, level and degree of exposure likely as a result of participation in such hazardous waste operations. Employees, contractors and subcontractors working outside of the operations part of a site are not covered by this **standard**.*

**1926.65(j)(1)(viii)**—Where major spills may occur, a **spill containment program**, which is part of the employer's **safety and health program** required in paragraph (b) [Safety and Health Program] of this section, *shall be implemented* to contain and isolate the entire volume of the hazardous substance being transferred. [Reference paragraph (j) for specific information.]

**1926.65(k)(2)(i)**—*A decontamination procedure shall be developed, communicated to employees and implemented before any employees or equipment may enter areas on site where potential for exposure to hazardous substances exists.*

**1926.65(k)(2)(ii)**—*Standard operating procedures shall be developed to minimize employee contact with hazardous substances or with equipment that has contacted hazardous substances.*

**1926.65(k)(2)(iv)**—*Decontamination procedures shall be monitored by the site safety and health supervisor to determine their effectiveness. When such *procedures* are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.*

**1926.65(l)(1)(i)**—An **emergency response plan** *shall be developed and implemented* by all employers within the scope of paragraphs (a)(1)(i) through (ii) [Scope] of this section to handle anticipated emergencies prior to the commencement of hazardous waste operations. The **plan** *shall be in writing and available for inspection and copying* by employees, their representatives, OSHA personnel and other governmental agencies with relevant responsibilities.



**1926.65(l)(1)(ii)**—Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an **emergency action plan** complying with *Sec. 1926.35 [Employee Emergency Action Plan]* of this part. *[Reference paragraph (l)(2) and (l)(3) for specific information.]*

**1926.65(l)(3)(v)**—The **site emergency response plan** shall be reviewed periodically and, as necessary, be **amended** to keep it current with new or changing site conditions or *information*.

**1926.65(l)(3)(vii)**—Based upon the information available at time of the emergency, the employer shall *evaluate the incident and the site response capabilities* and proceed with the appropriate steps to implement the **site emergency response plan**.

**1926.65(o)(1)**—The employer shall *develop and implement procedures* for the introduction of effective new technologies and equipment developed for the improved protection of employees working with hazardous waste clean-up operations, and the same shall be implemented as part of the **site safety and health program** to assure that employee protection is being **maintained**.

**1926.65(o)(2)**—*New technologies, equipment or control measures* available to the industry, such as the use of foams, absorbents, adsorbents, neutralizers, or other means to suppress the level of air contaminants while excavating the site or for spill control, shall be *evaluated* by employers or their representatives. Such an **evaluation** shall be done to determine the effectiveness of the new methods, *materials*, or equipment before implementing their use on a large scale for enhancing employee protection. **Information** and **data** from **manufacturers or suppliers** may be used as part of the **employer's evaluation** effort. Such **evaluations** shall be made **available** to OSHA upon request.

## **Inspections and Tests**

**1926.65(b)(4)(iv)**—Effectiveness of **site safety and health plan**. *Inspections shall be conducted* by the site safety and health supervisor or, in the absence of that individual, another individual who is *knowledgeable in occupational safety and health*, acting on behalf of the employer as necessary to determine the effectiveness of the **site safety and health plan**. Any deficiencies in the effectiveness of the **site safety and health plan** shall be *corrected* by the employer.

**1926.65(c)(1)**—General. *Hazardous waste sites shall be evaluated* in accordance with this paragraph to identify specific site hazards and to determine the appropriate *safety and health control procedures* needed to protect employees from the identified hazards.

**1926.65(c)(2)**—*Preliminary evaluation. A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a qualified person* in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more *detailed evaluation* of the site's specific characteristics shall be *performed by a qualified person* in order to further identify existing site hazards and to further aid in the selection of the appropriate *engineering controls and personal protective equipment* for the tasks to be performed.

**1926.65(c)(3)**—*Hazard identification. All suspected conditions that may pose inhalation or skin absorption hazards that are immediately dangerous to life or health (IDLH), or other conditions that may cause death or serious harm, shall be identified during the preliminary survey and evaluated during the detailed survey.* Examples of such hazards include, but are not limited to, confined space entry, potentially explosive or flammable situations, visible vapor clouds, or areas where biological indicators such as dead animals or vegetation are located.

**1926.65(c)(4)**—**Required information.** The following **information** to the extent **available** shall be obtained by the employer prior to allowing employees to enter a site. *[Reference paragraph (c)(4) for specific elements.]*

**1926.65(l)(3)(vii)**—Based upon the information available at time of the emergency, the employer shall *evaluate the incident and the site response capabilities* and proceed with the appropriate steps to implement the **site emergency response plan**.



## Certification

**1926.65(e)(6)—Training certification.** Employees and supervisors that have received and successfully completed the training and field experience specified in *paragraphs (e)(1) through (e)(4) [Training]* of this section shall be **certified** by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A **written certificate** shall be given to each person so **certified**. Any person who has not been so **certified** or who does not meet the requirements of *paragraph (e)(9) [Equivalent Training]* of this section shall be prohibited from engaging in hazardous waste operations.

**1926.65(e)(9)—Equivalent training.** Employers who can show by **documentation or certification** that an employee's work experience and/or training has resulted in training equivalent to that training required in *paragraphs (e)(1) through (e)(4) [Training]* of this section shall not be required to provide the initial training requirements of those paragraphs to such employees and shall provide a **copy of the certification or documentation** to the employee upon request. However, **certified** employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

## Recordkeeping

**1926.65(b)(1)(i)—Employers shall develop and implement a written safety and health program** for their employees involved in hazardous waste operations. The **program** shall be **designed to identify, evaluate, and control** safety and health hazards, and provide for emergency response for hazardous waste operations. [Reference paragraph (b)(1)(ii) for specific elements.]

**1926.65(b)(1)(v)—Program availability.** The **written safety and health program** shall be made available to any contractor or subcontractor or their representative who will be involved with the hazardous waste operation; to employees; to employee designated representatives; to OSHA personnel, and to personnel of other Federal, state, or local agencies with regulatory authority over the site.

**1926.65(b)(4)(iii)—Pre-entry briefing.** The **site specific safety and health plan** shall provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the **site safety and health plan** and that this **plan** is being followed. The **information and data obtained** from site characterization and analysis work required in *paragraph (c) [Site Characterization and Analysis]* of this section shall be used to **prepare and update the site safety and health plan**.

**1926.65(c)(4)—Required information.** The following **information to the extent available** shall be obtained by the employer prior to allowing employees to enter a site. [Reference paragraph (c)(4) for specific elements.]

**1926.65(c)(8)—Employee notification.** Any **information** concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is available to the employer and relevant to the duties an employee is expected to perform shall be **made available to the affected employees prior to the commencement of their work** activities. The employer may utilize information developed for the hazard communication **standard** for this purpose.

**1926.65(e)(6)—Training certification.** Employees and supervisors that have received and successfully completed the training and field experience specified in *paragraphs (e)(1) through (e)(4) [Training]* of this section shall be **certified** by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A **written certificate** shall be given to each person so **certified**. Any person who has not been so **certified** or who does not meet the requirements of *paragraph (e)(9) [Equivalent Training]* of this section shall be prohibited from engaging in hazardous waste operations.

**1926.65(e)(9)—Equivalent training.** Employers who can show by **documentation** or **certification** that an employee's work experience and/or training has resulted in training equivalent to that training required in *paragraphs (e)(1) through (e)(4) [Training]* of this section shall not be required to provide the initial training requirements of those paragraphs to such employees and shall provide a **copy** of the **certification** or **documentation** to the employee upon request. However, **certified** employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site. Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

**1926.65(f)(6)—Information provided to the physician.** The employer shall provide one **copy of this standard** and its **appendices** to the attending **physician**, and **additional information** for each employee: *[Reference paragraph (f)(6) for specific information.]*

**1926.65(f)(8)(i)**—An accurate **record of the medical surveillance** required by *paragraph (f) [Medical Surveillance]* of this section shall be **retained**. This **record** shall be **retained** for the period specified and meet the criteria of 29 CFR 1926.33 *[Access to Employee Exposure and Medical Records]*. *[Reference paragraph (f)(8)(ii) for specific information.]*

**1926.65(g)(5)—Personal protective equipment (PPE) program.** A written personal protective equipment program, which is part of the employer's **safety and health program** required in *paragraph (b) [Safety and Health Program]* of this section or required in *paragraph (p)(1) [Safety and Health Program]* of this section and which is also a part of the **site-specific safety and health plan** shall be established. The **PPE program** shall address the elements listed below. When elements, such as donning and doffing procedures, are provided by the manufacturer of a piece of equipment and are attached to the **plan**, they need not be **rewritten** into the **plan** as long as they adequately address the procedure or element. *[Reference paragraph (g)(5) for specific information.]*

**1926.65(l)(1)(i)**—An **emergency response plan** shall be developed and implemented by all employers within the scope of *paragraphs (a)(1)(i) through (ii) [Scope]* of this section to handle anticipated emergencies prior to the commencement of hazardous waste operations. The **plan** shall be in **writing** and **available** for inspection and **copying** by employees, their representatives, OSHA personnel and other governmental agencies with relevant responsibilities.

## **Training and Communications**

**1926.65(b)(1)(iv)**—Contractors and sub-contractors. An employer who retains contractor or sub-contractor services for work in hazardous waste operations shall inform those contractors, sub-contractors, or their representatives of the site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified by the employer, including those identified in the employer's **information program**.

**1926.65(b)(4)(iii)**—Pre-entry briefing. The **site specific safety and health plan** shall provide for pre-entry briefings to be held prior to initiating any site activity, and at such other times as necessary to ensure that employees are apprised of the **site safety and health plan** and that this **plan** is being followed. The **information and data** obtained from site characterization and analysis work required in *paragraph (c) [Site Characterization and Analysis]* of this section shall be used to prepare and update the **site safety and health plan**.

**1926.65(c)(7)(i)**—Once the presence and concentrations of specific hazardous substances and health hazards have been established, the risks associated with these substances shall be identified. Employees who will be working on the site shall be informed of any risks that have been identified. In situations covered by the Hazard Communication Standard, 29 CFR 1926.59, training required by that **standard** need not be duplicated.

**1926.65(c)(8)**—Employee notification. Any **information** concerning the chemical, physical, and toxicologic properties of each substance known or expected to be present on site that is **available** to the employer and relevant to the duties an employee is expected to perform shall be made available to the affected employees prior to the commencement of their work activities. The employer may utilize **information** developed for the hazard communication standard for this purpose.

**1926.65(e)(1)(i)**—All employees working on site (such as but not limited to equipment operators, general laborers and others) exposed to hazardous substances, health hazards, or safety hazards and their supervisors and management responsible for the site *shall receive training meeting the requirements of this paragraph before they are permitted to engage in hazardous waste operations* that could expose them to hazardous substances, safety, or health hazards, and they *shall receive review training as specified in this paragraph. [Reference paragraph (e)(2) for specific elements.]*

**1926.65(e)(3)(i)**—General site workers (such as equipment operators, general laborers and supervisory personnel) engaged in hazardous substance removal or other activities which expose or potentially expose workers to hazardous substances and health hazards *shall receive a minimum of 40 hours of instruction off the site, and a minimum of three days actual field experience* under the direct supervision of a *trained, experienced* supervisor.

**1926.65(e)(3)(ii)**—Workers on site only occasionally for a specific limited task (such as, but not limited to, ground water monitoring, land surveying, or geo-physical surveying) and who are unlikely to be exposed over permissible exposure limits and published exposure limits *shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience* under the direct supervision of a *trained, experienced* supervisor.

**1926.65(e)(3)(iii)**—Workers regularly on site who work in areas which have been monitored and fully characterized indicating that exposures are under permissible exposure limits and published exposure limits where respirators are not necessary, and the characterization indicates that there are no health hazards or the possibility of an emergency developing, *shall receive a minimum of 24 hours of instruction off the site and the minimum of one day actual field experience* under the direct supervision of a *trained, experienced* supervisor.

**1926.65(e)(3)(iv)**—Workers with 24 hours of training who are covered by *paragraphs (e)(3)(ii) and (e)(3)(iii) [Training]* of this section, and who become general site workers or who are required to wear respirators, *shall have the additional 16 hours and two days of training necessary to total the training specified in paragraph (e)(3)(i) [Training].*

**1926.65(e)(4)**—*Management and supervisor training.* On-site management and supervisors directly responsible for, or who supervise employees engaged in, hazardous waste operations *shall receive 40 hours initial training, and three days of supervised field experience* (the training may be reduced to 24 hours and one day if the only area of their responsibility is employees covered by *paragraphs (e)(3)(ii) and (e)(3)(iii) [Training]* and *at least eight additional hours of specialized training at the time of job assignment* on such topics as, but not limited to, the employer's **safety and health program** and the associated employee **training program, personal protective equipment program, spill containment program,** and **health hazard monitoring procedure and techniques.**

**1926.65(e)(5)**—*Qualifications for trainers.* Trainers *shall be qualified to instruct employees about the subject matter that is being presented in training.* Such trainers *shall have satisfactorily completed a **training program*** for teaching the subjects they are expected to teach, or they shall have the **academic credentials** and instructional experience necessary for teaching the subjects. *Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.*

**1926.65(e)(6)**—**Training certification.** Employees and supervisors that have received and successfully completed the training and field experience specified in *paragraphs (e)(1) through (e)(4) [Training]* of this section *shall be **certified** by their instructor or the head instructor and trained supervisor as having successfully completed the necessary training. A **written certificate** shall be given to each person so **certified**.* Any person who has not been so **certified** or who does not meet the requirements of *paragraph (e)(9) [Equivalent Training]* of this section shall be prohibited from engaging in hazardous waste operations.

**1926.65(e)(7)**—*Emergency response.* Employees who are engaged in responding to hazardous emergency situations at hazardous waste clean-up sites that may expose them to hazardous substances *shall be trained* in how to respond to such expected emergencies.

**1926.65(e)(8)**—*Refresher training.* Employees specified in *paragraph (e)(1) [Training]* of this section, and managers and supervisors specified in *paragraph (e)(4) [Management and Supervisor Training]* of this section, *shall receive eight hours of refresher training annually* on the items specified in *paragraph (e)(2) and/or (e)(4) [Training]* of this section, any critique of incidents that have occurred in the past year that can serve as training examples of related work, and other relevant topics.

**1926.65(e)(9)**—*Equivalent training.* Employers who can show by **documentation or certification** that an employee's work experience and/or training has resulted in training equivalent to that training required in *paragraphs (e)(1) through (e)(4) [Training]* of this section shall not be required to provide the initial training requirements of those paragraphs to such employees and *shall provide a copy of the certification or documentation* to the employee upon request. However, *certified employees or employees with equivalent training new to a site shall receive appropriate, site specific training before site entry and have appropriate supervised field experience at the new site.* Equivalent training includes any academic training or the training that existing employees might have already received from actual hazardous waste site work experience.

**1926.65(k)(7)**—*Commercial laundries or cleaning establishments.* Commercial laundries or cleaning establishments that decontaminate protective clothing or equipment *shall be informed* of the potentially harmful effects of exposures to hazardous substances.

**1926.65(l)(3)(iv)**—The **emergency response plan** *shall be rehearsed regularly as part of the overall training program* for site operations.

## **Exposure Monitoring**

**1926.65(c)(6)**—*Monitoring.* The following *monitoring shall be conducted during initial site entry* when the site evaluation produces information that shows the potential for ionizing radiation or IDLH conditions, or when the site information is not sufficient reasonably to eliminate these possible conditions. *[Reference paragraph (c)(6) for specific information.]*

**1926.65(h)(2)**—*Initial entry.* Upon initial entry, *representative air monitoring shall be conducted* to identify any IDLH condition, exposure over permissible exposure limits or published exposure levels, exposure over a radioactive material's dose limits or other dangerous condition such as the presence of flammable atmospheres or oxygen-deficient environments.

**1926.65(h)(3)**—*Periodic monitoring.* Periodic monitoring *shall be conducted* when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows: *[Reference paragraph (h)(3) for specific information.]*

**1926.65(k)(2)(iv)**—*Decontamination procedures shall be monitored* by the site safety and health supervisor to determine their effectiveness. When such *procedures* are found to be ineffective, appropriate steps shall be taken to correct any deficiencies.

## **Medical Surveillance**

**1926.65(f)(1)**—General. Employers engaged in operations specified in *paragraphs (a)(1)(i) through (a)(1)(iv) [Scope]* of this section and not covered by *paragraph (a)(2)(iii) [Scope]* exceptions and employers of employees specified in *paragraph (q)(9) [Medical Surveillance and Consultation]* shall institute a **medical surveillance program** in accordance with this paragraph. *[Reference paragraph (f)(2) for covered employees.]*

**1926.65(f)(3)**—*Frequency of medical examinations and consultations.* Medical examinations and consultations shall be made available by the employer to each employee covered under *paragraph (f)(2) [Medical Surveillance]* of this section on the following schedules. *[Reference paragraph (f)(4) for specific information on examinations.]*

**1926.65(f)(3)(i)(A)**—*Prior to assignment.*



**1926.65(f)(3)(i)(B)**—*At least once every twelve months for each employee covered unless the attending **physician** believes a longer interval (not greater than biennially) is appropriate.*

**1926.65(f)(3)(i)(C)**—*At termination of employment or reassignment to an area where the employee would not be covered if the employee has not had an examination within the last six months.*

**1926.65(f)(3)(i)(D)**—*As soon as possible upon notification by an employee that the employee has developed signs or symptoms indicating possible overexposure to hazardous substances or health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation.*

**1926.65(f)(3)(i)(E)**—*At more frequent times, if the examining **physician** determines that an increased frequency of examination is medically necessary.*

**1926.65(f)(3)(ii)**—For employees covered under *paragraph (f)(2)(iii) [Medical Surveillance]* and for all employees including those of employers covered by *paragraph (a)(1)(v) [Scope]* who may have been injured, received a health impairment, developed signs or symptoms which may have resulted from exposure to hazardous substances resulting from an emergency incident, or exposed during an emergency incident to hazardous substances at concentrations above the permissible exposure limits or the published exposure levels without the necessary personal protective equipment being used:

**1926.65(f)(3)(ii)(A)**—*As soon as possible following the emergency incident or development of signs or symptoms.*

**1926.65(f)(3)(ii)(B)**—*At additional times, if the examining **physician** determines that follow-up examinations or consultations are medically necessary.*

**1926.65(f)(6)**—**Information provided to the *physician*.** The employer shall provide one **copy of this standard** and its appendices to the attending **physician**, and additional **information** for each employee: *[Reference paragraph (f)(6) for specific information.]*

**1926.65(f)(7)(i)**—The employer shall **obtain and furnish** the employee with a **copy of a written opinion** from the attending **physician**. *[Reference paragraph (f)(7)(i) for specific information.]*

### **Competent Person**

**1926.65(e)(5)**—*Qualifications for trainers. Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a **training program** for teaching the subjects they are expected to teach, or they shall have the **academic credentials** and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.*

### **Qualified Person**

**1926.65(c)(2)**—*Preliminary evaluation. A preliminary evaluation of a site's characteristics shall be performed prior to site entry by a qualified person in order to aid in the selection of appropriate employee protection methods prior to site entry. Immediately after initial site entry, a more detailed evaluation of the site's specific characteristics shall be performed by a qualified person in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.*

**1926.65(e)(5)**—*Qualifications for trainers. Trainers shall be qualified to instruct employees about the subject matter that is being presented in training. Such trainers shall have satisfactorily completed a **training program** for teaching the subjects they are expected to teach, or they shall have the **academic credentials** and instructional experience necessary for teaching the subjects. Instructors shall demonstrate competent instructional skills and knowledge of the applicable subject matter.*



## Signs, Markings and Tags

**1926.65(j)(1)(i)**—Hazardous substances and contaminated soils, liquids, and other residues *shall be handled, transported, labeled, and disposed of in accordance with this paragraph.*

**1926.65(j)(8)(i)**—Drums and containers *shall be identified and classified* prior to packaging for shipment.

**1926.65(n)(1)(iii)**—Any container used to distribute drinking water *shall be clearly **marked*** as to the nature of its contents and not used for any other purpose.

**1926.65(n)(2)(i)**—Outlets for nonpotable water, such as water for fire fighting purposes, *shall be identified to indicate clearly* that the water is unsafe and is not to be used for drinking, washing, or cooking purposes.

***Note:** Certain operations conducted under the Resource Conservation and Recovery Act of 1976 (RCRA). Employers conducting operations at treatment, storage and disposal (TSD) facilities specified in paragraph (a)(1)(iv)[Scope] of this section shall provide and implement the programs specified in this paragraph. See the “Notes and Exceptions” to paragraph (a)(2)(iii) [Scope] of this section for employers not covered.*

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—hazard communication program, safety and health program, new technology program, medical surveillance program, decontamination program, emergency response plan, material handling program
- Recordkeeping—program, records
- Certification—training, annual
- Training and Communications—training program, initial and annual training
- Medical Surveillance—program
- Competent Person—credentials

## Programs, Plans and Procedures

**1926.65(p)(1)—Safety and health program.** *The employer shall develop and implement a **written safety and health program** for employees involved in hazardous waste operations that shall be **available** for inspection by employees, their representatives and OSHA personnel. The **program** shall be designed to *identify, evaluate and control safety and health hazards* in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of paragraph (p)(8) [Emergency Response Plan] of this section and to *address as appropriate site analysis, engineering controls, maximum exposure limits, hazardous waste handling procedures* and uses of new technologies.*

**1926.65(p)(2)—Hazard communication program.** *The employer shall implement a **hazard communication program** meeting the requirements of 29 CFR 1926.59—Hazard Communication as part of the employer’s **safety and program**. **Note to 1926.65**—*The exemption for hazardous waste provided in Sec. 1926.59 [Hazard Communication] is applicable to this section.**

**1926.65(p)(3)—Medical surveillance program.** *The employer shall develop and implement a **medical surveillance program** meeting the requirements of paragraph (f) [Medical Surveillance] of this section.*

**1926.65(p)(4)—Decontamination program.** *The employer shall develop and implement a **decontamination procedure** meeting the requirements of paragraph (k) [Decontamination] of this section.*

**1926.65(p)(5)—New technology program.** *The employer shall develop and implement **procedures** meeting the requirements of paragraph (o) [New Technology Programs] of this section for introducing new and innovative equipment into the workplace.*

**1926.65(p)(6)—Material handling program.** Where employees will be handling drums or containers, the employer *shall develop and implement procedures* meeting the requirements of *paragraphs (j)(1)(ii) through (viii) and (xi) [Handling Drums and Containers]* of this section, as well as *paragraphs (j)(3) [Material Handling Equipment] and (j)(8) [Shipping and Transport]* of this section prior to starting such work.

**1926.65(p)(7)(i)—New employees.** The employer *shall develop and implement a **training program***, which is part of the employer's **safety and health program**, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not endanger themselves or other employees. The *initial training shall be for 24 hours and refresher training shall be for eight hours annually*. Employees who have received the *initial training* required by this paragraph *shall be given a **written certificate*** attesting that they have successfully completed the necessary training.

**1926.65(p)(8)(i)—Emergency response plan.** *An emergency response plan shall be developed and implemented* by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by *permits*, such as those issued by the U.S. Environmental Protection Agency, provided that the **contingency plan** is made part of the **emergency response plan**. The **emergency response plan** *shall be a **written portion*** of the employers **safety and health program** required in *paragraph (p)(1)* of this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of *paragraph (p)(8)* if they provide an **emergency action plan** complying with 1926.35 of this part. *[Reference paragraph (p)(8)(ii) for specific information.]*

**1926.65(p)(8)(iii)(A)—Training for emergency response employees** *shall be completed before they are called upon to perform in real emergencies*. Such training shall include the *elements of the **emergency response plan***, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and *procedures* for handling emergency incidents. *[Reference paragraph (p)(8)(iii)(A) for exceptions.]*

**1926.65(p)(8)(iii)(B)—Employee members of TSD facility emergency response organizations** *shall be trained to a level of competence* in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the *safe operating procedures* to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures.

**1926.65(p)(8)(iv)(D)—The **site emergency response plan**** *shall be reviewed periodically* and, as necessary, be **amended** to keep it current with new or changing site conditions or information.

**1926.65(p)(8)(iv)(F)—Based upon the information available at time of the emergency, the employer shall evaluate the incident and the site response capabilities** and proceed with the appropriate steps to **implement the **site emergency response plan****.

## **Recordkeeping**

**1926.65(p)(1)—Safety and health program.** *The employer shall develop and implement a **written safety and health program*** for employees involved in hazardous waste operations that shall be *available for inspection* by employees, their representatives and OSHA personnel. The **program** *shall be **designed** to identify, evaluate and control* safety and health hazards in their facilities for the purpose of employee protection, to provide for emergency response meeting the requirements of *paragraph (p)(8) [Emergency Response Plan]* of this section and to address as appropriate site analysis, engineering controls, maximum exposure limits, *hazardous waste handling procedures* and uses of new technologies.

**1926.65(p)(2)—Hazard communication program.** The employer *shall implement a **hazard communication program*** meeting the requirements of 29 CFR 1926.59—Hazard Communication as part of the employer's **safety and program**.

**Note to 1926.65—The exemption for hazardous waste provided in Sec. 1926.59 [Hazard Communication] is applicable to this section.**

**1926.65(p)(3)—Medical surveillance program.** The employer *shall develop and implement a **medical surveillance program*** meeting the requirements of *paragraph (f) [Medical Surveillance]* of this section.

**1926.65(p)(4)—Decontamination program.** The employer *shall develop and implement a decontamination procedure* meeting the requirements of *paragraph (k) [Decontamination]* of this section.

**1926.65(p)(5)—New technology program.** The employer *shall develop and implement procedures* meeting the requirements of *paragraph (o) [New Technology Programs]* of this section for introducing new and innovative equipment into the workplace.

**1926.65(p)(6)—Material handling program.** Where employees will be handling drums or containers, the employer *shall develop and implement procedures* meeting the requirements of *paragraphs (j)(1)(ii) through (viii) and (xi) [Handling Drums and Containers]* of this section, as well as *paragraphs (j)(3) [Material Handling Equipment] and (j)(8) [Shipping and Transport]* of this section prior to starting such work.

**1926.65(p)(7)(i)—New employees.** The employer *shall develop and implement a **training program***, which is part of the employer's **safety and health program**, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not endanger themselves or other employees. The *initial training shall be for 24 hours and refresher training shall be for eight hours annually*. Employees who have received the *initial training* required by this paragraph *shall be given a **written certificate*** attesting that they have successfully completed the necessary training.

**1926.65(p)(7)(iii)—Trainers.** *Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the **academic credentials** and instruction experience necessary to demonstrate a good command of the subject matter of the courses and **competent instructional skills**.*

**1926.65(p)(8)(i)—Emergency response plan.** *An **emergency response plan** shall be developed and implemented* by all employers. Such plans need not duplicate any of the subjects fully addressed in the employer's contingency planning required by **permits**, such as those issued by the U.S. Environmental Protection Agency, provided that the **contingency plan** is made part of the **emergency response plan**. The **emergency response plan** *shall be a **written portion*** of the employers **safety and health program** required in *paragraph (p)(1)* of this section. Employers who will evacuate their employees from the worksite location when an emergency occurs and who do not permit any of their employees to assist in handling the emergency are exempt from the requirements of *paragraph (p)(8)* if they provide an **emergency action plan** complying with 1926.35 of this part. *[Reference paragraph (p)(8)(ii) for specific information]*

**1926.65(p)(8)(iii)(C)—**The employer *shall **certify*** that each covered employee has attended and successfully completed the training required in *paragraph (p)(8)(iii) [Training]* of this section, or *shall **certify** the employee's competency at least yearly*. The method used to demonstrate competency for **certification** of training *shall be **recorded and maintain*** by the employer. *[Reference paragraph (p)(8)(iv)(A) for specific information.]*

## **Certification**

**1926.65(p)(7)(i)—New employees.** The employer *shall develop and implement a **training program***, which is part of the employer's **safety and health program**, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not endanger themselves or other employees. The *initial training shall be for 24 hours and refresher training shall be for eight hours annually*. Employees who have received the initial training required by this paragraph *shall be given a **written certificate*** attesting that they have successfully completed the necessary training.

**1926.65(p)(8)(iii)(C)—**The employer *shall **certify*** that each covered employee has attended and successfully completed the training required in *paragraph (p)(8)(iii) [Training]* of this section, or *shall **certify** the employee's competency at least yearly*. The method used to demonstrate competency for **certification** of training *shall be **recorded and maintain*** by the employer. *[Reference paragraph (p)(8)(iv)(A) for specific information.]*

## Training and Communications

**1926.65(p)(7)(i)**—*New employees.* The employer shall develop and implement a **training program**, which is part of the employer's **safety and health program**, for employees exposed to health hazards or hazardous substances at TSD operations to enable the employees to perform their assigned duties and functions in a safe and healthful manner so as not endanger themselves or other employees. The *initial training shall be for 24 hours and refresher training shall be for eight hours annually*. Employees who have received the initial training required by this paragraph shall be given a **written certificate** attesting that they have successfully completed the necessary training.

**1926.65(p)(7)(ii)**—*Current employees.* Employers who can show by an employee's previous work experience and/or training that the employee has had training equivalent to the *initial training* required by this paragraph, shall be considered as meeting the *initial training* requirements of this paragraph as to that employee. Equivalent training includes the training that existing employees might have already received from actual site work experience. *Current employees shall receive eight hours of refresher training annually.*

**1926.65(p)(7)(iii)**—*Trainers.* Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the **academic credentials** and instruction experience necessary to demonstrate a good command of the subject matter of the courses and *competent instructional skills*.

**1926.65(p)(8)(iii)(A)**—*Training for emergency response employees shall be completed before they are called upon to perform in real emergencies.* Such training shall include the *elements of the emergency response plan*, standard operating procedures the employer has established for the job, the personal protective equipment to be worn and procedures for handling emergency incidents. [Reference paragraph (p)(8)(iii)(A) for exceptions.]

**1926.65(p)(8)(iii)(B)**—Employee members of TSD facility emergency response organizations shall be trained to a level of *competence* in the recognition of health and safety hazards to protect themselves and other employees. This would include training in the methods used to minimize the risk from safety and health hazards; in the safe use of control equipment; in the selection and use of appropriate personal protective equipment; in the *safe operating procedures* to be used at the incident scene; in the techniques of coordination with other employees to minimize risks; in the appropriate response to over exposure from health hazards or injury to themselves and other employees; and in the recognition of subsequent symptoms which may result from over exposures.

**1926.65(p)(8)(iv)(C)**—The **emergency response plan** shall be rehearsed regularly as part of the overall **training program** for site operations.

## Medical Surveillance

**1926.65(p)(3)**—**Medical surveillance program.** The employer shall develop and implement a **medical surveillance program** meeting the requirements of paragraph (f) [Medical Surveillance] of this section.

## Competent Person

**1926.65(p)(7)(iii)**—*Trainers.* Trainers who teach initial training shall have satisfactorily completed a training course for teaching the subjects they are expected to teach or they shall have the **academic credentials** and instruction experience necessary to demonstrate a good command of the subject matter of the courses and *competent instructional skills*.

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



## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—emergency response plan
- Recordkeeping—program, records
- Certification—training
- Training and Communications—initially, annually, briefings
- Medical Surveillance—baseline, consultations
- Competent Person—competency
- Qualified Person—individual in charge, trainers

### Programs, Plans and Procedures

**1926.65(q)(1)—Emergency response plan.** *An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The **plan** shall be in **writing** and available for inspection and **copying** by employees, their representatives and OSHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an **emergency action plan** in accordance with 1926.35 [Employee Emergency Action Plans] of this part. [Reference paragraph (q)(2) for specific information.]*

**1926.65(q)(4)—Skilled support personnel.** *Personnel, not necessarily an employer's own employees, who are skilled in the operation of certain equipment, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this paragraph for the employer's regular employees. However, these personnel shall be given an initial briefing at the site prior to their participation in any emergency response. The initial briefing shall include instruction in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees shall be used to assure the safety and health of these personnel.*

**1926.65(q)(11)(ii)**—Where the clean-up is done on plant property using plant or workplace employees, such employees shall have completed the training requirements of the following: 29 CFR 1926.35 [Employee Emergency Action Plans], 1926.59 [Hazard Communication], and 1926.103 [Respiratory Protection], and other appropriate safety and health training made necessary by the tasks that they are expected to be performed such as personal protective equipment and decontamination procedures. All equipment to be used in the performance of the clean-up work shall be in serviceable condition and shall have been inspected prior to use.

### Recordkeeping

**1926.65(q)(1)—Emergency response plan.** *An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The **plan** shall be in **writing** and available for inspection and **copying** by employees, their representatives and OSHA personnel. Employers who will evacuate their employees from the danger area when an emergency occurs, and who do not permit any of their employees to assist in handling the emergency, are exempt from the requirements of this paragraph if they provide an **emergency action plan** in accordance with 1926.35 [Employee Emergency Action Plans] of this part. [Reference paragraph (q)(2) for specific information.]*

**1926.65(q)(6)(ii)—First responder operations level.** *First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in specific areas in addition to those listed for the awareness level and the employer shall so **certify**. [Reference paragraph (q)(6)(ii) for specific information.]*



**1926.65(q)(6)(iii)**—*Hazardous materials technician.* Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians *shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iii) for specific information.]

**1926.65(q)(6)(iv)**—*Hazardous materials specialist.* Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists *shall have received at least 24 hours of training equal to the technician level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iv) for specific information.]

**1926.65(q)(6)(v)**—*On scene incident commander.* Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, *shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(v) for specific information.]

**1926.65(q)(8)(ii)**—A **statement** shall be made of the training or competency, and if a **statement of competency** is made, the employer shall keep a **record** of the methodology used to demonstrate competency.

## **Certification**

**1926.65(q)(6)(ii)**—*First responder operations level.* First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They *are trained to respond* in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level *shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in specific areas in addition to those listed for the awareness level and the employer shall so **certify**.* [Reference paragraph (q)(6)(ii) for specific information.]

**1926.65(q)(6)(iii)**—*Hazardous materials technician.* Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians *shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iii) for specific information.]

**1926.65(q)(6)(iv)**—*Hazardous materials specialist.* Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists *shall have received at least 24 hours of training equal to the technician level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iv) for specific information.]

**1926.65(q)(6)(v)—On scene incident commander.** Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, *shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so certify.* [Reference paragraph (q)(6)(v) for specific information.]

## **Training and Communications**

**1926.65(q)(4)—Skilled support personnel.** Personnel, not necessarily an employer's own employees, *who are skilled in the operation of certain equipment*, such as mechanized earth moving or digging equipment or crane and hoisting equipment, and who are needed temporarily to perform immediate emergency support work that cannot reasonably be performed in a timely fashion by an employer's own employees, and who will be or may be exposed to the hazards at an emergency response scene, are not required to meet the training required in this paragraph for the employer's regular employees. However, *these personnel shall be given an initial briefing* at the site prior to their participation in any emergency response. The initial briefing *shall include instruction* in the wearing of appropriate personal protective equipment, what chemical hazards are involved, and what duties are to be performed. All other appropriate safety and health precautions provided to the employer's own employees shall be used to assure the safety and health of these personnel.

**1926.65(q)(5)—Specialist employees.** Employees who, in the course of their regular job duties, work with *and are trained in the hazards* of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the *individual in charge*, *shall receive training or demonstrate competency in the area of their specialization annually.*

**1926.65(q)(6)—Training.** Training shall be based on the duties and function to be performed by each responder of an emergency response organization. The skill and knowledge levels required for all new responders, those hired after the effective date of this **standard**, *shall be conveyed to them through training before they are permitted to take part in actual emergency operations on an incident. Employees who participate, or are expected to participate, in emergency response, shall be given training in accordance with the following paragraphs:*

**1926.65(q)(6)(i)—First responder awareness level.** First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who *have been trained* to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level *shall have sufficient training or have had sufficient experience* to objectively demonstrate competency in specific areas. [Reference paragraph (q)(6)(i) for specific information.]

**1926.65(q)(6)(ii)—First responder operations level.** First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They *are trained to respond* in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level *shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in specific areas in addition to those listed for the awareness level and the employer shall so certify.* [Reference paragraph (q)(6)(ii) for specific information.]

**1926.65(q)(6)(iii)—Hazardous materials technician.** Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians *shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so certify.* [Reference paragraph (q)(6)(iii) for specific information.]

**1926.65(q)(6)(iv)**—*Hazardous materials specialist.* Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists *shall have received at least 24 hours of training equal to the technician level and in addition have competency in specific areas and the employer shall so certify.* [Reference paragraph (q)(6)(iv) for specific information.]

**1926.65(q)(6)(v)**—*On scene incident commander.* Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, *shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so certify.* [Reference paragraph (q)(6)(v) for specific information.]

**1926.65(q)(7)**—*Trainers.* Trainers who teach any of the above training subjects *shall have satisfactorily completed a training course* for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they *shall have the training and/or academic credentials and instructional experience* necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

**1926.65(q)(8)(i)**—Those employees who are trained in accordance with *paragraph (q)(6) [Training]* of this section *shall receive annual refresher training* of sufficient content and duration to maintain their competencies, or shall demonstrate competency in those areas *at least yearly.*

**1926.65(q)(11)(ii)**—Where the clean-up is done on plant property using plant or workplace employees, such employees *shall have completed the training requirements* of the following: 29 CFR 1926.35 [Employee Emergency Action Plans], 1926.59 [Hazard Communication], and 1926.103 [Respiratory Protection], and other appropriate safety and health training made necessary by the tasks that they are expected to be performed such as personal protective equipment and *decontamination procedures.* All equipment to be used in the performance of the clean-up work shall be in serviceable condition and shall have been *inspected prior to use.*

## Medical Surveillance

**1926.65(q)(9)(i)**—Members of an organized and designated HAZMAT team and hazardous materials specialists *shall receive a baseline physical examination and be provided with medical surveillance as required in paragraph (f) [Medical Surveillance]* of this section.

**1926.65(q)(9)(ii)**—Any emergency response employees who exhibits signs or symptoms which may have resulted from exposure to hazardous substances during the course of an emergency incident, either immediately or subsequently, *shall be provided with medical consultation as required in paragraph (f)(3)(ii) [Medical Surveillance]* of this section.

## Competent Person

**1926.65(q)(6)(ii)**—*First responder operations level.* First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They are trained to respond in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level *shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in specific areas in addition to those listed for the awareness level and the employer shall so certify.* [Reference paragraph (q)(6)(ii) for specific information.]

**1926.65(q)(6)(iii)—Hazardous materials technician.** Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians *shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iii) for specific information.]

**1926.65(q)(6)(iv)—Hazardous materials specialist.** Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists *shall have received at least 24 hours of training equal to the technician level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iv) for specific information.]

**1926.65(q)(6)(v)—On scene incident commander.** Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, *shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(v) for specific information.]

**1926.65(q)(7)—Trainers.** Trainers who teach any of the above training subjects *shall have satisfactorily completed a training course* for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they *shall have the training and/or **academic credentials** and instructional experience* necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

**1926.65(q)(8)(i)**—Those employees who are trained in accordance with *paragraph (q)(6) [Training]* of this section *shall receive annual refresher training* of sufficient content and duration to maintain their *competencies*, or shall demonstrate competency in those areas *at least yearly*.

**1926.65(q)(8)(ii)**—A **statement** shall be made of the training or competency, and if a **statement of competency** is made, the employer shall keep a **record** of the methodology used to demonstrate competency.

## **Qualified Person**

**1926.65(q)(5)—Specialist employees.** Employees who, in the course of their regular job duties, work with *and are trained in the hazards* of specific hazardous substances, and who will be called upon to provide technical advice or assistance at a hazardous substance release incident to the *individual in charge*, *shall receive training or demonstrate competency in the area of their specialization annually*.

**1926.65(q)(6)(i)—First responder awareness level.** First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who *have been trained* to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. First responders at the awareness level *shall have sufficient training or have had sufficient experience* to objectively demonstrate competency in specific areas. [Reference paragraph (q)(6)(i) for specific information.]

**1926.65(q)(6)(ii)—First responder operations level.** First responders at the operations level are individuals who respond to releases or potential releases of hazardous substances as part of the initial response to the site for the purpose of protecting nearby persons, property, or the environment from the effects of the release. They *are trained to respond* in a defensive fashion without actually trying to stop the release. Their function is to contain the release from a safe distance, keep it from spreading, and prevent exposures. First responders at the operational level *shall have received at least eight hours of training or have had sufficient experience to objectively demonstrate competency in specific areas in addition to those listed for the awareness level and the employer shall so **certify**.* [Reference paragraph (q)(6)(ii) for specific information.]



**1926.65(q)(6)(iii)—Hazardous materials technician.** Hazardous materials technicians are individuals who respond to releases or potential releases for the purpose of stopping the release. They assume a more aggressive role than a first responder at the operations level in that they will approach the point of release in order to plug, patch or otherwise stop the release of a hazardous substance. Hazardous materials technicians *shall have received at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iii) for specific information.]

**1926.65(q)(6)(iv)—Hazardous materials specialist.** Hazardous materials specialists are individuals who respond with and provide support to hazardous materials technicians. Their duties parallel those of the hazardous materials technician, however, those duties require a more directed or specific knowledge of the various substances they may be called upon to contain. The hazardous materials specialist would also act as the site liaison with Federal, state, local and other government authorities in regards to site activities. Hazardous materials specialists *shall have received at least 24 hours of training equal to the technician level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(iv) for specific information.]

**1926.65(q)(6)(v)—On scene incident commander.** Incident commanders, who will assume control of the incident scene beyond the first responder awareness level, *shall receive at least 24 hours of training equal to the first responder operations level and in addition have competency in specific areas and the employer shall so **certify**.* [Reference paragraph (q)(6)(v) for specific information.]

**1926.65(q)(7)—Trainers.** Trainers who teach any of the above training subjects *shall have satisfactorily completed a training course* for teaching the subjects they are expected to teach, such as the courses offered by the U.S. National Fire Academy, or they *shall have the training and/or **academic credentials** and instructional experience* necessary to demonstrate competent instructional skills and a good command of the subject matter of the courses they are to teach.

## **1926.66—CRITERIA FOR DESIGN AND CONSTRUCTION OF SPRAY BOOTHS**

**Scope/Application:** *This section applies to the design and construction of spray booths.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—filter rolls

### **Inspections and Tests**

**1926.66(b)(5)(i)**—The spraying operations except electrostatic spraying operations shall be so designed, installed and ***maintain*** that the average air velocity over the open face of the booth (or booth cross section during spraying operations) shall be not less than 100 linear feet per minute. Electrostatic spraying operations may be conducted with an air velocity over the open face of the booth of not less than 60 linear feet per minute, or more, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges or audible alarm or pressure activated devices shall be installed to indicate or insure that the required air velocity is maintained. *Filter rolls shall be inspected* to insure proper replacement of filter media.



## 1926.97—ELECTRICAL PROTECTIVE EQUIPMENT

**Scope/Application:** *This section applies to electrical protective equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—demonstrate
- Inspections and Tests—tests
- Recordkeeping—certify
- Certification—certify
- Signs, Markings and Tags—markings

### Programs, Plans and Procedures

**1926.97(c)(2)(vii)(C)**—Any other class of glove may be used without protector gloves, under limited-use conditions, when small equipment and parts manipulation necessitate unusually high finger dexterity but only if the *employer can demonstrate that the* possibility of physical damage to the gloves is small and if the class of glove is one class higher than that required for the voltage involved.

### Inspections and Tests

**1926.97(a)(2)(i)**—Equipment shall be capable of withstanding the ac *proof-test* voltage specified in Table E-1 or the *dc proof-test* voltage specified in Table E-2.

**1926.97(a)(2)(iv)**—Material used for Type II insulating equipment shall be capable of withstanding an *ozone test*, with no visible effects. The *ozone test shall reliably indicate* that the material will resist ozone exposure in actual use. Any visible signs of ozone deterioration of the material, such as checking, cracking, breaks, or pitting, is evidence of failure to meet the requirements for ozonerestant material. (See the note following *paragraph (a)(3)(ii)(B) [Workmanship and Finish]* of this section.)

**1926.97(a)(3)(i)**—Equipment shall be free of physical irregularities that can adversely affect the insulating properties of the equipment and that can be *detected by the tests or inspections* required under this section.

**1926.97(b)(2)(i)**—Protective equipment used for the primary insulation of employees from energized circuit parts shall be capable of *passing a current test* when subjected to the highest nominal voltage on which the equipment is to be used.

**1926.97(c)(2)(ii)**—Insulating *equipment shall be inspected* for damage before each day's use and immediately following any incident that can reasonably be suspected of causing damage. Insulating gloves shall be given an air test, *along with the inspection*.

**1926.97(c)(2)(iv)**—Insulating equipment found to have other defects that might affect its insulating properties shall be removed from service and *returned for testing* under *paragraphs (c)(2)(viii) and (c)(2)(ix) [Specific Requirements]* of this section.

**1926.97(c)(2)(vii)(D)**—Insulating gloves that have been used without protector gloves may not be reused *until they have been tested* under the provisions of *paragraphs (c)(2)(viii) and (c)(2)(ix) [Specific Requirements]* of this section.

**1926.97(c)(2)(viii)**—Electrical protective equipment shall be *subjected to periodic electrical tests*. *Test voltages and the maximum intervals between tests* shall be in accordance with *Table E-4 [Rubber Insulating Equipment—Voltage Requirements]* and *Table E-5 [Rubber Insulating Equipment—Test Intervals]*.

**1926.97(c)(2)(x)**—Insulating equipment failing to pass *inspections or electrical tests* may not be used by employees, except as follows: *[Reference (c)(2)(x) for specific requirements.]*

**1926.97(c)(2)(xi)**—Repaired insulating equipment *shall be retested* before it may be used by employees.

**1926.97(c)(2)(xii)**—The employer *shall certify that equipment has been tested* in accordance with the requirements of paragraphs (c)(2)(iv), (c)(2)(vii)(D), (c)(2)(viii), (c)(2)(ix), and (c)(2)(xi) of this section. The **certification** *shall identify the equipment that passed the test and the date it was tested and shall be made available upon request* to the Assistant Secretary for Occupational Safety and Health and to employees or their authorized representatives.

**Note to paragraph (c)(2)(xii):** *Marking equipment with, and entering onto logs, the results of the tests and the dates of testing are two acceptable means of meeting the certification requirement.*

### **Recordkeeping**

**1926.97(c)(2)(xii)**—The employer *shall certify that equipment has been tested* in accordance with the requirements of paragraphs (c)(2)(iv), (c)(2)(vii)(D), (c)(2)(viii), (c)(2)(ix), and (c)(2)(xi) of this section. The **certification** *shall identify the equipment that passed the test and the date it was tested and shall be made available upon request* to the Assistant Secretary for Occupational Safety and Health and to employees or their authorized representatives.

**Note to paragraph (c)(2)(xii):** *Marking equipment with, and entering onto logs, the results of the tests and the dates of testing are two acceptable means of meeting the certification requirement.*

### **Certification**

**1926.97(c)(2)(xii)**—The employer *shall certify that equipment has been tested* in accordance with the requirements of paragraphs (c)(2)(iv), (c)(2)(vii)(D), (c)(2)(viii), (c)(2)(ix), and (c)(2)(xi) of this section. The **certification** *shall identify the equipment that passed the test and the date it was tested and shall be made available upon request* to the Assistant Secretary for Occupational Safety and Health and to employees or their authorized representatives.

**Note to paragraph (c)(2)(xii):** *Marking equipment with, and entering onto logs, the results of the tests and the dates of testing are two acceptable means of meeting the certification requirement.*

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

**1926.97(a)(1)(ii)**—Each item shall be *clearly marked*. [Reference paragraph (a)(1)(ii) for specific requirements.]

**1926.97(a)(1)(ii)(I)**—Other relevant **markings**, such as the **manufacturer's identification** and the size of the equipment, may also be provided.

**1926.97(a)(1)(iii)**—**Markings** *shall be nonconducting and shall be applied* in such a manner as not to impair the insulating qualities of the equipment.

**1926.97(a)(1)(iv)**—**Markings** *on gloves shall be confined* to the cuff portion of the glove.

**1926.97(c)(2)(xii)**—The employer *shall certify that equipment has been tested* in accordance with the requirements of paragraphs (c)(2)(iv), (c)(2)(vii)(D), (c)(2)(viii), (c)(2)(ix), and (c)(2)(xi) of this section. The **certification** *shall identify the equipment that passed the test and the date it was tested and shall be made available upon request* to the Assistant Secretary for Occupational Safety and Health and to employees or their authorized representatives.

**Note to paragraph (c)(2)(xii):** *Marking equipment with, and entering onto logs, the results of the tests and the dates of testing are two acceptable means of meeting the certification requirement.*

## 29 CFR 1926 Subpart E—Personal Protective and Life Saving Equipment

### 1926.101—HEARING PROTECTION

*Scope/Application:* This section applies to hearing protective devices.

#### STANDARD HIGHLIGHTS

- Competent Person—ear protection devices

#### Competent Person

**1926.101(b)**—Ear protective devices inserted in the ear shall be fitted or determined individually by *competent persons*.

### 1926.103—RESPIRATORY PROTECTION

*Scope/Application:* The requirements applicable to construction work under this section are identical to those set forth at 29 CFR 1910.134 [Respiratory Protection] of this chapter. \

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

#### Programs, Plans and Procedures

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

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

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

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

## Inspections and Tests

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

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

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

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

**1910.134(h)(3)(iii)**—In addition to the requirements of *paragraphs (h)(3)(i) and (ii) [Inspection]* of this section, self-contained breathing apparatus *shall be inspected monthly.* Air and oxygen cylinders shall be *maintained* in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

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

## Recordkeeping

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

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

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

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

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

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

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

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

## Certification

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

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

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

## Training and Communications

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

**1910.134(k)—Training and information.** This paragraph requires the employer to *provide effective training to employees* who are required to use respirators. The training must be comprehensive, understandable, and *recur annually, and more often if necessary*. This paragraph also requires the employer to *provide the basic information on respirators in Appendix D* [Information for Employees Using Respirators When Not Required Under Standard] of this section to employees who wear respirators when not required by this section or by the employer to do so. [Reference paragraph (k)(1) for specific training information.]

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

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

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

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

**1910.134(k)(6)—**The basic advisory information on respirators, as presented in *Appendix D—Information for Employees Using Respirators When Not Required Under Standard* of this section, shall be provided by the employer in any *written* or oral *format*, to employees who wear respirators when such use is not required by this section or by the employer.



## Medical Surveillance

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

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

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

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

## Qualified Person

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

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

**1910.134(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.

## 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.

## 29 CFR Subpart F—Fire Protection and Prevention

### 1926.150—FIRE PROTECTION

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

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—fire protection program
- Inspections and Tests—periodic inspections
- Recordkeeping—instructions
- Training and Communications—fire brigade, instructions posted
- Signs, Markings and Tags—standpipes marked

#### Programs, Plans and Procedures

**1926.150(a)(1)**—The employer shall be responsible for the *development of a **fire protection program*** to be followed throughout all phases of the construction and demolition work, and he shall provide for the firefighting equipment as specified in this subpart. As fire hazards occur, there shall be no delay in providing the necessary equipment.

#### Inspections and Tests

**1926.150(a)(4)**—All firefighting equipment *shall be periodically inspected* and maintained in operating condition. Defective equipment shall be immediately replaced.

**1926.150(c)(1)(viii)**—Portable fire extinguishers *shall be inspected periodically* and maintained in accordance with *Maintenance and Use of Portable Fire Extinguishers, NFPA No. 10A-1970*.

#### Recordkeeping

**1926.150(e)(2)**—The *alarm code and **reporting instructions** shall be conspicuously **posted*** at phones and at employee entrances.

#### Training and Communications

**1926.150(a)(5)**—As warranted by the project, the employer *shall provide a trained and equipped* firefighting organization (Fire Brigade) to assure adequate protection to life.

**1926.150(e)(2)**—The *alarm code and **reporting instructions** shall be conspicuously **posted*** at phones and at employee entrances.

#### Signs, Markings and Tags

**1926.150(d)(2)**—Standpipes. In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall be brought up as soon as applicable laws permit, and shall be maintained as construction progresses in such a manner that they are always ready for fire protection use. The standpipes shall be provided with Siamese fire department connections on the outside of the structure, at the street level, which *shall be conspicuously **marked***. There shall be at least one standard hose outlet at each floor.

**1926.150(e)(2)**—The *alarm code and **reporting instructions** shall be conspicuously **posted*** at phones and at employee entrances.

## 1926.151—FIRE PREVENTION

**Scope/Application:** *This section applies to fire prevention.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—regular procedures for periodic cleanup
- Signs, Markings and Tags—posted signs

#### Programs, Plans and Procedures

**1926.151(c)(3)**—The entire storage site shall be kept free from accumulation of unnecessary combustible *materials*. Weeds and grass shall be kept down and a *regular procedure provided for the periodic cleanup* of the entire area.

#### Signs, Markings and Tags

**1926.151(a)(3)**—Smoking shall be prohibited at or in the vicinity of operations which constitute a fire hazard, and *shall be conspicuously posted*: “No Smoking or Open Flame.”

## 1926.152—FLAMMABLE AND COMBUSTIBLE LIQUIDS

**Scope/Application:** *This section applies to flammable and combustible liquids.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—strength testing
- Recordkeeping—posted instructions
- Training and Communications—posted emergency instructions
- Signs, Markings and Tags—signs posted, cabinets labeled

#### Inspections and Tests

**1926.152(i)(7)(i)**—General. All tanks, whether shop built or field erected, *shall be strength tested* before they are placed in service in accordance with the applicable paragraphs of the code under which they were built. The *American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters’ Laboratories, Inc.*, on a tank shall be evidence of compliance with this strength test. Tanks not **marked** in accordance with the above codes *shall be strength tested before they are placed in service* in accordance with good engineering principles and reference shall be made to the sections on testing in the codes listed in paragraphs (i)(1)(iii)(A), (iv)(B), or (v)(B) of this section.

#### Recordkeeping

**1926.152(i)(5)(vi)(V)(2)**—That *detailed printed instructions of what to do in flood emergencies are properly posted*.

#### Training and Communications

**1926.152(i)(5)(vi)(V)(2)**—That *detailed printed instructions of what to do in flood emergencies are properly posted*.

**1926.152(i)(5)(vi)(V)(3)**—That station operators and other employees depended upon to carry out *such instructions* are *thoroughly informed* as to the location and operation of such valves and other equipment necessary to effect these requirements.

## Signs, Markings and Tags

**1926.152(b)(2)(iii)**—Cabinets *shall be labeled* in conspicuous lettering, “Flammable-Keep Fire Away.”

**1926.152(g)(6)**—Clearly *identified* and easily accessible switch(es) *shall be provided* at a location remote from dispensing devices to shut off the power to all dispensing devices in the event of an emergency.

**1926.152(g)(9)**—Conspicuous and legible *signs prohibiting smoking shall be posted*.

**1926.152(i)(5)(vi)(V)(2)**—That *detailed printed instructions of what to do in flood emergencies are properly posted*.

**1926.152(i)(7)(i)**—General. All tanks, whether shop built or field erected, *shall be strength tested* before they are placed in service in accordance with the applicable paragraphs of the code under which they were built. The *American Society of Mechanical Engineers (ASME) code stamp, American Petroleum Institute (API) monogram, or the label of the Underwriters’ Laboratories, Inc.*, on a tank shall be evidence of compliance with this strength test. Tanks not *marked* in accordance with the above codes *shall be strength tested before they are placed in service* in accordance with good engineering principles and reference shall be made to the sections on testing in the codes listed in paragraphs (i)(1)(iii)(A), (iv)(B), or (v)(B) of this section.

## 1926.153—LIQUEFIED PETROLEUM GAS

*Scope/Application: This section applies to liquefied petroleum gas.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tests

### Inspections and Tests

**1926.153(f)(2)**—Any appliance that was originally manufactured for operation with a gaseous fuel other than LP-Gas, and is in good condition, may be used with LP-Gas only after it is properly converted, adapted, *and tested* for performance with LP-Gas before the appliance is placed in use.

## 29 CFR Subpart G—Signs, Signals and Barricades

### 1926.200—ACCIDENT PREVENTION SIGNS AND TAGS

*Scope/Application:* This section applies to accident prevention signs and tags.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posted signs, accident prevention tags

#### Signs, Markings and Tags

**1926.200(a)—General.** *Signs and symbols* required by this subpart *shall be visible at all times* when work is being performed, and shall be removed or covered promptly when the hazards no longer exist.

**1926.200(b)(1)—Danger signs** (see Figure G-1) *shall be used* only where an immediate hazard exists. [Reference paragraph (b)(2) for specific sign requirements.]

**1926.200(c)(1)—Caution signs** (see Figure G-2) *shall be used* only to warn against potential hazards or to caution against unsafe practices. [Reference paragraph (c)(2) and (c)(3) for specific sign requirements.]

**1926.200(g)(1)**—Construction areas *shall be posted* with legible **traffic signs** at points of hazard. [Reference paragraph (g)(2) for specific sign requirements.]

**1926.200(h)(1)—Accident prevention tags** *shall be used* as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They shall not be used in place of, or as a substitute for, **accident prevention signs**. [Reference paragraph (h)(2) for specific sign requirements.]



## 29 CFR Subpart H—Materials Handling, Storage, Use and Disposal

### 1926.250—GENERAL REQUIREMENTS FOR STORAGE

*Scope/Application:* This section applies to material storage.

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—load limits posted

#### Signs, Markings and Tags

**1926.250(a)(2)**—*Maximum safe load limits* of floors within buildings and structures, in pounds per square foot, *shall be conspicuously posted* in all storage areas, except for floor or slab on grade. Maximum safe loads shall not be exceeded.

### 1926.251—RIGGING EQUIPMENT FOR MATERIAL HANDLING

*Scope/Application:* This section applies to slings used in conjunction with other material handling equipment for the movement of material by hoisting, in employments covered by this part. The types of slings covered are those made from alloy steel chain, wire rope, metal mesh, natural or synthetic fiber rope (conventional three strand construction), and synthetic web (nylon, polyester, and polypropylene).

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections conducted prior to use, each shift, annual, and periodic, proof tests, records
- Recordkeeping—inspection records
- Certification—proof test
- Competent Person—inspections
- Signs, Markings and Tags—proof-tested, identification, markings

#### Inspections and Tests

**1926.251(a)(1)**—*Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe. Defective rigging equipment shall be removed from service.*

**1926.251(a)(4)**—*Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar materials, shall be **marked** to indicate the safe working loads and shall be proof-tested prior to use to 125 percent of their rated load.*

**1926.251(a)(6)**—*Inspections. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service.*

**1926.251(b)(6)(i)**—*In addition to the inspection required by other paragraphs of this section, a thorough periodic inspection of alloy steel chain slings in use shall be made on a regular basis, to be determined on the basis of (A) frequency of sling use; (B) severity of service conditions; (C) nature of lifts being made; and (D) experience gained on the service life of slings used in similar circumstances. Such inspections shall in no event be at intervals greater than once every 12 months.*

**1926.251(c)(15)(ii)**—*All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall **retain a certificate of proof test**, and make it available for examination.*

**1926.251(f)(2)**—The *manufacturer's recommendations* shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable *manufacturer's recommendations* are *available* shall be tested to twice the intended safe working load before they are initially put into use. The employer shall *maintain a record of the dates and results of such tests*.

### Recordkeeping

**1926.251(b)(6)(ii)**—The employer shall make and *maintain a record of the most recent month in which each alloy steel chain sling was thoroughly inspected*, and shall make such *record available* for examination.

**1926.251(c)(15)(ii)**—All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall *retain a certificate of proof test*, and make it available for examination.

**1926.251(f)(2)**—The *manufacturer's recommendations* shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. All hooks for which no applicable *manufacturer's recommendations* are available shall be tested to twice the intended safe working load before they are initially put into use. The employer shall *maintain a record of the dates and results of such tests*.

### Certification

**1926.251(c)(15)(ii)**—All welded end attachments shall not be used unless proof tested by the manufacturer or equivalent entity at twice their rated capacity prior to initial use. The employer shall *retain a certificate of proof test*, and make it available for examination.

### Competent Person

**1926.251(a)(6)**—*Inspections. Each day before being used*, the sling and all fastenings and attachments shall be inspected for damage or defects by a competent person designated by the employer. *Additional inspections shall be performed during sling use, where service conditions warrant*. Damaged or defective slings shall be immediately removed from service.

### Signs, Markings and Tags

**1926.251(b)(1)**—Welded alloy steel chain slings shall have *permanently affixed durable identification* stating size, grade, rated capacity, and sling manufacturer.

**1926.251(a)(4)**—Special custom design grabs, hooks, clamps, or other lifting accessories, for such units as modular panels, prefabricated structures and similar *materials*, shall be *marked* to indicate the safe working loads and shall be *proof-tested prior to use* to 125 percent of their rated load.

## 1926.252—DISPOSAL OF WASTE MATERIALS

*Scope/Application: This section applies to disposal of waste materials.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—warning signs posted

### Signs, Markings and Tags

**1926.252(b)**—When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. *Signs warning of the hazard of falling materials shall be posted at each level*. Removal shall not be permitted in this lower area until debris handling ceases above.

## 29 CFR Subpart I—Tools—Hand and Power

### 1926.302—POWER-OPERATED HAND TOOLS

**Scope/Application:** *This section applies to power-operated tools.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedure
- Inspections and Tests—daily tests
- Recordkeeping—manufacturer procedure
- Training and Communications—trained employees

#### Programs, Plans and Procedures

**1926.302(e)(2)**—The tool *shall be tested each day* before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the ***manufacturer's recommended procedure***.

#### Inspections and Tests

**1926.302(e)(2)**—The tool *shall be tested each day* before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the ***manufacturer's recommended procedure***.

#### Recordkeeping

**1926.302(e)(2)**—The tool *shall be tested each day* before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the ***manufacturer's recommended procedure***.

#### Training and Communications

**1926.302(e)(1)**—Only employees *who have been trained* in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool.

### 1926.303—ABRASIVE WHEELS AND TOOLS

**Scope/Application:** *This section applies to abrasive wheels and tools.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—ring tests, inspections before mounting

#### Inspections and Tests

**1926.303(c)(7)**—All abrasive wheels *shall be closely inspected and ring-tested* before mounting to ensure that they are free from cracks or defects.

## 1926.304—WOODWORKING TOOLS

**Scope/Application:** *This section applies to all woodworking tools.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—markings

#### Signs, Markings and Tags

**1926.304(b)**—Speeds. The operating speed *shall be etched or otherwise permanently **marked*** on all circular saws over 20 inches in diameter or operating at over 10,000 peripheral feet per minute. Any saw so **marked** shall not be operated at a speed other than that marked on the blade. When a **marked** saw is retensioned for a different speed, the **marking** shall be corrected to show the new speed.

## 1926.305—JACKS—LEVER AND RATCHET, SCREW, AND HYDRAULIC

**Scope/Application:** *This section applies to all jack-lever and ratchet, screw, and hydraulic tools.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections
- Signs, Markings and Tags—tagging, markings

#### Inspections and Tests

**1926.305(d)(1)(iv)**—Each jack *shall be thoroughly inspected* at times which depend upon the service conditions. Inspections shall be not less frequent than the following:

**1926.305(d)(1)(iv)(a)**—For constant or intermittent use at one locality, *once every 6 months*.

**1926.305(d)(1)(iv)(b)**—For jacks sent out of shop for special work, *when sent out and when returned*.

**1926.305(d)(1)(iv)(c)**—For a jack subjected to abnormal load or shock, *immediately before and immediately thereafter*.

#### Signs, Markings and Tags

**1926.305(a)(1)**—The manufacturer's rated capacity *shall be legibly **marked*** on all jacks and shall not be exceeded.

**1926.305(d)(1)(vi)**—Jacks which are out of order *shall be **tagged*** accordingly, and shall not be used until repairs are made.

## 1926.306—AIR RECEIVERS

**Scope/Application:** *This section applies to all air receivers.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—frequent and regular intervals inspections

### Inspections and Tests

**1926.306(b)(3)(iv)**—All safety valves *shall be tested frequently and at regular intervals* to determine whether they are in good operating condition.

## 1926.307—MECHANICAL POWER-TRANSMISSION APPARATUS

**Scope/Application:** *This section applies to all mechanical power—transmission apparatuses.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic inspections

### Inspections and Tests

**1926.307(b)(1)(iv)**—For flywheels with smooth rims 5 feet (1.52 m) or less in diameter, where the preceding methods cannot be applied, the following may be used: A disk attached to the flywheel in such manner as to cover the spokes of the wheel on the exposed side and present a smooth surface and edge, at the same time *providing means for periodic inspection*. An open space, not exceeding 4 inches (10.16 cm) in width, may be left between the outside edge of the disk and the rim of the wheel if desired, to facilitate turning the wheel over. Where a disk is used, the keys or other dangerous projections not covered by disk shall be cut off or covered. This subdivision does not apply to flywheel with solid web centers.

**1926.307(p)(6)(ii)**—*Inspection shall be made* of belts, lacings, and fasteners and such equipment kept in good repair.



## 29 CFR Subpart J—Welding and Cutting

### 1926.351—ARC WELDING AND CUTTING

**Scope/Application:** *This section applies to arc welding and cutting.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections conducted beginning of work shift
- Training and Communications—employees instructed

#### Inspections and Tests

**1926.350(f)(3)**—All hose in use, carrying acetylene, oxygen, natural or manufactured fuel gas, or any gas or substance which may ignite or enter into combustion, or be in any way harmful to employees, *shall be inspected at the beginning of each working shift*. Defective hose shall be removed from service.

**1926.350(f)(4)**—Hose which has been subject to flashback, or which shows evidence of severe wear or damage, *shall be tested* to twice the normal pressure to which it is subject, but in no case less than 300 p.s.i. Defective hose, or hose in doubtful condition, shall not be used.

**1926.350(g)(2)**—Torches in use *shall be inspected at the beginning of each working shift* for leaking shutoff valves, hose couplings, and tip connections. Defective torches shall not be used.

#### Training and Communications

**1926.350(d)**—Use of fuel gas. The employer *shall thoroughly instruct employees* in the safe use of fuel gas. *[Reference paragraph (d) for specific requirements.]*

### 1926.352—FIRE PREVENTION

**Scope/Application:** *This section applies to fire prevention during welding and cutting.*

#### STANDARD HIGHLIGHTS

- Training and Communications—instructions, assignments

#### Training and Communications

**1926.352(e)**—When the welding, cutting, or heating operation is such that normal fire prevention precautions are not sufficient, additional personnel *shall be assigned* to guard against fire while the actual welding, cutting, or heating operation is being performed, and for a sufficient period of time after completion of the work to ensure that no possibility of fire exists. Such personnel *shall be instructed* as to the specific anticipated fire hazards and how the firefighting equipment provided is to be used.

## 1926.353—VENTILATION AND PROTECTION IN WELDING, CUTTING, AND HEATING

**Scope/Application:** *This section applies to ventilation and protection in welding, cutting, and heating.*

### STANDARD HIGHLIGHTS

- Training and Communications—assigned personnel for communications

#### Training and Communications

**1926.353(b)(2)**—When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators in accordance with the requirements of subpart E (*Personal Protective Equipment and Life Saving Equipment*) of this part, and an *employee on the outside of such a confined space shall be assigned to maintain communication* with those working within it and to aid them in an emergency.

## 1926.354—WELDING, CUTTING, AND HEATING IN WAY OF PRESERVATIVE COATINGS

**Scope/Application:** *This section applies to welding, cutting, and heating in way of preservative coatings.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tests by competent person
- Competent Person—tests

#### Inspections and Tests

**1926.354(a)**—Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a *test shall be made by a competent person* to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

#### Competent Person

**1926.354(a)**—Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a *test shall be made by a competent person* to determine its flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

## 29 CFR Subpart K—Electrical

### 1926.403—GENERAL REQUIREMENTS

**Scope/Application:** *These sections apply to installations, both temporary and permanent, used on the jobsite; but these sections do not apply to existing permanent installations that were in place before the construction activity commenced.*

*Installation safety requirements are contained in 1926.402 through 1926.408. Included in this category are electric equipment and installations used to provide electric power and light on jobsites.*

**Exception:** *Not covered. Sections 1926.402 through 1926.408 do not cover installations used for the generation, transmission, and distribution of electric energy, including related communication, metering, control, and transformation installations. (However, these regulations do cover portable and vehicle-mounted generators used to provide power for equipment used at the jobsite.) See subpart V [Power Transmission and Distribution] of this part for the construction of power distribution and transmission lines.*

#### STANDARD HIGHLIGHTS

- Recordkeeping—certification
- Certification—equipment
- Signs, Markings and Tags—labeling, certification, markings

#### Recordkeeping

**1926.403(b)(1)(i)**—Suitability for installation and use in conformity with the provisions of this subpart. Suitability of equipment for an identified purpose *may be evidenced by **listing, labeling, or certification*** for that identified purpose.

#### Certification

**1926.403(b)(1)(i)**—Suitability for installation and use in conformity with the provisions of this subpart. Suitability of equipment for an identified purpose *may be evidenced by **listing, labeling, or certification*** for that identified purpose.

#### Signs, Markings and Tags

**1926.403(b)(1)(i)**—Suitability for installation and use in conformity with the provisions of this subpart. Suitability of equipment for an identified purpose *may be evidenced by **listing, labeling, or certification*** for that identified purpose.

**1926.403(g)—Marking.** Electrical equipment shall not be used *unless the **manufacturer's name, trademark, or other descriptive marking** by which the organization responsible for the product may be identified is placed on the equipment and unless other **markings** are provided* giving voltage, current, wattage, or other ratings as necessary. The **marking** shall be of sufficient durability to withstand the environment involved.

**1926.403(h)—Identification of disconnecting means and circuits.** Each disconnecting means required by this subpart for motors and appliances *shall be legibly **marked*** to indicate its purpose, unless located and arranged so the purpose is evident. Each service, feeder, and branch circuit, at its disconnecting means or overcurrent device, *shall be legibly **marked*** to indicate its purpose, unless located and arranged so the purpose is evident. These **markings** shall be of sufficient durability to withstand the environment involved.

## 1926.404—WIRING DESIGN AND PROTECTION

**Scope/Application:** *These sections apply to installations, both temporary and permanent, used on the jobsite; but these sections do not apply to existing permanent installations that were in place before the construction activity commenced.*

*Installation safety requirements are contained in 1926.402 through 1926.408. Included in this category are electric equipment and installations used to provide electric power and light on jobsites.*

**Exception:** *Not covered. Sections 1926.402 through 1926.408 [Electrical] do not cover installations used for the generation, transmission, and distribution of electric energy, including related communication, metering, control, and transformation installations. (However, these regulations do cover portable and vehicle-mounted generators used to provide power for equipment used at the jobsite.) See subpart V [Power Transmission and Distribution] of this part for the construction of power distribution and transmission lines.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—written assured grounding program
- Inspections and Tests—tests, visual inspections, inspections daily, quarterly, before use
- Recordkeeping—test records
- Competent Person—designated competent person
- Signs, Markings and Tags—posting, markings

### Programs, Plans and Procedures

**1926.404(b)(1)(i)**—General. The employer shall use either ground fault circuit interrupters as specified in paragraph (b)(1)(ii) [Ground Fault Circuit Interrupters] of this section or an **assured equipment grounding conductor program** as specified in paragraph (b)(1)(iii) [Assured Equipment Grounding Conductor Program] of this section to protect employees on construction sites. These requirements are in addition to any other requirements for equipment grounding conductors.

**1926.404(b)(1)(iii)**—**Assured equipment grounding conductor program.** The employer shall establish and implement an **assured equipment grounding conductor program** on construction sites covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. This **program** shall comply with the following minimum requirements:

**1926.404(b)(1)(iii)(A)**—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 and any affected employee.

### Inspections and Tests

**1926.404(b)(1)(iii)(C)**—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.

**1926.404(b)(1)(iii)(D)**—The following tests shall be performed on all cord sets, 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:

**1926.404(b)(1)(iii)(D)(1)**—All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

**1926.404(b)(1)(iii)(D)(2)**—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.

**1926.404(b)(1)(iii)(E)**—All required tests shall be performed:

**1926.404(b)(1)(iii)(E)(1)**—*Before first use;*

**1926.404(b)(1)(iii)(E)(2)**—*Before equipment is returned to service following any repairs;*

**1926.404(b)(1)(iii)(E)(3)**—*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*

**1926.404(b)(1)(iii)(E)(4)**—*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.*

## **Recordkeeping**

**1926.404(b)(1)(iii)**—Tests performed as required in this paragraph 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.

**1926.404(b)(1)(iii)(A)**—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 and any affected employee.

## **Competent Person**

**1926.404(b)(1)(iii)(B)**—The employer shall designate one or more competent persons (as defined in 1926.32(f)) to implement the **program**.

## **Signs, Markings and Tags**

**1926.404(d)(2)(ii)**—**Warning signs**. **Signs** warning of high voltage shall be **posted** where unauthorized employees might come in contact with live parts.

**1926.404(e)(1)(vi)(C)**—If used as switches in 120-volt, fluorescent lighting circuits, circuit breakers shall be **marked** “SWD.”

**1926.404(f)(7)(iv)(C)(6)**—Tools likely to be used in wet and/or conductive locations need not be grounded if supplied through an isolating transformer with an ungrounded secondary of not over 50 volts. **Listed or labeled portable tools** and appliances protected by a system of double insulation, or its equivalent, need not be grounded. If such a system is employed, the equipment shall be **distinctively marked** to indicate that the tool or appliance utilizes a system of double insulation.

## **1926.408—SPECIAL SYSTEMS**

**Scope/Application:** *These sections apply to installations, both temporary and permanent, used on the jobsite; but these sections do not apply to existing permanent installations that were in place before the construction activity commenced.*

**Exception:** *Not covered. Sections 1926.402 through 1926.408 [Electrical] do not cover installations used for the generation, transmission, and distribution of electric energy, including related communication, metering, control, and transformation installations. (However, these regulations do cover portable and vehicle-mounted generators used to provide power for equipment used at the jobsite.) See subpart V [Power Transmission and Distribution] of this part for the construction of power distribution and transmission lines.*

## **STANDARD HIGHLIGHTS**

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



## Qualified Person

**1926.408(a)(1)(i)**—Above ground. Above-ground conductors shall be installed in rigid metal conduit, in intermediate metal conduit, in cable trays, in cablebus, in other suitable raceways, or as open runs of metal-clad cable designed for the use and purpose. However, open runs of non-metallic-sheathed cable or of bare conductors or busbars may be installed in locations which are *accessible only to qualified persons*. Metallic shielding components, such as tapes, wires, or braids for conductors, shall be grounded. Open runs of insulated wires and cables having a bare lead sheath or a braided outer covering shall be supported in a manner designed to prevent physical damage to the braid or sheath.

**1926.408(a)(2)(i)**—Circuit breakers. Circuit breakers located indoors shall consist of metal-enclosed or fire-resistant, cell-mounted units. In locations accessible *only to qualified personnel*, open mounting of circuit breakers is permitted. A means of indicating the open and closed position of circuit breakers shall be provided.

**1926.408(a)(3)(i)**—Power cable connections to mobile machines. 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 ground wire(s) terminal to ground effectively 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.

**1926.408(a)(3)(ii)**—Guarding live parts. All energized switching and control parts shall be enclosed in effectively grounded metal cabinets or enclosures. Circuit breakers and protective equipment shall have the operating means projecting through the metal cabinet or enclosure so these units can be reset without locked doors being opened. Enclosures and metal cabinets shall be locked so that *only authorized qualified persons have access and shall be marked* with a **sign** warning of the presence of energized parts. Collector ring assemblies on revolving-type machines (shovels, draglines, etc.) shall be guarded.

## Signs, Markings and Tags

**1926.408(a)(2)(iii)**—Equipment isolating means. A means shall be provided to completely isolate equipment for inspection and repairs. Isolating means which are not designed to interrupt the load current of the circuit *shall be either interlocked with a circuit interrupter or provided with a sign* warning against opening them under load.

**1926.408(a)(3)(i)**—Power cable connections to mobile machines. 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 ground wire(s) terminal to ground effectively 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.

**1926.408(a)(3)(ii)**—Guarding live parts. 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.

## 1926.416—GENERAL REQUIREMENTS

**Scope/Application:** *Safety-related work practices are contained in 1926.416 and 1926.417. In addition to covering the hazards arising from the use of electricity at jobsites, these regulations also cover the hazards arising from the accidental contact, direct or indirect, by employees with all energized lines, above or below ground, passing through or near the jobsite.*

### STANDARD HIGHLIGHTS

- Training and Communications—advise employees
- Signs, Markings and Tags—posting warning signs

#### Training and Communications

**1926.416(a)(3)**—Before work is begun the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an energized electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact with the electric power circuit. The employer *shall post and maintain proper warning signs* where such a circuit exists. The employer *shall advise employees* of the location of such lines, the hazards involved, and the protective measures to be taken.

#### Signs, Markings and Tags

**1926.416(a)(3)**—Before work is begun the employer shall ascertain by inquiry or direct observation, or by instruments, whether any part of an energized electric power circuit, exposed or concealed, is so located that the performance of the work may bring any person, tool, or machine into physical or electrical contact with the electric power circuit. The employer *shall post and maintain proper warning signs* where such a circuit exists. The employer *shall advise employees* of the location of such lines, the hazards involved, and the protective measures to be taken.

## 1926.417—LOCKOUT AND TAGGING OF CIRCUITS

**Scope/Application:** *Safety-related work practices are contained in 1926.416 and 1926.417. In addition to covering the hazards arising from the use of electricity at jobsites, these regulations also cover the hazards arising from the accidental contact, direct or indirect, by employees with all energized lines, above or below ground, passing through or near the jobsite.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tags

#### Signs, Markings and Tags

**1926.417(a)**—Controls. Controls that are to be deactivated during the course of work on energized or deenergized equipment or circuits *shall be tagged*.

**1926.417(b)**—Equipment and circuits. Equipment or circuits that are deenergized shall be rendered inoperative and *shall have tags attached at all points* where such equipment or circuits can be energized.

**1926.417(c)**—Tags. *Tags shall be placed to identify* plainly the equipment or circuits being worked on.

## 29 CFR Subpart L—Scaffolds

### 1926.451—GENERAL REQUIREMENTS

**Scope/Application:** *This section applies to all scaffolds used in workplaces covered by this part.*

**Exception:** *It does not apply to crane or derrick suspended personnel platforms. The criteria for aerial lifts are set out exclusively in Sec. 1926.453 [Aerial Lifts].*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—evaluations, competent person, inspected every occurrence and workshift
- Recordkeeping—design
- Training and Communications—trained employees
- Competent Person—inspections, evaluations
- Qualified Person—engineer designs

#### Inspections and Tests

**1926.451(b)(11)**—Scaffold components made of dissimilar metals shall not be used together unless a *competent person* has *determined* that galvanic action will not reduce the strength of any component to a level below that required by *paragraph (a)(1) [Capacity]* of this section.

**1926.451(d)(3)(i)**—Before the scaffold is used, direct connections *shall be evaluated by a competent person* who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections *shall be **designed** by an engineer* experienced in such scaffold design.

**1926.451(d)(10)**—Ropes *shall be inspected for defects by a competent person prior to each workshift and after every occurrence* which could affect a rope's integrity.

**1926.451(d)(12)(iv)**—Clips *shall be inspected* and retightened to the ***manufacturer's recommendations*** at the start of each workshift thereafter.

**1926.451(d)(13)**—Suspension scaffold power-operated hoists and manual hoists *shall be tested by a qualified testing laboratory*.

**1926.451(d)(18)**—Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an *evaluation by a competent person*. Window cleaners' anchors shall not be used for this purpose.

**1926.451(e)(9)(i)**—The employer shall provide safe means of access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer *shall have a competent person determine* whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

**1926.451(f)(3)**—Scaffolds and scaffold components *shall be inspected for visible defects by a competent person before each work shift, and after any occurrence* which could affect a scaffold's structural integrity.

**1926.451(f)(12)**—Work on or from scaffolds is prohibited during storms or high winds unless a *competent person* has *determined* that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

**1926.451(g)(2)**—Effective September 2, 1997, the employer *shall have a competent person determine* the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Employers are required to provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

**1926.451(g)(4)(xiv)**—Manila or plastic (or other synthetic) rope being used for toprails or midrails shall be *inspected by a competent person* as frequently as necessary to ensure that it continues to meet the strength requirements of *paragraph (g) [Fall Protection]* of this section.

## **Recordkeeping**

**1926.451(d)(3)(i)**—Before the scaffold is used, direct connections *shall be evaluated by a competent person* who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections *shall be **designed** by an engineer* experienced in such scaffold design.

**1926.451(d)(12)(iv)**—Clips *shall be inspected* and retightened to the ***manufacturer's recommendations*** at the start of each workshift thereafter.

## **Training and Communications**

**1926.451(f)(7)**—Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a *competent person qualified* in scaffold erection, moving, dismantling or alteration. Such activities shall be performed *only by experienced and trained employees selected for such work by the competent person*.

## **Competent Person**

**1926.451(b)(10)**—Scaffold components manufactured by different manufacturers shall not be intermixed unless the components fit together without force and the scaffold's structural integrity is maintained by the user. Scaffold components manufactured by different manufacturers shall not be modified in order to intermix them unless a *competent person determines* the resulting scaffold is structurally sound.

**1926.451(b)(11)**—Scaffold components made of dissimilar metals shall not be used together unless a *competent person has determined* that galvanic action will not reduce the strength of any component to a level below that required by *paragraph (a)(1) [Capacity]* of this section.

**1926.451(d)(3)(i)**—Before the scaffold is used, direct connections *shall be evaluated by a competent person* who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections *shall be **designed** by an engineer* experienced in such scaffold design.

**1926.451(d)(10)**—Ropes *shall be inspected for defects by a competent person prior to each workshift and after every occurrence* which could affect a rope's integrity.

**1926.451(d)(18)**—Two-point and multi-point suspension scaffolds shall be tied or otherwise secured to prevent them from swaying, as determined to be necessary based on an *evaluation by a competent person*. Window cleaners' anchors shall not be used for this purpose.

**1926.451(e)(9)(i)**—The employer shall provide safe means of access for each employee erecting or dismantling a scaffold where the provision of safe access is feasible and does not create a greater hazard. The employer *shall have a competent person determine* whether it is feasible or would pose a greater hazard to provide, and have employees use a safe means of access. This determination shall be based on site conditions and the type of scaffold being erected or dismantled.

**1926.451(f)(3)**—Scaffolds and scaffold components *shall be inspected for visible defects by a competent person before each work shift, and after any occurrence which could affect a scaffold's structural integrity.*

**1926.451(f)(7)**—Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a *competent person qualified* in scaffold erection, moving, dismantling or alteration. Such activities shall be performed *only by experienced and trained employees selected for such work by the competent person.*

**1926.451(f)(12)**—Work on or from scaffolds is prohibited during storms or high winds unless a *competent person has determined* that it is safe for employees to be on the scaffold and those employees are protected by a personal fall arrest system or wind screens. Wind screens shall not be used unless the scaffold is secured against the anticipated wind forces imposed.

**1926.451(g)(2)**—Effective September 2, 1997, the employer *shall have a competent person determine* the feasibility and safety of providing fall protection for employees erecting or dismantling supported scaffolds. Employers are required to provide fall protection for employees erecting or dismantling supported scaffolds where the installation and use of such protection is feasible and does not create a greater hazard.

**1926.451(g)(4)(xiv)**—Manila or plastic (or other synthetic) rope being used for top rails or mid rails shall be *inspected by a competent person* as frequently as necessary to ensure that it continues to meet the strength requirements of *paragraph (g) [Fall Protection]* of this section.

### Qualified Person

**1926.451(d)(3)(i)**—Before the scaffold is used, direct connections *shall be evaluated by a competent person* who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, masons' multi-point adjustable suspension scaffold connections *shall be designed by an engineer* experienced in such scaffold design.

## 1926.452—ADDITIONAL REQUIREMENTS APPLICABLE TO SPECIFIC TYPES OF SCAFFOLDS

**Scope/Application:** *This section applies to all scaffolds used in workplaces covered by this part. In addition to the applicable requirements of 1926.451 [General Requirements], the following requirements apply to the specific types of scaffolds indicated. Scaffolds not specifically addressed by 1926.452 [Additional Requirements Applicable to Specific Types of Scaffolds], such as but not limited to systems scaffolds, must meet the requirements of 1926.451 [General Requirements].*

**Exception:** *It does not apply to crane or derrick suspended personnel platforms. The criteria for aerial lifts are set out exclusively in Sec. 1926.453 [Aerial Lifts].*

### STANDARD HIGHLIGHTS

- Inspections and Tests—before erection
- Recordkeeping—manufacturer approval
- Qualified Person—designs, registered professional engineer

### Inspections and Tests

**1926.452(p)(4)**—Platforms shall be of the ladder-type, plank-type, beam-type, or light-metal type. Light metal-type platforms having a rated capacity of 750 pounds or less and platforms 40 feet (12.2 m) or less in length *shall be tested and listed* by a nationally recognized testing laboratory.

**1926.452(t)(2)**—Interior hung scaffolds—Overhead supporting members (roof structure, ceiling beams, or other structural members) *shall be inspected and checked for strength before the scaffold is erected.*



**1926.452(w)(6)(ii)**—The height to base width ratio of the scaffold during movement is two to one or less, unless the scaffold is *designed and constructed* to meet or exceed nationally recognized *stability test requirements* such as those listed in *paragraph (x) [Repair Bracket Scaffolds] of Appendix A [Scaffold Specifications]* to this subpart (ANSI/SIA A92.5 and A92.6).

## Recordkeeping

**1926.452(a)(10)**—Pole scaffolds over 60 feet in height *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with that *design*. Non-mandatory *Appendix A [Scaffold Specifications]* to this subpart contains examples of criteria that will enable an employer to comply with *design* and loading requirements for pole scaffolds under 60 feet in height.

**1926.452(b)(10)**—Tube and coupler scaffolds over 125 feet in height *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with such *design*. Non-mandatory *Appendix A [Scaffold Specifications]* to this subpart contains examples of criteria that will enable an employer to comply with *design* and loading requirements for tube and coupler scaffolds under 125 feet in height.

**1926.452(c)(5)(iii)**—Fabricated frame scaffolds. Be used only to support personnel, unless the scaffold *has been designed for other loads by a qualified engineer* and built to withstand the tipping forces caused by those other loads being placed on the bracket-supported section of the scaffold.

**1926.452(c)(6)**—Fabricated frame scaffolds. Scaffolds over 125 feet (38.0 m) in height above their base plates *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with such *design*.

**1926.452(i)(8)**—Outrigger scaffolds. Scaffolds and scaffold components *shall be designed by a registered professional engineer* and shall be constructed and loaded in accordance with such *design*.

**1926.452(o)(2)(i)**—Single-point adjustable suspension scaffolds. The rigging *has been designed by a qualified person*.

**1926.452(p)(1)**—Two-point adjustable suspension scaffolds (swing stages). Platforms shall not be more than 36 inches (0.9 m) wide unless *designed by a qualified person* to prevent unstable conditions.

**1926.452(y)(4)**—Stilts shall be properly *maintained*. Any alteration of the original equipment *shall be approved by the manufacturer*.

## Qualified Person

**1926.452(a)(10)**—Pole scaffolds over 60 feet in height *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with that *design*. Non-mandatory *Appendix A [Scaffold Specifications]* to this subpart contains examples of criteria that will enable an employer to comply with *design* and loading requirements for pole scaffolds under 60 feet in height.

**1926.452(b)(10)**—Tube and coupler scaffolds over 125 feet in height *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with such *design*. Non-mandatory *Appendix A [Scaffold Specifications]* to this subpart contains examples of criteria that will enable an employer to comply with *design* and loading requirements for tube and coupler scaffolds under 125 feet in height.

**1926.452(c)(5)(iii)**—Fabricated frame scaffolds. Be used only to support personnel, unless the scaffold *has been designed for other loads by a qualified engineer* and built to withstand the tipping forces caused by those other loads being placed on the bracket-supported section of the scaffold.

**1926.452(c)(6)**—Fabricated frame scaffolds. Scaffolds over 125 feet (38.0 m) in height above their base plates *shall be designed by a registered professional engineer*, and shall be constructed and loaded in accordance with such *design*.

**1926.452(i)(8)**—Outrigger scaffolds. Scaffolds and scaffold components *shall be designed by a registered professional engineer* and shall be constructed and loaded in accordance with such *design*.

**1926.452(o)(2)(i)**—Single-point adjustable suspension scaffolds. The rigging *has been designed by a qualified person*.

**1926.452(p)(1)**—Two-point adjustable suspension scaffolds (swing stages). Platforms shall not be more than 36 inches (0.9 m) wide unless *designed by a qualified person* to prevent unstable conditions.

## **1926.453—AERIAL LIFTS**

**Scope/Application:** *The criteria for aerial lifts are set out exclusively in § 1926.453—Aerial Lifts.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—tested each day and prior to use
- Recordkeeping—modification certified in writing
- Certification—written by manufacturer
- Qualified Person—authorized person

### **Inspections and Tests**

**1926.453(b)(2)(i)**—Lift controls *shall be tested each day prior to use* to determine that such controls are in safe working condition.

### **Recordkeeping**

**1926.453(a)(2)**—Aerial lifts may be “field modified” for uses other than those intended by the manufacturer provided the *modification has been certified in writing by the manufacturer* or by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of *ANSI A92.2-1969* and this section and to be at least as safe as the equipment was before modification.

### **Certification**

**1926.453(a)(2)**—Aerial lifts may be “field modified” for uses other than those intended by the manufacturer provided the *modification has been certified in writing by the manufacturer* or by any other equivalent entity, such as a nationally recognized testing laboratory, to be in conformity with all applicable provisions of *ANSI A92.2-1969* and this section and to be at least as safe as the equipment was before modification.

### **Qualified Person**

**1926.453(b)(2)(ii)**—Only *authorized persons* shall operate an aerial lift.

## 1926.454—TRAINING REQUIREMENTS

**Scope/Application:** *This section supplements and clarifies the requirements of Sec. 1926.21(b)(2) [Safety Training and Education] as these relate to the hazards of work on scaffolds.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Inspections and Tests—inspection
- Training and Communications—initial and retraining, competent person
- Competent Person—trained by
- Qualified Person—trained by

### Programs, Plans and Procedures

**1926.454(a)**—The employer shall have each employee who performs work while on a scaffold *trained by a person qualified* in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand *the procedures* to control or minimize those hazards. *[Reference paragraph (a) for specific training requirements.]*

### Inspections and Tests

**1926.454(b)**—The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, *or inspecting a scaffold trained by a competent person* to recognize any hazards associated with the work in question. *[Reference paragraph (b) for specific training requirements.]*

### Training and Communications

**1926.454(a)**—The employer shall have each employee who performs work while on a scaffold *trained by a person qualified* in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand *the procedures* to control or minimize those hazards. *[Reference paragraph (a) for specific training requirements.]*

**1926.454(b)**—The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, *or inspecting a scaffold trained by a competent person* to recognize any hazards associated with the work in question. *[Reference paragraph (b) for specific training requirements.]*

**1926.454(c)**—When the employer has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the employer *shall retrain* each such employee so that the requisite proficiency is regained. *Retraining is required* in at least the following situations:

**1926.454(c)(1)**—*Where changes at the worksite present a hazard about which an employee has not been previously trained.*

**1926.454(c)(2)**—*Where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained.*

**1926.454(c)(3)**—*Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.*

### Competent Person

**1926.454(b)**—The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, *or inspecting a scaffold trained by a competent person* to recognize any hazards associated with *the work in question*. *[Reference paragraph (b) for specific training requirements.]*

## Qualified Person

**1926.454(a)**—The employer shall have each employee who performs work while on a scaffold *trained by a person qualified* in the subject matter to recognize the hazards associated with the type of scaffold being used and to understand the *procedures to control* or minimize those hazards. *[Reference paragraph (a) for specific training requirements.]*

## 29 CFR Subpart M—Fall Protection

### 1926.501—DUTY TO HAVE FALL PROTECTION

**Scope/Application:** *This section sets forth requirements for employers to provide fall protection systems in construction workplaces covered under 29 CFR Part 1926. All fall protection required by this section shall conform to the criteria set forth in 1926.502 [Fall Protection Systems Criteria and Practices] of this subpart.*

**Exception:** *The provisions of this subpart do not apply when employees are making an inspection, investigation, or assessment of workplace conditions prior to the actual start of construction work or after all construction work has been completed.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—fall protection plan

#### Programs, Plans and Procedures

**1926.501(b)(2)(i)**—Leading edges. Each employee who is constructing a leading edge 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems. **Exception:** When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall **develop and implement a fall protection plan** which meets the requirements of *paragraph (k) [Fall Protection Plan] of 1926.502 [Fall Protection Systems Criteria and Practices]*.

**Note:** *There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a **fall protection plan** which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.*

**1926.501(b)(12)**—Precast concrete erection. Each employee engaged in the erection of precast concrete members (including, but not limited to the erection of wall panels, columns, beams, and floor and roof “tees”) and related operations such as grouting of precast concrete members, who is 6 feet (1.8 m) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, or personal fall arrest systems, unless another provision in *paragraph (b)* of this section provides for an alternative fall protection measure. **Exception:** When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall **develop and implement a fall protection plan** which meets the requirements of *paragraph (k) [Fall Protection Plan] of 1926.502 [Fall Protection Systems Criteria and Practices]*.

**Note:** *There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a **fall protection plan** which complies with 1926.502(k) for a particular workplace situation, in lieu of implementing any of those systems.*

**1926.501(b)(13)**—Residential construction. Each employee engaged in residential construction activities 6 feet (1.8 m) or more above lower levels shall be protected by guardrail systems, safety net system, or personal fall arrest system unless another provision in *paragraph (b)* of this section provides for an alternative fall protection measure. **Exception:** When the employer can demonstrate that it is infeasible or creates a greater hazard to use these systems, the employer shall **develop and implement a fall protection plan** which meets the requirements of *paragraph (k) [Fall Protection Plan] of 1926.502 [Fall Protection Systems Criteria and Practices]*.

**Note:** *There is a presumption that it is feasible and will not create a greater hazard to implement at least one of the above-listed fall protection systems. Accordingly, the employer has the burden of establishing that it is appropriate to implement a fall protection plan which complies with paragraph (k) [Fall Protection Plan] of 1926.502 [Fall Protection Systems Criteria and Practices] for a particular workplace situation, in lieu of implementing any of those systems.*



## 1926.502—FALL PROTECTION SYSTEMS CRITERIA AND PRACTICES

**Scope/Application:** *This section sets forth requirements for employers to provide fall protection systems in construction workplaces covered under 29 CFR Part 1926. All fall protection required by this section shall conform to the criteria set forth in 1926.502 [Fall Protection Systems Criteria and Practices] of this subpart. Fall protection systems required by this part shall comply with the applicable provisions of this section.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—fall protection plan, monitoring system, incident investigations
- Inspections and Tests—prior to use, weekly, and frequent inspections, competent person
- Recordkeeping—certification record, kept at site, competent person
- Certification—records
- Competent Person—certification record, inspections
- Qualified Person—fall protection plan

### Programs, Plans and Procedures

**1926.502(k)—Fall protection plan.** This option is available only to employees engaged in leading edge work, precast concrete erection work, or residential construction work (See 1926.501(b)(2), (b)(12), and (b)(13) [Fall Protection Plan]) who can demonstrate that it is infeasible or it creates a greater hazard to use conventional fall protection equipment. The **fall protection plan** must conform to specific provisions. [Reference paragraph (k) for specific provisions.]

**1926.502(k)(3)—***A copy of the fall protection plan with all approved changes shall be **maintained** at the job site.*

**1926.502(k)(8)—**Where no other alternative measure has been implemented, the employer *shall implement a safety monitoring system* in conformance with 1926.502(h) [Safety Monitoring Systems].

**1926.502(k)(10)—**In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer *shall investigate the circumstances of the fall or other incident to determine if the **fall protection plan** needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes to prevent similar types of falls or incidents.*

### Inspections and Tests

**1926.502(b)(15)—**Manila, plastic or synthetic rope being used for top rails or midrails shall be *inspected as frequently* as necessary to ensure that it continues to meet the strength requirements of *paragraph (b)(3) [Guardrail Systems]* of this section.

**1926.502(c)(4)(ii)—**When the employer can demonstrate that it is unreasonable to perform the *drop-test* required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by *preparing a **certification record*** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

**1926.502(c)(5)—**Defective nets shall not be used. Safety nets *shall be inspected at least once a week* for wear, damage, and other deterioration. Defective components shall be removed from service. Safety nets *shall also be inspected after any occurrence* which could affect the integrity of the safety net system.

**1926.502(d)(19)**—Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection *until inspected and determined by a competent person* to be undamaged and suitable for reuse.

**1926.502(d)(21)**—Personal fall arrest systems *shall be inspected prior to each use* for wear, damage and other deterioration, and defective components shall be removed from service.

**1926.502(e)(9)**—Positioning device systems *shall be inspected prior to each use* for wear, damage, and other deterioration, and defective components shall be removed from service.

**1926.502(k)(10)**—In the event an employee falls, or some other related, serious incident occurs, (e.g., a near miss) the employer *shall investigate the circumstances of the fall or other incident to determine if the **fall protection plan** needs to be changed (e.g. new practices, procedures, or training) and shall implement those changes* to prevent similar types of falls or incidents.

### Recordkeeping

**1926.502(b)(15)**—When the employer can demonstrate that it is unreasonable to perform the drop-test required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by preparing a **certification record** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

**1926.502(k)(1)**—The **fall protection plan** shall be **prepared** by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction work is being performed and the **plan** must be **maintained** up to date.

**1926.502(k)(3)**—A copy of the **fall protection plan** with all approved changes shall be **maintained** at the job site.

### Certification

**1926.502(b)(15)**—When the employer can demonstrate that it is unreasonable to perform the drop-test required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by preparing a **certification record** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

**1926.502(c)(4)(ii)**—When the employer can demonstrate that it is unreasonable to perform the drop-test required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by preparing a **certification record** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

## Competent Person

**1926.502(b)(15)**—When the employer can demonstrate that it is unreasonable to perform the drop-test required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by preparing a **certification record** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

**1926.502(d)(19)**—Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection *until inspected and determined by a competent person* to be undamaged and suitable for reuse.

**1926.502(h)(1)**—The employer shall designate a competent person to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with specific requirements. *[Reference paragraph (h)(1) for specific requirements.]*

**1926.502(k)(4)**—The implementation of the **fall protection plan** shall be under the supervision of a competent person.

## Qualified Person

**1926.502(b)(15)**—When the employer can demonstrate that it is unreasonable to perform the drop-test required by *paragraph (c)(4)(i) [Safety Net Systems]* of this section, the employer (or a *designated competent person*) shall **certify** that the net and net installation is in compliance with the provisions of *paragraphs (c)(3) and (c)(4)(i) [Safety Net Systems]* of this section by preparing a **certification record** prior to the net being used as a fall protection system. The **certification record** must include an identification of the net and net installation for which the **certification record** is being prepared; the date that it was determined that the identified net and net installation were in compliance with *paragraph (c)(3) [Safety Net Systems]* of this section and the **signature** of the person making the determination and **certification**. The most recent **certification record** for each net and net installation shall be **available** at the jobsite for inspection.

**1926.502(k)(1)**—The **fall protection plan** shall be prepared by a qualified person and developed specifically for the site where the leading edge work, precast concrete work, or residential construction work is being performed and the **plan** must be **maintained** up to date.

**1926.502(k)(2)**—Any changes to the **fall protection plan** shall be approved by a qualified person.

## 1926.503—TRAINING REQUIREMENTS

**Scope/Application:** This section sets forth requirements for employers to provide fall protection systems in construction workplaces covered under 29 CFR Part 1926. The following training provisions supplement and clarify the requirements of 1926.21 [Safety Training and Education] regarding the hazards addressed in subpart M [Fall Protection] of this part.

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—training program
- Recordkeeping—retention requirements, records
- Certification—training record
- Training and Communications—training program, initial, retraining
- Competent Person—training

## Programs, Plans and Procedures

**1926.503(a)(1)**—The employer *shall provide a **training program*** for each employee who might be exposed to fall hazards. The ***program*** shall enable each employee to recognize the hazards of falling and *shall train each employee in the procedures* to be followed in order to minimize these hazards.

## Recordkeeping

**1926.503(b)(1)**—The employer *shall verify compliance with paragraph (a) [Training Program]* of this section *by preparing a **written certification record***. The ***written certification record*** shall contain the name or other identity of the employee trained, the date(s) of the training, and the ***signature*** of the person who conducted the training or the ***signature of the employer***. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the ***certification record*** shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

**1926.503(b)(2)**—The *latest training **certification*** shall be ***maintained***.

## Certification

**1926.503(b)(1)**—The employer *shall verify compliance with paragraph (a) [Training Program]* of this section *by preparing a **written certification record***. The ***written certification record*** shall contain the name or other identity of the employee trained, the date(s) of the training, and the ***signature*** of the person who conducted the training or the ***signature of the employer***. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the ***certification record*** shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

**1926.503(b)(2)**—The *latest training **certification*** shall be ***maintained***.

## Training and Communications

**1926.503(a)(1)**—The employer *shall provide a **training program*** for each employee who might be exposed to fall hazards. The ***program*** shall enable each employee to recognize the hazards of falling and *shall train each employee in the procedures* to be followed in order to minimize these hazards.

**1926.503(a)(2)**—The employer shall assure that each employee *has been trained, as necessary, by a competent person* qualified in the following areas. *[Reference paragraph (a)(2) for specific provisions.]*

**1926.503(b)(1)**—The employer *shall verify compliance with paragraph (a) [Training Program]* of this section *by preparing a **written certification record***. The ***written certification record*** shall contain the name or other identity of the employee trained, the date(s) of the training, and the ***signature of the person*** who conducted the training or the ***signature*** of the employer. If the employer relies on training conducted by another employer or completed prior to the effective date of this section, the ***certification record*** shall indicate the date the employer determined the prior training was adequate rather than the date of actual training.

**1926.503(c)**—*Retraining*. When the employer has reason to believe that any affected employee who has already been trained does not have the understanding and skill required by *paragraph (a) [Training Program]* of this section, the *employer shall retrain each such employee*. Circumstances where retraining is required include, but are not limited to, situations where: *[Reference paragraph (c) for specific information.]*

## Competent Person

**1926.503(a)(2)**—The employer shall assure that each employee *has been trained, as necessary, by a competent person* qualified in the specific areas: *[Reference paragraph (a)(2) for specific provisions.]*

## 29 CFR Subpart N—Helicopters, Hoists, Elevators, and Conveyors

### 1926.551—HELICOPTERS

**Scope/Application:** *This section sets forth helicopter regulations. Helicopter cranes shall be expected to comply with any applicable regulations of the Federal Aviation Administration.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—plan, briefing
- Inspections and Tests—prior to each day's operations
- Training and Communications—briefings conducted daily
- Qualified Person—responsibilities for operator, designated employee

#### Programs, Plans and Procedures

**1926.551(b)—Briefing.** *Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the **plan of operation** for the pilot and ground personnel.*

#### Inspections and Tests

**1926.551(d)**—Cargo hooks. All electrically operated cargo hooks shall have the electrical activating device so designed and installed as to prevent inadvertent operation. In addition, these cargo hooks shall be equipped with an emergency mechanical control for releasing the load. The hooks *shall be tested prior to each day's operation* to determine that the release functions properly, both electrically and mechanically.

#### Training and Communications

**1926.551(b)—Briefing.** *Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the **plan of operation** for the pilot and ground personnel.*

**1926.551(n)**—Signal systems. *Signal systems between aircrew and ground personnel shall be understood and checked in advance* of hoisting the load. This applies to either radio or hand signal systems.

**1926.551(r)**—Communications. *There shall be constant reliable communication between the pilot, and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. This signalman shall be distinctly recognizable from other ground personnel.*

#### Qualified Person

**1926.551(b)—Briefing.** *Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the **plan of operation** for the pilot and ground personnel.*

**1926.551(h)**—Operator responsibility. The helicopter operator *shall be responsible* for size, weight, and manner in which loads are connected to the helicopter. If, for any reason, the helicopter operator believes the lift cannot be made safely, the lift shall not be made.

**1926.551(r)**—Communications. *There shall be constant reliable communication between the pilot, and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. This signalman shall be distinctly recognizable from other ground personnel.*



## 1926.552—MATERIAL HOISTS, PERSONNEL HOISTS, AND ELEVATORS

**Scope/Application:** *This section sets forth regulations pertaining to material hoists, personnel hoists, and elevators.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—weekly, prior to use, quarterly, records
- Recordkeeping—maintain records
- Certification—records
- Competent Person—supervision
- Qualified Person—professional engineer
- Signs, Markings and Tags—posting rules, instructions

### Inspections and Tests

**1926.552(c)(15)**—Following assembly and erection of hoists, and before being put in service, *an inspection and test* of all functions and safety devices shall be made under the *supervision of a competent person*. A similar inspection and test is required following major alteration of an existing installation. All hoists *shall be inspected and tested at not more than 3-month intervals*. The employer shall prepare a **certification record** which includes the date the inspection and test of all functions and safety devices was performed; the **signature** of the person who performed the inspection and test; and a serial number, or other identifier, for the hoist that was inspected and tested. The most recent **certification record** shall be **maintained on file**.

**1926.552(c)(17)(iii)**—These hoists *shall be inspected and maintained on a weekly basis*. Whenever the hoisting equipment is exposed to winds exceeding 35 miles per hour it shall be inspected and put in operable condition before reuse.

**1926.552(d)**—Permanent elevators under the care and custody of the employer and used by employees for work covered by this Act shall comply with the requirements of *American National Standards Institute A17.1-1965* with **addenda A17.1a-1967, A17.1b-1968, A17.1c-1969, A17.1d-1970**, and inspected in accordance with *A17.2-1960* with **addenda A17.2a-1965, A17.2b-1967**.

### Recordkeeping

**1926.552(a)(1)**—The employer shall comply with the **manufacturer's specifications** and limitations applicable to the operation of all hoists and elevators. Where **manufacturer's specifications** are not available, the limitations assigned to the equipment *shall be based on the determinations of a professional engineer competent in the field*.

**1926.552(a)(2)**—**Rated load capacities, recommended operating speeds, and special hazard warnings or instructions** shall be **posted** on cars and platforms.

**1926.552(b)(1)(ii)**—**Operating rules** shall be established and **posted** at the operator's station of the hoist. Such **rules** shall include signal system and allowable line speed for various loads. **Rules and notices** shall be **posted** on the car frame or crosshead in a conspicuous location, *including the statement "No Riders Allowed."*

**1926.552(c)(15)**—Following assembly and erection of hoists, and before being put in service, *an inspection and test* of all functions and safety devices shall be made under the *supervision of a competent person*. A similar inspection and test is required following major alteration of an existing installation. All hoists *shall be inspected and tested at not more than 3-month intervals*. The employer shall prepare a **certification record** which includes the date the inspection and test of all functions and safety devices was performed; the **signature** of the person who performed the inspection and test; and a serial number, or other identifier, for the hoist that was inspected and tested. The most recent **certification record** shall be **maintained on file**.

## Certification

**1926.552(c)(15)**—Following assembly and erection of hoists, and before being put in service, *an inspection and test* of all functions and safety devices shall be made under the *supervision of a competent person*. A similar *inspection and test* is required following major alteration of an existing installation. All hoists *shall be inspected and tested at not more than 3-month intervals*. The employer shall **prepare a certification record** which includes the date the *inspection and test* of all functions and safety devices was performed; the **signature** of the person who performed the *inspection and test*; and a serial number, or other identifier, for the hoist that *was inspected and tested*. The most recent **certification record** shall be **maintained on file**.

## Competent Person

**1926.552(c)(15)**—Following assembly and erection of hoists, and before being put in service, *an inspection and test* of all functions and safety devices shall be made under the *supervision of a competent person*. A similar *inspection and test* is required following major alteration of an existing installation. All hoists *shall be inspected and tested at not more than 3-month intervals*. The employer shall **prepare a certification record** which includes the date the *inspection and test* of all functions and safety devices was performed; the **signature** of the person who performed the *inspection and test*; and a serial number, or other identifier, for the hoist that *was inspected and tested*. The most recent **certification record** shall be **maintained on file**.

## Qualified Person

**1926.552(a)(1)**—The employer shall comply with the **manufacturer's specifications** and limitations applicable to the operation of all hoists and elevators. Where **manufacturer's specifications** are not **available**, the limitations assigned to the equipment *shall be based on the determinations of a professional engineer competent* in the field.

## Signs, Markings and Tags

**1926.552(a)(2)**—**Rated load capacities, recommended operating speeds, and special hazard warnings or instructions** shall be **posted** on cars and platforms.

**1926.552(b)(1)(ii)**—**Operating rules** shall be established and **posted** at the operator's station of the hoist. Such rules shall include signal system and allowable line speed for various loads. **Rules and notices** shall be **posted** on the car frame or crosshead in a conspicuous location, including the **statement "No Riders Allowed."**

## 1926.554—OVERHEAD HOISTS

**Scope/Application:** *This section sets forth regulations pertaining to overhead hoists.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—per manufacturer
- Recordkeeping—per manufacturer
- Signs, Markings and Tags—markings

## Inspections and Tests

**1926.554(a)(6)**—All overhead hoists in use *shall meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer.*

## Recordkeeping

**1926.554(a)(6)**—All overhead hoists in use *shall meet the applicable requirements for construction, design, installation, testing, inspection, maintenance, and operation, as prescribed by the manufacturer.*

## Signs, Markings and Tags

**1926.554(a)(1)**—The *safe working load* of the overhead hoist, as determined by the manufacturer, *shall be indicated on the hoist*, and this safe working load shall not be exceeded.

## 1926.555—CONVEYORS

***Scope/Application:*** *This section sets forth regulations pertaining to conveyors.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—ANSI
- Signs, Markings and Tags—markings

## Inspections and Tests

**1926.555(a)(8)**—All conveyors in use *shall meet the applicable requirements for design, construction, inspection, testing, maintenance, and operation*, as prescribed in the *ANSI B20.1-1957, Safety Code for Conveyors, Cableways, and Related Equipment*.

## Signs, Markings and Tags

**1926.555(a)(6)**—All crossovers, aisles, and passageways *shall be conspicuously marked* by suitable *signs*, as required by *Subpart G [Signs, Signal, and Barricades]* of this part.

## 29 CFR Subpart O—Motor Vehicles, Mechanized Equipment, and Marine Operations

### 1926.600—GENERAL REQUIREMENTS

**Scope/Application:** *This section sets forth regulations for motor vehicles, mechanized equipment and marine operations.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—tests prior to work
- Qualified Person—designated person

#### Inspections and Tests

**1926.600(a)(6)(vii)**—*Prior to work near transmitter towers where an electrical charge can be induced in the equipment or materials being handled, the transmitter shall be de-energized or tests shall be made to determine if electrical charge is induced on the crane.*

#### Qualified Person

**1926.600(a)(6)(iv)**—*A person shall be designated to observe clearance of the equipment and give timely warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.*

### 1926.601—MOTOR VEHICLES

**Scope/Application:** *This section sets forth regulations for motor vehicles. Motor vehicles as covered by this part are those vehicles that operate within an off-highway jobsite, not open to public traffic.*

**Exception:** *The requirements of this section do not apply to equipment for which rules are prescribed in Sec. 1926.602 [Material Handling Equipment].*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—vehicles checked beginning of each shift

#### Inspections and Tests

**1926.601(b)(14)**—*All vehicles in use shall be checked at the beginning of each shift to assure that the following parts, equipment, and accessories are in safe operating condition and free of apparent damage that could cause failure while in use: service brakes, including trailer brake connections; parking system (hand brake); emergency stopping system (brakes); tires; horn; steering mechanism; coupling devices; seat belts; operating controls; and safety devices. All defects shall be corrected before the vehicle is placed in service. These requirements also apply to equipment such as lights, reflectors, windshield wipers, defrosters, fire extinguishers, etc., where such equipment is necessary.*

## 1926.602—MATERIAL HANDLING EQUIPMENT

**Scope/Application:** *This section sets forth regulations for material handling equipment. These rules apply to the following types of earthmoving equipment: scrapers, loaders, crawler or wheel tractors, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment. The promulgation of specific rules for compactors and rubber-tired “skid-steer” equipment is reserved pending consideration of standards currently being developed.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—per ANSI requirements
- Recordkeeping—written manufacturer approval
- Training and Communications—initial and refresher training
- Signs, Markings and Tags—rated capacity posted
- Other—29 CFR 1910.178(l)—Powered Industrial Trucks

### Inspections and Tests

**1926.602(c)(1)(vi)**—All industrial trucks in use *shall meet the applicable requirements of design, construction, stability, inspection, testing, maintenance, and operation, as defined in **American National Standards Institute B56.1-1969, Safety Standards for Powered Industrial Trucks**.*

### Recordkeeping

**1926.602(c)(1)(ii)**—No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the *manufacturer’s written approval*. If such modifications or changes are made, the capacity, operation, and *maintenance instruction plates, tags, or decals* shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

### Training and Communications

**1926.602(d)**—*Powered industrial truck operator training. Note:* The requirements applicable to construction work under this paragraph are identical to those set forth at *Sec. 1910.178(l) [Powered Industrial Trucks]* of this chapter.

**1910.178(l)(3)**—*Training program content.* Powered industrial truck operators *shall receive initial training in topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer’s workplace. [Reference paragraph (l)(3)i for training topics.]*

### Signs, Markings and Tags

**1926.602(c)(1)(i)**—Lift trucks, stackers, etc., *shall have the **rated capacity** clearly **posted*** on the vehicle so as to be clearly visible to the operator. When auxiliary removable counterweights are provided by the manufacturer, corresponding alternate *rated capacities* also shall be clearly shown on the vehicle. These *ratings* shall not be exceeded.

**1926.602(c)(1)(ii)**—No modifications or additions which affect the capacity or safe operation of the equipment shall be made without the *manufacturer’s written approval*. If such modifications or changes are made, the capacity, operation, and *maintenance instruction plates, tags, or decals* shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

### Other

### 29 CFR 1910.178(l)—Powered Industrial Trucks



**1910.178(l)(1)(i)**—The employer *shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this paragraph (l) [Operator Training]*.

**1910.178(l)(1)(ii)**—Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer *shall ensure that each operator has successfully completed the training required by this paragraph (l) [Operator Training], except as permitted by paragraph (l)(5) [Avoidance of Duplicative Training]*.

**1910.178(l)(3)**—***Training program content.*** Powered industrial truck operators *shall receive initial training in topics, except in topics which the employer can demonstrate are not applicable to safe operation of the truck in the employer’s workplace. [Reference paragraph (l)(3)i for training topics.]*

**1910.178(l)(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.*

## **1926.603—PILE DRIVING EQUIPMENT**

***Scope/Application:*** *This section sets forth regulations for pile driving equipment*

### **STANDARD HIGHLIGHTS**

- Qualified Person—designated signalmen

#### **Qualified Person**

**1926.603(c)(1)**—Engineers and winchmen shall accept signals only from the *designated signalmen*.

## **1926.604—SITE CLEARING**

***Scope/Application:*** *This section sets forth regulations for site clearing*

### **STANDARD HIGHLIGHTS**

- Training and Communications—instruction on first aid treatment

#### **Training and Communications**

**1926.604(a)(1)**—Employees engaged in site clearing shall be protected from hazards of irritant and toxic plants and *suitably instructed in the first aid treatment* available.

## 29 CFR Subpart P—Excavations

### 1926.651—SPECIFIC EXCAVATION REQUIREMENTS

**Scope/Application:** *This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections before entry, after rain, and daily, atmospheric
- Recordkeeping—design
- Competent Person—daily inspections, design, monitor

#### Inspections and Tests

**1926.651(g)(1)(i)**—Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation *shall be tested before employees enter* excavations greater than 4 feet (1.22 m) in depth.

**1926.651(g)(1)(iv)**—When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, *testing shall be conducted as often as necessary* to ensure that the atmosphere remains safe.

**1926.651(h)(3)**—If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains *will require an inspection by a competent person* and compliance with *paragraphs (h)(1) and (h)(2) [Protection From Hazards Associated With Water Accumulation]* of this section.

**1926.651(k)(1)**—*Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person* for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. *An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence.* These inspections are only required when employee exposure can be reasonably anticipated.

#### Recordkeeping

**1926.651(c)(1)(i)**—Structural ramps that are used solely by employees as a means of access or egress from excavations *shall be designed by a competent person*. Structural ramps used for access or egress of equipment *shall be designed by a competent person qualified in structural design*, and shall be constructed in accordance with the *design*.

#### Competent Person

**1926.651(c)(1)(i)**—Structural ramps that are used solely by employees as a means of access or egress from excavations *shall be designed by a competent person*. Structural ramps used for access or egress of equipment *shall be designed by a competent person qualified in structural design*, and shall be constructed in accordance with the *design*.

**1926.651(h)(2)**—If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations *shall be monitored by a competent person* to ensure proper operation.

**1926.651(h)(3)**—If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains *will require an inspection by a competent person* and compliance with *paragraphs (h)(1) and (h)(2) [Protection From Hazards Associated With Water Accumulation]* of this section.

**1926.651(k)(1)**—*Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence.* These inspections are only required when employee exposure can be reasonably anticipated.

**1926.651(k)(2)**—Where *the competent person finds evidence* of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

## **1926.652—REQUIREMENTS FOR PROTECTIVE SYSTEMS**

**Scope/Application:** *This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.*

### **STANDARD HIGHLIGHTS**

- Recordkeeping—designs at job site, written manufacturer Information
- Training and Communications—explanatory information
- Qualified Person—registered professional engineer

### **Recordkeeping**

**1926.652(b)(3)(ii)(C)**—*Design* of sloping and benching systems. **Explanatory information** as may be necessary to aid the user in making a correct selection of a protective system from the **data**.

**1926.652(b)(3)(iii)**—*Design* of sloping and benching systems. *At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.*

**1926.652(b)(4)(ii)**—*Design* of sloping and benching systems. **Designs** shall be in **written form** and shall include specific information. *[Reference paragraph (b)(4)(ii) for specific provisions.]*

**1926.652(b)(4)(iii)**—*Design* of sloping and benching systems. *At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy shall be made available to the Secretary upon request.*

**1926.652(c)(2)(iii)**—*Design of support systems, shield systems, and other protective systems. Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy shall be made available to the Secretary upon request.*

**1926.652(c)(3)(ii)(C)**—*Design of support systems, shield systems, and other protective systems. Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.*

**1926.652(c)(3)(iii)**—*Design of support systems, shield systems, and other protective systems. At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.*

**1926.652(c)(4)(iii)**—*Design of support systems, shield systems, and other protective systems. At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available to the Secretary upon request.*

## Training and Communications

**1926.652(b)(3)(ii)(C)**—*Design of sloping and benching systems. Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.*

**1926.652(c)(3)(ii)(C)**—*Design of support systems, shield systems, and other protective systems. Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.*

## Qualified Person

**1926.652(b)(3)(iii)**—*Design of sloping and benching systems. At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.*

**1926.652(c)(3)(iii)**—*Design of support systems, shield systems, and other protective systems. At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.*

**1926.652(b)(4)(i)**—*Sloping and benching systems not utilizing Option (1) or Option (2) or Option (3) under paragraph (b) [Design of Sloping and Benching Systems] of this section shall be approved by a registered professional engineer.*

## 29 CFR Subpart Q—Concrete and Masonry Construction

### 1926.701—GENERAL REQUIREMENTS

**Scope/Application:** *This subpart sets forth requirements to protect all construction employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926. In addition to the requirements in subpart Q [Concrete and Masonry Construction], other relevant provisions in parts 1910 [General Industry] and 1926 [Construction Industry] apply to concrete and masonry construction operations.*

#### STANDARD HIGHLIGHTS

- Recordkeeping—information
- Qualified Person—structural design
- Signs, Markings and Tags—barriers, signs

#### Recordkeeping

**1926.701(a)**—Construction loads. No construction loads shall be placed on a concrete structure or portion of a concrete structure *unless the employer determines, based on **information** received from a person who is qualified in **structural design***, that the structure or portion of the structure is capable of supporting the loads.

#### Qualified Person

**1926.701(a)**—Construction loads. No construction loads shall be placed on a concrete structure or portion of a concrete structure *unless the employer determines, based on **information** received from a person who is qualified in **structural design***, that the structure or portion of the structure is capable of supporting the loads.

#### Signs, Markings and Tags

**1926.702(c)(2)**—*Signs and barriers shall be erected to limit employee access to the post-tensioning area during tensioning operations.*

### 1926.702—REQUIREMENTS FOR EQUIPMENT AND TOOLS

**Scope/Application:** *This subpart sets forth requirements to protect all construction employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926. In addition to the requirements in subpart Q [Concrete and Masonry Construction], other relevant provisions in parts 1910 [General Industry] and 1926 [Construction Industry] apply to concrete and masonry construction operations. This section contains the general requirements for equipment and tools.*

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—locks and tags

#### Signs, Markings and Tags

**1926.702(a)(2)**—No employee shall be permitted to enter storage facilities unless the ejection system *has been shut down, locked out, and **tagged*** to indicate that the ejection system is not to be operated.

**1926.702(j)(1)**—No employee shall be permitted to perform maintenance or repair activity on equipment (such as compressors mixers, screens or pumps used for concrete and masonry construction activities) where the inadvertent operation of the equipment could occur and cause injury, unless all potentially hazardous energy sources *have been locked out and **tagged***.



## 1926.703—REQUIREMENTS FOR CAST-IN-PLACE CONCRETE

**Scope/Application:** *This subpart sets forth requirements to protect all construction employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926. In addition to the requirements in subpart Q [Concrete and Masonry Construction], other relevant provisions in parts 1910 [General Industry] and 1926 [Construction Industry] apply to concrete and masonry construction operations. This section contains the general requirements for formwork.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections prior to erection and immediate, ASTM
- Recordkeeping—drawings and plans at jobsite
- Qualified Person—qualified engineer, inspections

### Inspections and Tests

**1926.703(b)(1)**—All shoring equipment (including equipment used in reshoring operations) *shall be inspected prior to erection* to determine that the equipment meets the requirements specified in the **formwork drawings**.

**1926.703(b)(3)**—Erected shoring equipment *shall be inspected immediately prior to, during, and immediately after* concrete placement.

**1926.703(b)(8)(i)**—The **design** of the shoring *shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design*.

**1926.703(e)(1)(ii)**—The concrete *has been properly tested with an appropriate ASTM standard test method* designed to indicate the concrete compressive strength, and the **test results** indicate that the concrete has gained sufficient strength to support its weight and superimposed loads.

### Recordkeeping

**1926.703(a)(2)**—**Drawings or plans**, including all revisions, for the jack layout, formwork (including shoring equipment), working decks, and scaffolds, *shall be available at the jobsite*.

**1926.703(b)(1)**—All shoring equipment (including equipment used in reshoring operations) *shall be inspected prior to erection* to determine that the equipment meets the requirements specified in the **formwork drawings**.

**1926.703(b)(8)(i)**—The **design** of the shoring *shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design*.

### Qualified Person

**1926.703(b)(8)(i)**—The **design** of the shoring *shall be prepared by a qualified designer and the erected shoring shall be inspected by an engineer qualified in structural design*.

## 1926.705—REQUIREMENTS FOR LIFT-SLAB OPERATIONS

**Scope/Application:** *This subpart sets forth requirements to protect all construction employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926. In addition to the requirements in subpart Q [Concrete and Masonry Construction], other relevant provisions in parts 1910 [General Industry] and 1926 [Construction Industry] apply to concrete and masonry construction operations. This section contains the general requirements for lift-slab operations.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—measures implemented by employer
- Recordkeeping—designs
- Competent Person—experienced
- Qualified Person—registered professional engineer
- Signs, Markings and Tags—markings

### Programs, Plans and Procedures

**1926.705(p)**—*Equipment shall be **designed** and installed so that the lifting rods cannot slip out of position or the employer shall institute other measures, such as the use of locking or blocking devices, which will provide positive connection between the lifting rods and attachments and will prevent components from disengaging during lifting operations.*

### Recordkeeping

**1926.705(a)**—*Lift-slab operations shall be **designed** and planned by a **registered professional engineer** who has experience in lift-slab construction. Such **plans and designs** shall be implemented by the employer and shall include **detailed instructions and sketches** indicating the prescribed method of erection. These **plans and designs** shall also include provisions for ensuring lateral stability of the building/structure during construction.*

### Competent Person

**1926.705(i)**—*If leveling is maintained by manual controls, such controls shall be located in a central location and **attended by a competent person** while lifting is in progress. In addition to meeting the definition in 1926.32(f) [Definitions], the **competent person must be experienced** in the lifting operation and with the lifting equipment being used.*

### Qualified Person

**1926.705(a)**—*Lift-slab operations shall be **designed** and planned by a **registered professional engineer** who has experience in lift-slab construction. Such **plans and designs** shall be implemented by the employer and shall include **detailed instructions and sketches** indicating the prescribed method of erection. These **plans and designs** shall also include provisions for ensuring lateral stability of the building/structure during construction.*

### Signs, Markings and Tags

**1926.705(b)**—*Jacks/lifting units shall be **marked** to indicate their **rated capacity** as established by the manufacturer.*

## 1926.706—REQUIREMENTS FOR MASONRY CONSTRUCTION

**Scope/Application:** *This subpart sets forth requirements to protect all construction employees from the hazards associated with concrete and masonry construction operations performed in workplaces covered under 29 CFR Part 1926. In addition to the requirements in subpart Q [Concrete and Masonry Construction], other relevant provisions in parts 1910 [General Industry] and 1926 [Construction Industry] apply to concrete and masonry construction operations. This section contains the general requirements for masonry construction.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—limited access zone established

### Signs, Markings and Tags

**1926.706(a)**—A *limited access zone* shall be established whenever a masonry wall is being constructed. The *limited access zone* shall conform to the following. [Reference 1926.706(a) for specific requirements.]

**1926.706(a)(3)**—The *limited access zone* shall be established on the side of the wall which will be unscaffolded.

## 29 CFR Subpart R—Steel Erection

### 1926.752—SITE LAYOUT, SITE-SPECIFIC ERECTION PLAN AND CONSTRUCTION SEQUENCE

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—site-specific erection plan, preplanning
- Inspections and Tests—ASTM
- Recordkeeping—written notification of approval
- Qualified Person—site-specific erection plan

#### Programs, Plans and Procedures

**1926.752(d)**—*Pre-planning of overhead hoisting operations.* All hoisting operations in steel erection shall be preplanned to ensure that the requirements of Sec. 1926.753(d) [Working Under Loads] are met.

**1926.752(e)**—**Site-specific erection plan.** Where employers elect, due to conditions specific to the site, to develop alternate means and methods that provide employee protection in accordance with Sec. 1926.753(c)(5) [Hoisting and Rigging], Sec. 1926.757(a)(4) [Structural Steel Assembly] or Sec. 1926.757(e)(4) [Open Web Steel Joists], a **site-specific erection plan** shall be **developed** by a qualified person and be **available** at the work site. **Guidelines** for establishing a **site-specific erection plan** are contained in **Appendix A** to this subpart.

#### Inspections and Tests

**1926.752(b)**—Commencement of steel erection. A steel erection contractor shall not erect steel unless it *has received written notification* that the concrete in the footings, piers and walls or the mortar in the masonry piers and walls has attained, *on the basis of an appropriate ASTM standard test method of field-cured samples*, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

#### Recordkeeping

**1926.752(a)**—*Approval to begin steel erection.* Before authorizing the commencement of steel erection, the controlling contractor shall ensure that the steel erector is provided with **written notifications**. [Reference paragraph (a) for notifications.]

**1926.752(b)**—Commencement of steel erection. A steel erection contractor shall not erect steel unless it *has received written notification* that the concrete in the footings, piers and walls or the mortar in the masonry piers and walls has attained, *on the basis of an appropriate ASTM standard test method of field-cured samples*, either 75 percent of the intended minimum compressive design strength or sufficient strength to support the loads imposed during steel erection.

**1926.752(e)**—**Site-specific erection plan.** Where employers elect, due to conditions specific to the site, to develop alternate means and methods that provide employee protection in accordance with Sec. 1926.753(c)(5) [Hoisting and Rigging], Sec. 1926.757(a)(4) [Structural Steel Assembly] or Sec. 1926.757(e)(4) [Open Web Steel Joists], a **site-specific erection plan** shall be **developed** by a qualified person and be **available** at the work site. **Guidelines** for establishing a **site-specific erection plan** are contained in **Appendix A** to this subpart.

## Qualified Person

**1926.752(e)—*Site-specific erection plan.*** Where employers elect, due to conditions specific to the site, to develop alternate means and methods that provide employee protection in accordance with *Sec. 1926.753(c)(5) [Hoisting and Rigging]*, *Sec. 1926.757(a)(4) [Structural Steel Assembly]* or *Sec. 1926.757(e)(4) [Open Web Steel Joists]*, a ***site-specific erection plan*** shall be ***developed*** by a qualified person and be ***available*** at the work site. ***Guidelines for establishing a site-specific erection plan are contained in Appendix A to this subpart.***

## 1926.753—HOISTING AND RIGGING

***Scope/Application:*** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to hoists and rigging.*

***Exception:*** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—site-specific erection plan
- Inspections and Tests—pre-shift and visual inspections
- Recordkeeping—certified by manufacturers and qualified riggers
- Certification—certified by manufacturers and qualified riggers
- Training and Communications—procedures
- Competent Person—inspections
- Qualified Person—qualified rigger, inspections

### Programs, Plans and Procedures

**1926.753(c)(5)(ii)**—When equivalent protection is provided in a ***site-specific erection plan***.

**1926.753(e)(1)(iv)**—All employees engaged in the multiple lift *have been trained* in these *procedures* in accordance with *Sec. 1926.761(c)(1) [Training]*.

### Inspections and Tests

**1926.753(c)(1)**—*Pre-shift visual inspection of cranes.*

**1926.753(c)(1)(i)**—Cranes being used in steel erection activities *shall be visually inspected prior to each shift by a competent person*; the inspection shall include observation for deficiencies during operation. At a minimum this inspection shall include additional ***information***. *[Reference paragraph (c)(1)(i) for specific provisions.]*

**1926.761(c)(2)**—A *qualified rigger (a rigger who is also a qualified person)* shall inspect the rigging prior to each shift in accordance with *Sec. 1926.251 [Rigging Equipment for Material Handling]*.

### Recordkeeping

**1926.753(e)(2)**—Components of the multiple lift rigging assembly shall be specifically designed and assembled with a maximum capacity for total assembly and for each individual attachment point. This capacity, ***certified by the manufacturer or a qualified rigger***, shall be based on the ***manufacturer's specifications*** with a 5 to 1 safety factor for all components.



## Certification

**1926.753(e)(2)**—Components of the multiple lift rigging assembly shall be specifically designed and assembled with a maximum capacity for total assembly and for each individual attachment point. This capacity, *certified by the manufacturer or a qualified rigger*, shall be based on the *manufacturer's specifications* with a 5 to 1 safety factor for all components.

## Training and Communications

**1926.753(e)(1)(iv)**—All employees engaged in the multiple lift *have been trained* in these *procedures* in accordance with *Sec. 1926.761(c)(1) [Training]*.

## Competent Person

**1926.753(c)(1)(i)**—Cranes being used in steel erection activities *shall be visually inspected prior to each shift by a competent person*; the inspection shall include observation for deficiencies during operation. At a minimum, *this inspection* shall include additional information. *[Reference paragraph (c)(1)(i) for specific provisions.]*

**1926.753(c)(1)(ii)**—If any deficiency is identified, an immediate determination *shall be made by the competent person* as to whether the deficiency constitutes a hazard.

## Qualified Person

**1926.761(c)(2)**—A *qualified rigger (a rigger who is also a qualified person)* shall inspect the rigging prior to each shift in accordance with *Sec. 1926.251 [Rigging Equipment for Material Handling]*.

**1926.753(c)(5)**—Safety latches on hooks shall not be deactivated or made inoperable except:

**1926.753(c)(5)(i)**—When a *qualified rigger has determined* that the hoisting and placing of purlins and single joists can be performed more safely by doing so; or

**1926.753(c)(5)(ii)**—When equivalent protection *is provided in a site-specific erection plan*.

**1926.761(d)(2)(iii)**—All loads *shall be rigged by a qualified rigger*.

**1926.753(e)(2)**—Components of the multiple lift rigging assembly shall be specifically designed and assembled with a maximum capacity for total assembly and for each individual attachment point. This capacity, *certified by the manufacturer or a qualified rigger*, shall be based on the *manufacturer's specifications* with a 5 to 1 safety factor for all components.

## 1926.754—STRUCTURAL STEEL ASSEMBLY

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to structural steel assembly.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

## STANDARD HIGHLIGHTS

- Competent Person—approvals

## Competent Person

**1926.754(d)(1)**—When deemed necessary *by a competent person*, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure.

**1926.754(d)(3)**—Plumbing-up equipment *shall be removed only with the approval of a competent person*.

## 1926.755—COLUMN ANCHORAGE

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to column anchorage.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—evaluations by competent person
- Recordkeeping—controlling contractor provides written notification
- Competent Person—evaluations

### Inspections and Tests

**1926.755(a)(4)**—All columns *shall be evaluated by a competent person* to determine whether guying or bracing is needed; if guying or bracing is needed, it shall be installed.

### Recordkeeping

**1926.755(b)(2)**—Prior to the erection of a column, the *controlling contractor shall provide **written notification** to the steel erector* if there has been any repair, replacement or modification of the anchor rods (anchor bolts) of that column.

## Competent Person

**1926.755(a)(4)**—All columns *shall be evaluated by a competent person* to determine whether guying or bracing is needed; if guying or bracing is needed, it shall be installed.

## 1926.756—BEAMS AND COLUMNS

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to beams and columns.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Recordkeeping—drawings, engineer of record
- Competent Person—determinations
- Qualified Person—structural engineer of record

### Recordkeeping

**1926.756(a)(1)**—During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with at least two bolts per connection, of the same size and strength as shown in the **erection drawings**, drawn up wrench-tight or the equivalent *as specified by the project structural engineer of record*, except as specified in paragraph (b) [Diagonal Bracing] of this section.

**1926.756(b)**—Diagonal bracing. Solid web structural members used as diagonal bracing shall be secured by at least one bolt per connection drawn up wrench-tight or the equivalent as specified by the **project structural engineer of record**.

### Competent Person

**1926.756(a)(2)**—*A competent person shall determine if more than two bolts are necessary to ensure the stability of cantilevered members; if additional bolts are needed, they shall be installed.*

### Qualified Person

**1926.756(a)(1)**—During the final placing of solid web structural members, the load shall not be released from the hoisting line until the members are secured with at least two bolts per connection, of the same size and strength as shown in the **erection drawings**, drawn up wrench-tight or the equivalent *as specified by the project structural engineer of record*, except as specified in paragraph (b) [Diagonal Bracing] of this section.

**1926.756(b)**—Diagonal bracing. Solid web structural members used as diagonal bracing shall be secured by at least one bolt per connection drawn up wrench-tight or the equivalent as specified by the **project structural engineer of record**.

## 1926.757—OPEN WEB STEEL JOISTS

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to open web steel joists.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Recordkeeping—written approval
- Qualified Person—written approval, engineer of record, documented in plan

## Recordkeeping

**1926.757(a)(2)(i)(B)**—Be *designed* by a qualified person. [Reference paragraph (a)(2) for specific provisions.]

**1926.757(a)(7)**—No modification that affects the strength of a steel joist or steel joist girder shall be made without the approval of the *project structural engineer of record*.

**1926.757(a)(9)**—Steel joists and steel joist girders shall not be used as anchorage points for a fall arrest system unless *written approval to do so is obtained from a qualified person*.

**1926.757(e)(4)(i)**—The employer has *first determined from a qualified person and documented* in a *site-specific erection plan* that the structure or portion of the structure is capable of supporting the load.

## Qualified Person

**1926.757(a)(2)(i)(B)**—Be *designed* by a qualified person. [Reference paragraph (a)(2) for specific provisions.]

**1926.757(a)(4)**—Where steel joists at or near columns span more than 60 feet (18.3 m), the joists shall be set in tandem with all bridging installed unless an alternative method of erection, which provides equivalent stability to the steel joist, is *designed by a qualified person* and is included in the *site-specific erection plan*.

**1926.757(a)(7)**—No modification that affects the strength of a steel joist or steel joist girder shall be made without the approval of the *project structural engineer of record*.

**1926.757(a)(9)**—Steel joists and steel joist girders shall not be used as anchorage points for a fall arrest system unless *written approval to do so is obtained from a qualified person*.

**1926.757(e)(4)(i)**—The employer has *first determined from a qualified person and documented* in a *site-specific erection plan* that the structure or portion of the structure is capable of supporting the load.

## 1926.758—SYSTEMS-ENGINEERED METAL BUILDINGS

**Scope/Application:** This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to systems-engineered metal buildings.

**Exception:** This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.

## STANDARD HIGHLIGHTS

- Recordkeeping—written approval
- Qualified Person—written approval

## Recordkeeping

**1926.758(g)**—Purlins and girts shall not be used as an anchorage point for a fall arrest system unless *written approval is obtained from a qualified person*.

## Qualified Person

**1926.758(g)**—Purlins and girts shall not be used as an anchorage point for a fall arrest system unless *written approval is obtained from a qualified person*.

## 1926.760—FALL PROTECTION

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to fall protection.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections
- Training and Communications—connector training, controlled access zone training
- Qualified Person—authorized persons
- Signs, Markings and Tags—controlled decking zone established, marked

### Inspections and Tests

**1926.760(e)(2)**—*Has inspected and accepted control and responsibility of the fall protection prior to authorizing persons other than steel erectors to work in the area.*

### Training and Communications

**1926.760(b)(2)**—*Have completed connector training in accordance with Sec. 1926.761 [Training].*

**1926.760(c)(4)**—*Each employee working in a CDZ shall have completed CDZ training in accordance with Sec. 1926.761 [Training].*

### Qualified Person

**1926.760(e)(2)**—*Has inspected and accepted control and responsibility of the fall protection prior to authorizing persons other than steel erectors to work in the area.*

### Signs, Markings and Tags

**1926.760(c)**—Controlled Decking Zone (CDZ). *A controlled decking zone may be established in that area of the structure over 15 and up to 30 feet above a lower level where metal decking is initially being installed and forms the leading edge of a work area. In each CDZ, the following shall apply. [Reference paragraph (c) for specific provisions.]*

**1926.760(c)(3)**—*The boundaries of a CDZ shall be designated and clearly **marked**. The CDZ shall not be more than 90 feet (27.4 m) wide and 90 (27.4 m) feet deep from any leading edge. The CDZ shall be **marked** by the use of control lines or the equivalent. Examples of acceptable procedures for **demarcating** CDZ's can be found in Appendix D [Illustration of the Use of Control Lines to Demarcate CDZ] to this subpart.*



## 1926.761—TRAINING

**Scope/Application:** *This subpart sets forth requirements to protect employees from the hazards associated with steel erection activities involved in the construction, alteration, and/or repair of single and multi-story buildings, bridges, and other structures where steel erection occurs. The requirements of this subpart apply to employers engaged in steel erection unless otherwise specified. This section applies to training. The following provisions supplement the requirements of § 1926.21—Safety Training and Education regarding the hazards addressed in this subpart.*

**Exception:** *This subpart does not cover electrical transmission towers, communication and broadcast towers, or tanks.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—training program, procedures
- Training and Communications—training
- Qualified Person—provide training

### Programs, Plans and Procedures

**1926.761(b)—Fall hazard training.** The employer shall train each employee exposed to a fall hazard in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**. [Reference paragraph (b) for specific requirements.]

**1926.761(c)—Special training programs.** In addition to the training required in paragraphs (a) [Training Personnel] and (b) [Fall Hazard Training] of this section, the employer shall provide special training to employees engaged in the specific activities. [Reference paragraph (c)(1) for specific requirements.]

**1926.761(c)(2)—Connector procedures.** The employer shall ensure that each connector has been provided training in specific areas. [Reference paragraph (c)(2) for specific requirements.]

**1926.761(c)(3)—Controlled Decking Zone Procedures.** Where CDZs are being used, the employer shall assure that each employee has been provided training in the specific areas. [Reference paragraph (c)(3) for specific requirements.]

### Training and Communications

**1926.761(a)—Training personnel.** Training required by this section shall be provided by a qualified person(s).

**1926.761(b)—Fall hazard training.** The employer shall train each employee exposed to a fall hazard in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**. [Reference paragraph (b) for specific requirements.]

**1926.761(c)—Special training programs.** In addition to the training required in paragraphs (a) [Training Personnel] and (b) [Fall Hazard Training] of this section, the employer shall provide special training to employees engaged in the specific activities. [Reference paragraph (c)(1) for specific requirements.]

**1926.761(c)(2)—Connector procedures.** The employer shall ensure that each connector has been provided training in specific areas. [Reference paragraph (c)(2) for specific requirements.]

**1926.761(c)(3)—Controlled Decking Zone Procedures.** Where CDZs are being used, the employer shall assure that each employee has been provided training in the specific areas. [Reference paragraph (c)(3) for specific requirements.]

### Qualified Person

**1926.761(a)—Training personnel.** Training required by this section shall be provided by a qualified person(s).

## 29 CFR Subpart S—Underground Construction, Caissons, Cofferdams, and Compressed Air

### 1926.800—UNDERGROUND CONSTRUCTION

**Scope/Application:** *This section applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section, and covered in such a manner as to create conditions characteristic of underground construction.*

**Exception:** *This section does not apply to excavation and trenching operations covered by subpart P [Excavations] of this part, such as foundation operations for above-ground structures that are not physical connected to underground construction operations, and surface excavation; nor underground electrical transmission and distribution lines, as addressed in subpart V [Power Transmission and Distribution] of this part or access and egress.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—checkin/checkout
- Inspections and Tests—prior to use, each shift, frequent inspections, competent person
- Recordkeeping—retention, qualification tests
- Certificaton—record
- Training and Communications—initial training
- Exposure Monitoring—air monitoring conducted initially, frequently, and continuously
- Competent Person—air monitoring, inspections, other
- Qualified Person—qualifications, review
- Signs, Markings and Tags—posted warning signs, area classifications

#### Programs, Plans and Procedures

**1926.800(c)**—Check-in/check-out. The employer *shall maintain a check-in/check-out procedure* that will ensure that above-ground personnel can determine an accurate count of the number of persons underground in the event of an emergency. However, *this procedure is not required* when the construction of underground facilities designed for human occupancy has been sufficiently completed so that the permanent environmental controls are effective, and when the remaining construction activity will not cause any environmental hazard or structural failure within the facilities.

**1926.800(g)(5)(iii)**—*Rescue team members shall be qualified in rescue procedures, the use and limitations of breathing apparatus, and the use of firefighting equipment. **Qualifications** shall be reviewed not less than annually.*

#### Inspections and Tests

**1926.800(f)(4)**—*Communication systems shall be tested upon initial entry of each shift to the underground, and as often as necessary at later times, to ensure that they are in working order.*

**1926.800(k)(7)**—When ventilation has been reduced to the extent that hazardous levels of methane or flammable gas may have accumulated, a *competent person shall test all affected areas* after ventilation has been restored and shall determine whether the atmosphere is within flammable limits before any power, other than for acceptable equipment, is restored or work is resumed.

**1926.800(k)(8)**—Whenever the ventilation system has been shut down with all employees out of the underground area, only *competent persons authorized to test for air contaminants* shall be allowed underground until the ventilation has been restored and all affected areas have been tested for air contaminants and declared safe.

**1926.800(o)(3)(i)(A)**—*A competent person shall inspect the roof, face, and walls of the work area at the start of each shift and as often as necessary to determine ground stability.*

**1926.800(o)(3)(ii)**—*Ground conditions along haulageways and travelways shall be inspected as frequently as necessary to ensure safe passage.*

**1926.800(q)(1)**—*A competent person shall inspect all drilling and associated equipment prior to each use. Equipment defects affecting safety shall be corrected before the equipment is used.*

**1926.800(q)(2)**—*The drilling area shall be inspected for hazards before the drilling operation is started.*

**1926.800(t)(3)(xix)**—*A competent person shall visually check all hoisting machinery, equipment, anchorages, and hoisting rope at the beginning of each shift and during hoist use, as necessary.*

**1926.800(t)(3)(xx)**—*Each safety device shall be checked by a competent person at least weekly during hoist use to ensure suitable operation and safe condition.*

**1926.800(t)(3)(xxi)**—*In order to ensure suitable operation and safe condition of all functions and safety devices, each hoist assembly shall be inspected and load-tested to 100 percent of its rated capacity at the time of installation; after any repairs or alterations affecting its structural integrity; after the operation of any safety device; and annually when in use. The employer shall prepare a **certification record** which includes the date each inspection and load-test was performed; the **signature** of the person who performed the inspection and test; and a serial number or other identifier for the hoist that was inspected and tested. The most recent **certification record** shall be **maintained on file** until completion of the project.*

## **Recordkeeping**

**1926.800(g)(5)(iii)**—*Rescue team members shall be qualified in rescue procedures, the use and limitations of breathing apparatus, and the use of firefighting equipment. **Qualifications** shall be reviewed not less than annually.*

**1926.800(j)(3)**—**Recordkeeping.** *A record of all air quality tests shall be **maintained** above ground at the worksite and be made available to the Secretary of Labor upon request. The **record** shall include the location, date, time, substance and amount monitored. **Records of exposures** to toxic substances shall be **retained** in accordance with 1926.33 [Access to Employee Exposure and Medical Records] of this chapter. All other **air quality test records** shall be **retained** until completion of the project.*

**1926.800(t)(3)(xxi)**—*In order to ensure suitable operation and safe condition of all functions and safety devices, each hoist assembly shall be inspected and load-tested to 100 percent of its rated capacity at the time of installation; after any repairs or alterations affecting its structural integrity; after the operation of any safety device; and annually when in use. The employer shall prepare a **certification record** which includes the date each inspection and load-test was performed; the **signature** of the person who performed the inspection and test; and a serial number or other identifier for the hoist that was inspected and tested. The most recent **certification record** shall be **maintained on file** until completion of the project.*

## **Certification**

**1926.800(t)(3)(xxi)**—*In order to ensure suitable operation and safe condition of all functions and safety devices, each hoist assembly shall be inspected and load-tested to 100 percent of its rated capacity at the time of installation; after any repairs or alterations affecting its structural integrity; after the operation of any safety device; and annually when in use. The employer shall prepare a **certification record** which includes the date each inspection and load-test was performed; the **signature** of the person who performed the inspection and test; and a serial number or other identifier for the hoist that was inspected and tested. The most recent **certification record** shall be **maintained on file** until completion of the project.*

## **Training and Communications**

**1926.800(e)(2)**—*The employer shall establish and maintain direct communications for coordination of activities with other employers whose operations at the jobsite affect or may affect the safety of employees underground.*

**1926.800(d)**—*Safety instruction.* All employees *shall be instructed* in the recognition and avoidance of hazards associated with underground construction activities. *[Reference paragraph (d) for specific requirements.]*

**1926.800(f)(4)**—*Communication systems shall be tested upon initial entry of each shift to the underground, and as often as necessary at later times,* to ensure that they are in working order.

**1926.800(g)(5)(iv)**—On jobsites where flammable or noxious gases are encountered or anticipated in hazardous quantities, rescue team members *shall practice donning and using self-contained breathing apparatus monthly.*

**1926.800(j)(1)(v)(C)**—Employees *shall be informed* when a concentration of 10 ppm hydrogen sulfide is exceeded.

**1926.800(t)(1)(iv)(A)**—Before maintenance, repairs, or other work is commenced in the shaft served by a cage, skip, or bucket, the operator and other employees in the area *shall be informed and given suitable instructions.*

### **Exposure Monitoring**

**1926.800(j)(1)(i)(A)**—The employer *shall assign a competent person who shall perform all air monitoring* required by this section.

**1926.800(j)(1)(ii)(A)**—The atmosphere in all underground work areas *shall be tested* as often as necessary to assure that the atmosphere at normal atmospheric pressure contains at least 19.5 percent oxygen and no more than 22 percent oxygen.

**1926.800(j)(1)(ii)(B)**—*Tests for oxygen content shall be made before tests for air contaminants.*

**1926.800(j)(1)(iii)(A)**—The atmosphere in all underground work areas *shall be tested quantitatively for carbon monoxide, nitrogen dioxide, hydrogen sulfide, and other toxic gases, dusts, vapors, mists, and fumes as often as necessary* to ensure that the permissible exposure limits prescribed in 1926.55 [*Gases, Vapors, Fumes, Dusts, and Mists*] are not exceeded.

**1926.800(j)(1)(iii)(B)**—The atmosphere in all underground work areas *shall be tested quantitatively for methane and other flammable gases as often as necessary.*

**1926.800(j)(1)(iii)(C)**—If diesel-engine or gasoline-engine driven ventilating fans or compressors are used, *an initial test shall be made* of the inlet air of the fan or compressor, with the engines operating, to ensure that the air supply is not contaminated by engine exhaust.

**1926.800(j)(1)(iii)(D)**—*Testing shall be performed as often as necessary* to ensure that the ventilation requirements of paragraph (k) [*Ventilation*] of this section are met.

**1926.800(j)(1)(v)(A)**—Whenever air monitoring indicates the presence of 5 ppm or more of hydrogen sulfide, *a test shall be conducted in the affected underground work area(s), at least at the beginning and midpoint of each shift,* until the concentration of hydrogen sulfide has been less than 5 ppm for 3 consecutive days.

**1926.800(j)(1)(vi)**—When the *competent person determines, on the basis of air **monitoring results*** or other information, that air contaminants may be present in sufficient quantity to be dangerous to life. *[Reference paragraph (j)(1)(vi) for specific requirements.]*

**1926.800(j)(2)(iv)**—Local gas tests *shall be made prior to and continuously* during any welding, cutting or other hot work.

**1926.800(j)(2)(v)**—In underground operations driven by drill-and-blast methods, the air in the affected area *shall be tested for flammable gas prior to re-entry after blasting, and continuously when employees are working underground.*



**1926.800(k)(7)**—When ventilation has been reduced to the extent that hazardous levels of methane or flammable gas may have accumulated, a *competent person shall test all affected areas* after ventilation has been restored and shall determine whether the atmosphere is within flammable limits before any power, other than for acceptable equipment, is restored or work is resumed.

**1926.800(k)(8)**—Whenever the ventilation system has been shut down with all employees out of the underground area, only *competent persons authorized to test for air contaminants* shall be allowed underground until the ventilation has been restored and all affected areas have been tested for air contaminants and declared safe.

### **Competent Person**

**1926.800(j)(1)(i) 1926.800(j)(1)(i)(A)**—The employer *shall assign a competent person who shall perform all air monitoring* required by this section.

**1926.800(j)(1)(i)(B)**—Where this paragraph requires monitoring of airborne contaminants “as often as necessary,” the *competent person shall make a reasonable determination as to which substances to monitor and how frequently monitor*, considering specific factors. *[Reference paragraph (j)(1)(i)(8) for specific requirements.]*

**1926.800(j)(1)(vi)**—When the *competent person determines*, on the basis of air **monitoring results** or other information, that air contaminants may be present in sufficient quantity to be dangerous to life. *[Reference paragraph (j)(1)(vi) for specific requirements.]*

**1926.800(k)(7)**—When ventilation has been reduced to the extent that hazardous levels of methane or flammable gas may have accumulated, a *competent person shall test all affected areas* after ventilation has been restored and shall determine whether the atmosphere is within flammable limits before any power, other than for acceptable equipment, is restored or work is resumed.

**1926.800(k)(8)**—Whenever the ventilation system has been shut down with all employees out of the underground area, only *competent persons authorized to test for air contaminants* shall be allowed underground until the ventilation has been restored and all affected areas have been tested for air contaminants and declared safe.

**1926.800(o)(3)(i)(A)**—*A competent person shall inspect the roof, face, and walls of the work area at the start of each shift and as often as necessary* to determine ground stability.

**1926.800(o)(3)(iv)(B)**—*A competent person shall determine* whether rock bolts meet the necessary torque, and shall determine the testing frequency in light of the bolt system, ground conditions and the distance from vibration sources.

**1926.800(o)(4)(iii)**—After blasting operations in shafts, a *competent person shall determine* if the walls, ladders, timbers, blocking, or wedges have loosened. If so, necessary repairs shall be made before employees other than those assigned to make the repairs are allowed in or below the affected areas.

**1926.800(q)(1)**—*A competent person shall inspect all drilling and associated equipment prior* to each use. Equipment defects affecting safety shall be corrected before the equipment is used.

**1926.800(r)(1)(i)**—*A competent person shall inspect haulage equipment before* each shift.

**1926.800(t)(3)(xix)**—*A competent person shall visually check all hoisting machinery, equipment, anchorages, and hoisting rope at the beginning of each shift and during hoist use*, as necessary.

**1926.800(t)(3)(xx)**—Each safety device *shall be checked by a competent person at least weekly* during hoist use to ensure suitable operation and safe condition.



## Qualified Person

**1926.800(g)(3)**—*Designated person.* At least one designated person shall be on duty above ground whenever any employee is working underground. This *designated person* shall be responsible for securing immediate aid and keeping an accurate count of employees underground in case of emergency. The *designated person* must not be so busy that the counting function is encumbered.

**1926.800(g)(5)(iii)**—Rescue team members *shall be qualified* in rescue procedures, the use and limitations of breathing apparatus, and the use of firefighting equipment. Qualifications *shall be reviewed not less than annually*.

**1926.800(r)(18)(i)**—Where switching facilities are available, occupied personnel-cars shall be pulled, not pushed. If personnel-cars must be pushed and visibility of the track ahead is hampered, then a *qualified person shall be stationed* in the lead car to give signals to the locomotive operator.

## Signs, Markings and Tags

**1926.800(b)(3)**—The employer shall control access to all openings to prevent unauthorized entry underground. Unused chutes, manways, or other openings shall be tightly covered, bulkheaded, or fenced off, and *shall be posted with warning signs* indicating “Keep Out” or similar language. Completed or unused sections of the underground facility shall be barricaded.

**1926.800(h)(1)**—Potentially gassy operations. Underground construction operations *shall be classified* as potentially gassy. *[Reference paragraph (h)(1) for specific requirements.]*

**1926.800(h)(2)**—Gassy operations. Underground construction operations *shall be classified* as gassy. *[Reference paragraph (h)(2) for specific requirements.]*

**1926.800(o)(2)**—Subsidence areas. The employer shall ensure ground stability in hazardous subsidence areas by shoring, by filling in, or *by erecting barricades and posting warning signs* to prevent entry.

**1926.800(t)(1)(iv)(B)**—A *sign* warning that work is being done in the shaft shall be installed at the shaft collar, at the operator’s station, and at each underground landing.

## 1926.801—CAISSONS

**Scope/Application:** *This section applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section, and covered in such a manner as to create conditions characteristic of underground construction.*

**Exception:** *This section does not apply to excavation and trenching operations covered by subpart P [Excavations] of this part, such as foundation operations for above-ground structures that are not physical connected to underground construction operations, and surface excavation: nor underground electrical transmission and distribution lines, as addressed in subpart V [Power Transmission and Distribution] of this part, or access and egress.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—tests
- Signs, Markings and Tags—stamped shafts

## Inspections and Tests

**1926.801(b)**—Shafts *shall be subjected* to a hydrostatic or air-pressure test, at which pressure they shall be tight. The shaft *shall be stamped* on the outside shell about 12 inches from each flange to show the pressure to which they have been subjected.

## Signs, Markings and Tags

**1926.801(b)**—Shafts *shall be subjected to a hydrostatic or air-pressure test*, at which pressure they shall be tight. The shaft *shall be **stamped*** on the outside shell about 12 inches from each flange to show the pressure to which they have been subjected.

## 1926.802—COFFERDAMS

**Scope/Application:** *This section applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section, and covered in such a manner as to create conditions characteristic of underground construction.*

**Exception:** *This section does not apply to excavation and trenching operations covered by subpart P [Excavations] of this part, such as foundation operations for above-ground structures that are not physical connected to underground construction operations, and surface excavation: nor underground electrical transmission and distribution lines, as addressed in subpart V [Power Transmission and Distribution] of this part, or access and egress.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posted warning signs

## Signs, Markings and Tags

**1926.802(b)**—*Warning signals* for evacuation of employees in case of emergency *shall be developed and **posted**.*

## 1926.803—COMPRESSED AIR

**Scope/Application:** *This section applies to the construction of underground tunnels, shafts, chambers, and passageways. This section also applies to cut-and-cover excavations which are both physically connected to ongoing underground construction operations within the scope of this section, and covered in such a manner as to create conditions characteristic of underground construction.*

**Exception:** *This section does not apply to excavation and trenching operations covered by subpart P [Excavations] of this part, such as foundation operations for above-ground structures that are not physical connected to underground construction operations, and surface excavation: nor underground electrical transmission and distribution lines, as addressed in subpart V [Power Transmission and Distribution] of this part, or access and egress.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Recordkeeping—examination records, air monitoring records, identification badges
- Training and Communications—instructions
- Exposure Monitoring—once each shift
- Medical Surveillance—physically qualified
- Competent Person—designated, familiar with subparts
- Qualified Person—licensed physician on-site, physically qualified
- Signs, Markings and Tags—post rated capacity

## Programs, Plans and Procedures

**1926.803(f)(2)**—In the event it is necessary for an employee to be in compressed air more than once in a 24-hour period, the appointed *physician* shall be responsible for the establishment of methods and procedures of decompression applicable to repetitive exposures.

**1926.803(f)(3)**—If decanting is necessary, the appointed *physician* shall establish procedures before any employee is permitted to be decompressed by decanting methods. The period of time that the employees spend at atmospheric pressure between the decompression following the shift and recompression shall not exceed 5 minutes.

## Recordkeeping

**1926.803(b)(5)**—Such *physician* shall at all times keep a complete and full **record** of examinations made by him. The *physician* shall also keep an accurate **record** of any decompression illness or other illness or injury incapacitating any employee for work, and of all loss of life that occurs in the operation of a tunnel, caisson, or other compartment in which compressed air is used.

**1926.803(b)(6)**—**Records** shall be **available** for the inspection of the Secretary or his representatives, and a **copy** thereof shall be forwarded to OSHA within 48 hours following the occurrence of the accident, death, injury, or decompression illness. It shall state as fully as possible the cause of said death or decompression illness, and the place where the injured or sick employee was taken, and such other relative information as may be required by the Secretary.

**1926.803(b)(11)**—**Identification badges** shall be furnished to all employees, indicating that the wearer is a compressed air worker. A permanent **record** shall be **kept** of all **identification badges** issued. The **badge** shall give the employee's name, address of the medical lock, the telephone number of the **licensed physician** for the compressed air project, and **contain instructions** that in case of emergency of unknown or doubtful cause or illness, the wearer shall be rushed to the medical lock. The **badge** shall be worn at all times—off the job, as well as on the job.

**1926.803(d)(1)**—The **time of decompression** shall be **posted** in each man lock. [Reference paragraph (d) for specific requirements.]

**1926.803(d)(3)**—For each 8-hour shift, a **record** of employees employed under air pressure shall be kept by an employee who shall remain outside the lock near the entrance. This **record** shall show the period each employee spends in the air chamber and the time taken from decompression. A **copy** shall be submitted to the appointed *physician* after each shift.

**1926.803(g)(1)(v)**—A clock, thermometer, and continuous recording pressure gauge with a 4-hour graph shall be installed outside of each man lock and shall be changed prior to each shift's decompression. The **chart** shall be of sufficient size to register a legible **record** of variations in pressure within the man lock and shall be visible to the lock attendant. A **copy** of each **graph** shall be submitted to the appointed *physician* after each shift. In addition, a pressure gauge clock, and thermometer shall also be installed in each man lock. Additional fittings shall be provided so that test gauges may be attached whenever necessary.

**1926.803(g)(2)(i)**—The headroom in the special decompression chamber shall be not less than a minimum 7 feet and the cubical content shall provide at least 50 cubic feet of airspace for each employee. For each occupant, there shall be provided 4 square feet of free walking area and 3 square feet of seating space, exclusive of area required for lavatory and toilet facilities. The **rated capacity** shall be based on the stated minimum space per employee and shall be **posted** at the chamber entrance. The **posted capacity** shall not be exceeded, except in case of emergency.

**1926.803(i)(2)**—The air in the workplace shall be analyzed by the employer not less than once each shift, and **records** of such **tests** shall be kept **on file** at the place where the work is in progress. The **test results** shall be within the threshold limit values specified in Subpart D [Occupational Health and Environmental Controls] of this part, for hazardous gases, and within 10 percent of the lower explosive limit of flammable gases. If these limits are not met, immediate action to correct the situation shall be taken by the employer.

## Training and Communications

**1926.803(a)(2)**—Every employee *shall be instructed* in the **rules and regulations** which concern his safety or the safety of others.

**1926.803(b)(10)(xii)**—Be in constant charge of an attendant under the direct control of the **retained physician**. The attendant *shall be trained in the use of the lock and suitably instructed regarding* steps to be taken in the treatment of employee exhibiting symptoms compatible with a diagnosis of decompression illness.

**1926.803(e)(1)**—Every employee going under air pressure for the first time *shall be instructed* on how to avoid excessive discomfort.

**1926.803(i)(2)**—The air in the workplace *shall be analyzed by the employer not less than once each shift, and records of such tests shall be kept on file at the place where the work is in progress*. The **test results** shall be within the threshold limit values specified in Subpart D [Occupational Health and Environmental Controls] of this part, for hazardous gases, and within 10 percent of the lower explosive limit of flammable gases. If these limits are not met, immediate action to correct the situation shall be taken by the employer.

## Medical Surveillance

**1926.803(b)(1)**—There *shall be retained one or more licensed physicians* familiar with and experienced in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. He shall be available at all times while work is in progress in order to provide medical supervision of employees employed in compressed air work. He *shall himself be physically qualified and be willing to enter* a pressurized environment.

**1926.803(b)(2)**—No employee shall be permitted to enter a compressed air environment *until he has been examined by the physician and reported by him to be physically qualified* to engage in such work.

**1926.803(b)(3)**—In the event an employee is absent from work for 10 days, or is absent due to sickness or injury, he shall not resume work until *he is reexamined by the physician*, and his physical condition reported, as provided in this paragraph, to be such as to permit him to work in compressed air.

**1926.803(b)(4)**—After an employee has been employed continuously in compressed air for a period designated by the **physician**, *but not to exceed 1 year; he shall be reexamined by the physician* to determine if he is still physically qualified to engage in compressed air work.

**1926.803(d)(3)**—*For each 8-hour shift, a record of employees employed under air pressure shall be kept by an employee* who shall remain outside the lock near the entrance. This **record** shall show the period each employee spends in the air chamber and the time taken from decompression. A **copy** *shall be submitted to the appointed physician after each shift*.

## Competent Person

**1926.803(a)(1)**—There shall be present, at all times, *at least one competent person designated by and representing the employer*, who shall be familiar with this subpart in all respects, and responsible for full compliance with these and other applicable subparts.

**1926.803(h)(1)**—*At all times there shall be a thoroughly experienced, competent, and reliable person* on duty at the air control valves as a gauge tender who shall regulate the pressure in the working areas. During tunneling operations, one gauge tender may regulate the pressure in not more than two headings: Provided, that the gauge and controls are all in one location. In caisson work, there shall be a gauge tender for each caisson.

## Qualified Person

**1926.803(b)(1)**—There *shall be retained one or more **licensed physicians*** familiar with and experienced in the physical requirements and the medical aspects of compressed air work and the treatment of decompression illness. He shall be available at all times while work is in progress in order to provide medical supervision of employees employed in compressed air work. He *shall himself be physically qualified and be willing to enter a pressurized environment.*

## Exposure Monitoring

**1926.803(i)(2)**—The air in the workplace *shall be analyzed by the employer not less than once each shift, and **records** of such **tests** shall be **kept on file** at the place where the work is in progress.* The **test results** shall be within the threshold limit values specified in Subpart D [Occupational Health and Environmental Controls] of this part, for hazardous gases, and within 10 percent of the lower explosive limit of flammable gases. If these limits are not met, immediate action to correct the situation shall be taken by the employer.

## Signs, Markings and Tags

**1926.803(d)(1)**—The **time of decompression** *shall be **posted** in each man lock. [Reference paragraph (d) for specific requirements.]*

**1926.803(d)(2)**—Any **code of signals** used *shall be conspicuously **posted*** near workplace entrances and such other locations as may be necessary to bring them to the attention of all employees concerned.

**1926.803(d)(3)**—For each 8-hour shift, a **record** of employees employed under air pressure *shall be **kept** by an employee* who shall remain outside the lock near the entrance. This **record** shall show the period each employee spends in the air chamber and the time taken from decompression. A **copy** *shall be submitted to the appointed **physician** after each shift.*

**1926.803(g)(1)(v)**—A clock, thermometer, and continuous recording pressure gauge with a 4-hour graph *shall be installed outside of each man lock and shall be changed prior to each shift's decompression.* The **chart** shall be of sufficient size to register a legible **record** of variations in pressure within the man lock and shall be visible to the lock attendant. A **copy** of each **graph** *shall be submitted to the appointed **physician** after each shift.* In addition, a pressure gauge clock, and thermometer shall also be installed in each man lock. Additional fittings shall be provided so that test gauges may be attached whenever necessary.

**1926.803(g)(2)(i)**—The headroom in the special decompression chamber shall be not less than a minimum 7 feet and the cubical content shall provide at least 50 cubic feet of airspace for each employee. For each occupant, there shall be provided 4 square feet of free walking area and 3 square feet of seating space, exclusive of area required for lavatory and toilet facilities. The **rated capacity** *shall be based on the stated minimum space per employee and shall be **posted** at the chamber entrance.* The **posted capacity** shall not be exceeded, except in case of emergency.



## 29 CFR Subpart T—Demolition

### 1926.850—PREPATORY OPERATIONS

*Scope/Application: This section applies to preparatory operations for demolition.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—testing before demolition
- Recordkeeping—written evidence of survey
- Training and Communications—notifications to utility company
- Competent Person—engineering survey
- Signs, Markings and Tags—warning signs posted

#### Inspections and Tests

**1926.850(e)**—It *shall also be determined* if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances is apparent or suspected, *testing and purging shall be performed and the hazard eliminated before demolition is started.*

#### Recordkeeping

**1926.850(a)**—Prior to permitting employees to start demolition operations, an ***engineering survey shall be made, by a competent person***, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer *shall have in writing evidence that such a survey has been performed.*

#### Training and Communications

**1926.850(c)**—All electric, gas, water, steam, sewer, and other service lines shall be shut off, capped, or otherwise controlled, outside the building line before demolition work is started. In each case, *any utility company which is involved shall be notified in advance.*

#### Competent Person

**1926.850(a)**—Prior to permitting employees to start demolition operations, an ***engineering survey shall be made, by a competent person***, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer *shall have in writing evidence that such a survey has been performed.*

#### Signs, Markings and Tags

**1926.850(h)**—When debris is dropped through holes in the floor without the use of chutes, the area onto which the material is dropped shall be completely enclosed with barricades not less than 42 inches high and not less than 6 feet back from the projected edge of the opening above. ***Signs, warning of the hazard of falling materials, shall be posted at each level.*** Removal shall not be permitted in this lower area until debris handling ceases above.

## **1926.851—STAIRS, PASSAGEWAYS, AND LADDERS**

**Scope/Application:** *This section applies to stairs, passageways, and ladders in demolition.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—periodic inspections

#### **Inspections and Tests**

**1926.851(b)**—All stairs, passageways, ladders and incidental equipment thereto, which are covered by this section, *shall be periodically inspected* and maintain in a clean safe condition.

## **1926.859—MECHANICAL DEMOLITION**

**Scope/Application:** *This section applies to mechanical demolition.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—competent person, continuing inspections
- Competent Person—inspections

#### **Inspections and Tests**

**1926.859(g)**—*During demolition, continuing inspections by a competent person shall be made* as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

#### **Competent Person**

**1926.859(g)**—*During demolition, continuing inspections by a competent person shall be made* as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.

## 29 CFR Subpart U—Blasting and the Use of Explosives

### 1926.900—GENERAL PROVISIONS

*Scope/Application:* This section provides general provisions for blasting and use of explosives.

#### STANDARD HIGHLIGHTS

- Recordkeeping—record of inventory use
- Certification—competent person
- Competent Person—evaluate, alternatives in writing
- Signs, Markings and Tags—warning signs

#### Recordkeeping

**1926.900(d)**—All explosives shall be accounted for at all times. Explosives not being used shall be kept in a locked magazine, unavailable to persons not authorized to handle them. The employer *shall maintain an inventory and use record of all explosives*. Appropriate authorities *shall be notified* of any loss, theft, or unauthorized entry into a magazine.

**1926.900(k)(3)(i)**—The *prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads* within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a *competent person shall be consulted* to evaluate the particular situation, and *alternative provisions* may be made which are adequately *designed* to prevent any premature firing of electric blasting caps. A *description* of any such *alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted*. The *description shall be maintained at the construction site during the duration of the work*, and shall be *available for inspection by representatives of the Secretary of Labor*.

#### Certification

**1926.900(k)(3)(i)**—The *prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads* within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a *competent person shall be consulted* to evaluate the particular situation, and *alternative provisions* may be made which are adequately *designed* to prevent any premature firing of electric blasting caps. A *description* of any such *alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted*. The *description shall be maintained at the construction site during the duration of the work*, and shall be *available for inspection by representatives of the Secretary of Labor*.

#### Competent Person

**1926.900(k)(3)(i)**—The *prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads* within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a *competent person shall be consulted* to evaluate the particular situation, and *alternative provisions* may be made which are adequately *designed* to prevent any premature firing of electric blasting caps. A *description* of any such *alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted*. The *description shall be maintained at the construction site during the duration of the work*, and shall be *available for inspection by representatives of the Secretary of Labor*.

#### Signs, Markings and Tags

**1926.900(k)(3)(i)**—The *prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads* within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a *competent person shall be consulted* to evaluate the particular situation, and *alternative provisions* may be made which are adequately *designed* to prevent any premature firing of electric blasting caps. A *description* of any such *alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the competent person consulted*. The *description shall be maintained at the construction site during the duration of the work*, and shall be *available for inspection by representatives of the Secretary of Labor*.

## 1926.901—BLASTER QUALIFICATIONS

*Scope/Application:* This section provides blaster qualifications.

### STANDARD HIGHLIGHTS

- Recordkeeping—evidence of competency
- Training and Communications—understanding of written and oral orders
- Medical Surveillance—physicals for blaster
- Competent Person—blaster
- Qualified Person—trained

#### Recordkeeping

**1926.901(a)**—A blaster *shall be able to understand and give **written and oral orders***.

**1926.901(d)**—Blasters shall be required to *furnish satisfactory **evidence of competency*** in handling explosives and performing in a safe manner the type of blasting that will be required.

#### Training and Communications

**1926.901(a)**—A blaster *shall be able to understand and give **written and oral orders***.

#### Medical Surveillance

**1926.901(b)**—A blaster *shall be in good physical condition* and not be addicted to narcotics, intoxicants, or similar types of drugs.

#### Competent Person

**1926.901(d)**—Blasters shall be required to *furnish satisfactory **evidence of competency*** in handling explosives and performing in a safe manner the type of blasting that will be required.

**1926.901(e)**—The blaster *shall be knowledgeable and competent* in the use of each type of blasting method used.

#### Qualified Person

**1926.901(c)**—A blaster *shall be qualified, by reason of training, knowledge, or experience*, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of ***State and local laws and regulations*** which pertain to explosives.

## 1926.902—SURFACE TRANSPORTATION OF EXPLOSIVES

*Scope/Application:* This section provides requirements for surface transportation of explosives.

### STANDARD HIGHLIGHTS

- Medical Surveillance—physically fit driver
- Qualified Person—driver qualifications, physically fit, knowledge of regulations
- Signs, Markings and Tags—markings, placarding

## Medical Surveillance

**1926.902(b)**—Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a *licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.*

## Qualified Person

**1926.902(b)**—Motor vehicles or conveyances transporting explosives shall only be driven by, and be in the charge of, a *licensed driver who is physically fit. He shall be familiar with the local, State, and Federal regulation governing the transportation of explosives.*

## Signs, Markings and Tags

**1926.902(h)**—Every motor vehicle or conveyance used for transporting explosives shall be *marked or placarded* on both sides, the front, and the rear with the word “Explosives” in red letters, not less than 4 inches in height, on white background. In addition to such *marking or placarding, the motor vehicle or conveyance may display*, in such a manner that it will be readily visible from all directions, a red flag 18 inches by 30 inches, with the word “Explosives” *painted, stamped, or sewed* thereon, in white letters, at least 6 inches in height.

## 1926.903—UNDERGROUND TRANSPORTATION OF EXPLOSIVES

*Scope/Application: This section provides requirements for underground transportation of explosives.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—weekly checks, certification record
- Recordkeeping—records kept on file, certification records
- Certification—record

### Inspections and Tests

**1926.903(e)**—Trucks used for the transportation of explosives underground *shall have the electrical system checked weekly* to detect any failures which may constitute an electrical hazard. A *certification record* which includes the date of the inspection; the *signature* of the person who *performed the inspection*; and a serial number, or other identifier, of the *truck inspected shall be prepared and the most recent certification record shall be maintained on file.*

### Recordkeeping

**1926.903(e)**—Trucks used for the transportation of explosives underground *shall have the electrical system checked weekly* to detect any failures which may constitute an electrical hazard. A *certification record* which includes the date of the inspection; the *signature* of the person who *performed the inspection*; and a serial number, or other identifier, of the *truck inspected shall be prepared and the most recent certification record shall be maintained on file.*

### Certification

**1926.903(e)**—Trucks used for the transportation of explosives underground *shall have the electrical system checked weekly* to detect any failures which may constitute an electrical hazard. A *certification record* which includes the date of the inspection; the *signature* of the person who *performed the inspection*; and a serial number, or other identifier, of the *truck inspected shall be prepared and the most recent certification record shall be maintained on file.*



## 1926.904—STORAGE OF EXPLOSIVES AND BLASTING AGENTS

*Scope/Application:* This section provides requirements for storage of explosives and blasting agents.

### STANDARD HIGHLIGHTS

- Other—Alcohol, Tobacco and Firearms provisions

#### Other

**1926.904(a)**—Explosives and related *materials shall be stored in approved facilities* required under the applicable provisions of the *Bureau of Alcohol, Tobacco and Firearms regulations* contained in 27 CFR part 55, *Commerce in Explosives*.

## 1926.905—LOADING OF EXPLOSIVES OR BLASTING AGENTS

*Scope/Application:* This section provides requirements for loading of explosives and blasting agents.

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures established
- Recordkeeping—inventory
- Signs, Markings and Tags—warning signs

#### Programs, Plans and Procedures

**1926.905(a)**—Procedures that permit safe and efficient loading shall be established before loading is started.

#### Recordkeeping

**1926.905(t)**—The blaster shall keep an accurate, up-to-date **record** of explosives, blasting agents, and blasting supplies used in a blast and shall keep an accurate **running inventory** of all explosives and blasting agents stored on the operation.

#### Signs, Markings and Tags

**1926.905(p)**—**Warning signs**, indicating a blast area, shall be **maintained** at all approaches to the blast area. The **warning sign** lettering shall not be less than 4 inches in height on a contrasting background.

## 1926.906—INITIATION OF EXPLOSIVE CHARGES—ELECTRIC BLASTING

*Scope/Application:* This section provides requirements for the initiation of explosive charges-electric blasting.

### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic tests

#### Inspections and Tests

**1926.906(m)**—Blasting machines shall be in good condition and the efficiency of the machine shall be tested periodically to make certain that it can deliver power at its rated capacity.

## 1926.908—USE OF DETONATING CORD

*Scope/Application:* This section provides requirements for the use of detonating cords.

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections before firing

#### Inspections and Tests

**1926.908(g)**—All detonating cord connections *shall be inspected* before firing the blast.

## 1926.909—FIRING THE BLAST

*Scope/Application:* This section provides requirements for firing the blast.

### STANDARD HIGHLIGHTS

- Recordkeeping—signals posted
- Qualified Person—blaster in charge, duties
- Signs, Markings and Tags—posting danger signs, code of blasting signals

#### Recordkeeping

**1926.909(a)**—A *code of blasting signals* equivalent to Table U-1, *shall be posted* on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. *Danger signs shall be placed* at suitable locations.

#### Qualified Person

**1926.909(b)**—Before a blast is fired, a *loud warning signal shall be given by the blaster in charge*, who has made certain that all surplus explosives are in a safe place and all employees, vehicles, and equipment are at a safe distance, or under sufficient cover.

#### Signs, Markings and Tags

**1926.909(a)**—A *code of blasting signals* equivalent to Table U-1, *shall be posted* on one or more conspicuous places at the operation, and all employees shall be required to familiarize themselves with the code and conform to it. *Danger signs shall be placed* at suitable locations.

## 1926.910—INSPECTION AFTER BLASTING

*Scope/Application:* This section provides requirements for inspections after blasting.

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections

#### Inspections and Tests

**1926.910(b)**—Sufficient time shall be allowed, not less than 15 minutes in tunnels, for the smoke and fumes to leave the blasted area before returning to the shot. *An inspection of the area and the surrounding rubble shall be made by the blaster* to determine if all charges have been exploded before employees are allowed to return to the operation, and in tunnels, after the muck pile has been wetted down.

## 1926.911—MISFIRES

***Scope/Application:*** *This section provides requirements for misfires.*

### STANDARD HIGHLIGHTS

- Qualified Person—authorized representative

### Qualified Person

**1926.911(e)**—No drilling, digging, or picking shall be permitted until all missed holes have been detonated *or the authorized representative has approved* that work can proceed.

## 29 CFR Subpart V—Power Transmission and Distribution

### 1926.950—GENERAL

**Scope/Application:** *This subpart, except for paragraph (a)(3) of this section, covers the construction of electric power transmission and distribution lines and equipment. As used in this subpart, the term “construction” includes the erection of new electric transmission and distribution lines and equipment, and the alteration, conversion, and improvement of existing electric transmission and distribution lines and equipment. 1926.950(a)(3)—Applicable Part 1910 requirements. Line-clearance tree trimming operations and work involving electric power generation installations shall comply with 29 CFR 1910.269—Electric Power Generation, Transmission and Distribution.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—safety-related practices
- Inspections and Tests—visual inspections or tests, before work, tagging, records
- Recordkeeping—records
- Training and Communications—emergency procedures and first aid training
- Qualified Person—qualified
- Signs, Markings and Tags—tagging

#### Programs, Plans and Procedures

**1926.950(b)(1)(i)**—Each employee *shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements* in this subpart that pertain to his or her job assignments.

**1926.950(b)(1)(ii)**—Each employee *shall also be trained in and familiar with any other safety practices*, including applicable *emergency procedures* (such as pole-top and manhole rescue), that are not specifically addressed by this subpart but that are related to his or her work and are necessary for his or her safety.

**1926.950(b)(3)**—*Supervision and annual inspection.* The employer shall determine, *through regular supervision and through inspections conducted on at least an annual basis*, that each employee is complying with the *safety-related work practices* required by this subpart.

**1926.950(b)(4)(i)**—If the supervision or *annual inspections* required by paragraph (b)(3)[ *Supervision and Annual Inspection*] of this section indicate that the employee is not complying with the *safety-related work practices* required by this subpart.

**1926.950(b)(4)(ii)**—If new technology, new types of equipment, or *changes in procedures* necessitate the use of *safety-related work practices* that are different from those which the employee would normally use,

**1926.950(b)(4)(iii)**—If he or she must employ *safety-related work practices* that are not normally used during his or her regular job duties.

**Note to paragraph (b)(4)(iii):** *The Occupational Safety and Health Administration considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.*

**1926.950(b)(6)**—*Training goals.* The training shall establish employee proficiency in the work practices required by this subpart and shall introduce *the procedures* necessary for compliance with this subpart.

**1926.950(b)(7)**—*Demonstration of proficiency.* The employer shall ensure that each employee has *demonstrated proficiency* in the work practices involved before that employee is considered as having completed the *training required by paragraph (b) [Training]* of this section.

**1926.950(e)(1)**—*Emergency procedures and first aid.* The employer shall provide training or require that his employees are knowledgeable and proficient. [*Reference paragraph (e)(1) for specific requirements.*]

## Inspections and Tests

**126.950(b)(3)**—*Supervision and annual inspection.* The employer shall determine, *through regular supervision and through inspections conducted on at least an annual basis*, that each employee is complying with the *safety-related work practices* required by this subpart.

**126.950(b)(4)(i)**—If the supervision or *annual inspections* required by paragraph (b)(3)[ *Supervision and Annual Inspection*] of this section indicate that the employee is not complying with the *safety-related work practices* required by this subpart.

**126.950(c)(1)(ii)**—Conditions that are related to the safety of the work to be performed, that are listed in *paragraphs (d) (6) through (d)(8) [Existing Characteristics and Conditions]* of this section, and that are known to the host employer;

*Note to paragraph (c)(1)(ii):* For the purposes of this paragraph, the host employer need only provide **information** to contract employers that the host employer can obtain from its existing **records** through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

**126.950(c)(1)(iv)**—Any other **information** about the *design and operation* of the host employer's installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer's employees.

*Note to paragraph (c)(1)(iv):* For the purposes of this paragraph, the host employer need only provide **information** to contract employers that the host employer can obtain from its existing **records** through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

**126.950(d)(1)(iii)**—After all designated switches and disconnectors have been opened, rendered inoperable, and tagged, *visual inspection or tests shall be conducted* to insure that equipment or lines have been deenergized.

## Recordkeeping

**126.950(c)(1)(ii)**—Conditions that are related to the safety of the work to be performed, that are listed in *paragraphs (d) (6) through (d)(8) [Existing Characteristics and Conditions]* of this section, and that are known to the host employer;

*Note to paragraph (c)(1)(ii):* For the purposes of this paragraph, the host employer need only provide **information** to contract employers that the host employer can obtain from its existing **records** through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

**126.950(c)(1)(iv)**—Any other **information** about the *design and operation* of the host employer's installation that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer's employees.

*Note to paragraph (c)(1)(iv):* For the purposes of this paragraph, the host employer need only provide **information** to contract employers that the host employer can obtain from its existing **records** through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.

## Training and Communications

**126.950(b)(1)(i)**—Each employee *shall be trained in, and familiar with, the safety-related work practices, safety procedures, and other safety requirements* in this subpart that pertain to his or her job assignments.

**126.950(b)(1)(ii)**—Each employee *shall also be trained in and familiar with any other safety practices*, including applicable *emergency procedures* (such as pole-top and manhole rescue), that are not specifically addressed by this subpart but that are related to his or her work and are necessary for his or her safety.



**1926.950(b)(1)(iii)**—The *degree of training* shall be determined by the risk to the employee for the hazard involved.

**1926.950(b)(2)**—*Qualified employees.* Each *qualified employee* shall also be trained and competent. [Reference (b)(2) for specific requirements.]

**Note to paragraph (b)(2):** For the purposes of this subpart, a person must have the training required by paragraph (b)(2) [Qualified Person] of this section to be considered a qualified person.

**1926.950(b)(4)**—*Additional training.* An employee shall receive *additional training (or retraining)* under any of the following conditions:

**1926.950(b)(4)(i)**—If the supervision or *annual inspections* required by paragraph (b)(3) [Supervision and Annual Inspection] of this section indicate that the employee is not complying with the *safety-related work practices* required by this subpart.

**1926.950(b)(4)(ii)**—If new technology, new types of equipment, or *changes in procedures* necessitate the use of *safety-related work practices* that are different from those which the employee would normally use,

**1926.950(b)(4)(iii)**—If he or she must employ *safety-related work practices* that are not normally used during his or her regular job duties.

**Note to paragraph (b)(4)(iii):** The Occupational Safety and Health Administration considers tasks that are performed less often than once per year to necessitate retraining before the performance of the work practices involved.

**1926.950(b)(5)**—*Type of training.* The training required by paragraph (b) [Training] of this section shall be of the classroom or on-the-job type.

**1926.950(b)(6)**—*Training goals.* The training shall establish employee proficiency in the *work practices* required by this subpart and shall introduce *the procedures* necessary for compliance with this subpart.

**1926.950(b)(7)**—*Demonstration of proficiency.* The employer shall ensure that each employee has *demonstrated proficiency* in the *work practices* involved before that employee is considered as having completed the *training required by paragraph (b) [Training]* of this section.

**Note 1 to paragraph (b)(7):** Though they are not required by this paragraph, employment **records** that indicate that an employee has successfully completed the required training are one way of keeping track of when an employee has demonstrated proficiency.

**Note 2 to paragraph (b)(7):** For an employee with previous training, an employer may determine that that employee has demonstrated the proficiency required by this paragraph using the following process: (1) Confirm that the employee has the training required by paragraph (b) of this section, (2) use an examination or interview to make an initial determination that the employee understands the relevant safety related work practices before he or she performs any work covered by this subpart, and (3) supervise the employee closely until that employee has demonstrated proficiency as required by this paragraph.

**1926.950(c)(1)**—*Host employer responsibilities.* Before work begins, the host employer shall inform contract employers of:

**1926.950(c)(1)(i)**—The characteristics of the host employer's installation that are related to the safety of the work to be performed and are listed in paragraphs (d)(1) through (d)(5) [Existing Characteristics and Conditions] of this section;

**Note to paragraph (c)(1)(i):** This paragraph requires the host employer to obtain information listed in paragraphs (d)(1) through (d)(5) [Existing Characteristics and Conditions] of this section if it does not have this information in existing **records**.

**1926.950(c)(1)(ii)**—Conditions that are related to the safety of the work to be performed, that are listed in *paragraphs (d)(6) through (d)(8) [Existing Characteristics and Conditions]* of this section, and that are known to the host employer;

**Note to paragraph (c)(1)(ii):** *For the purposes of this paragraph, the host employer need only provide information to contract employers that the host employer can obtain from its existing **records** through the exercise of reasonable diligence. This paragraph does not require the host employer to make inspections of worksite conditions to obtain this information.*

**1926.950(c)(1)(iii)**—**Information** about the design and operation of the host employer’s installation that the contract employer needs to make *the assessments* required by this subpart; and

**Note to paragraph (c)(1)(iii):** *This paragraph requires the host employer to obtain information about the design and operation of its installation that contract employers need to make required assessments if it does not have this information in existing **records**.that is known by the host employer, that the contract employer requests, and that is related to the protection of the contract employer’s employees.*

**1926.950(c)(2)(i)**—The contract employer shall ensure that each of its *employees is instructed in the hazardous conditions* relevant to the employee’s work that the contract employer is aware of as a *result of **information** communicated* to the contract employer by the host employer under *paragraph (c)(1) [Host Employer Responsibilities]* of this section.

**1926.950(c)(2)(ii)**—Before work begins, the contract *employer shall advise the host employer* of any unique hazardous conditions presented by the contract employer’s work

**1926.950(c)(2)(iii)**—The contract employer *shall advise the host employer of any unanticipated hazardous conditions* found during the contract employer’s work that the host employer did not mention under *paragraph (c)(1) [Host Employer Responsibilities]* of this section. The contract employer shall *provide this **information*** to the host employer *within 2 working days* after discovering the hazardous condition.

**1926.950(e)(1)**—*Emergency procedures and first aid. The employer shall provide training or require that his employees are knowledgeable and proficient. [Reference paragraph (e)(1) for specific requirements.]*

## **Competent Person**

**1926.950(b)(2)**—*Qualified employees. Each qualified employee shall also be trained and competent. [Reference paragraph (b)(2) for specific requirements.]*

**Note to paragraph (b)(2):** *For the purposes of this subpart, a person must have the training required by paragraph (b)(2) [Qualified Person] of this section to be considered a qualified person.*

## **Qualified Person**

**1926.950(b)(2)**—*Qualified employees. Each qualified employee shall also be trained and competent. [Reference paragraph (b)(2) for specific requirements].*

**Note to paragraph (b)(2):** *For the purposes of this subpart, a person must have the training required by paragraph (b)(2) [Qualified Person] of this section to be considered a qualified person.*

## **Signs, Markings and Tags**

**1926.950(d)(1)(ii)(b)**—All switches and disconnectors *are plainly **tagged*** indicating that men are at work.

**1926.950(d)(1)(iii)**—After all designated switches and disconnectors have been opened, rendered inoperable, and *tagged, visual inspection or tests shall be conducted* to insure that equipment or lines have been deenergized.

## 1926.951—MEDICAL SERVICES AND FIRST AID

**Scope/Application:** *This section applies to medical services and first aid required under Subpart V—Power Transmission and Distribution.*

### STANDARD HIGHLIGHTS

- Training and Communications—first aid training

#### Training and Communications

**1926.951(b)**—*First-aid training.* In addition to the requirements of § 1926.50 [Medical Services and First Aid], when employees are performing work on, or associated with, exposed lines or equipment energized at 50 volts or more, persons with *first-aid training* shall be available as follows:

**1926.951(b)(1)**—*Field work.* For field work involving two or more employees at a work location, *at least two trained persons* shall be available.

## 1926.952—JOB BRIEFING

**Scope/Application:** *This section applies to job briefings required under Subpart V—Power Transmission and Distribution.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures, special precautions
- Training and Communications—information, briefings
- Qualified Person—job briefings

#### Programs, Plans and Procedures

**1926.952(b)**—*Subjects to be covered.* The *briefing shall cover* at least the following subjects: Hazards associated with the job, *work procedures involved, special precautions, energy-source controls, and personal protective equipment requirements.*

**1926.952(e)**—*Working alone.* An employee working alone need not conduct a job briefing. However, the employer shall ensure that the tasks to be *performed are planned* as if a briefing were required.

#### Training and Communications

**1926.952(a)(1)**—*Before each job. Information provided by the employer.* In assigning an employee or a group of employees to perform a job, the employer shall provide the *employee in charge of the job* with all available information that relates to the determination of existing characteristics and conditions required by § 1926.950(d)—*Existing Characteristics and Conditions.*

**1926.952(a)(2)**—*Briefing by the employee in charge.* The employer shall ensure that the *employee in charge conducts a job briefing that meets paragraphs (b)—Subjects to be Covered, (c)—Number of Briefings, and (d)—Extent of Briefing* of this section with the employees involved *before they start each job.*

**1926.952(b)**—*Subjects to be covered.* The *briefing shall cover* at least the following subjects: Hazards associated with the job, *work procedures involved, special precautions, energy-source controls, and personal protective equipment requirements.*

**1926.952(c)(1)**—*Number of briefings. At least one before each day or shift.* If the work or operations to be performed during the work day or shift are repetitive and similar, *at least one job briefing shall be conducted before the start of the first job of each day or shift.*

**1926.952(c)(2)**—*Number of briefings. Additional briefings. Additional job briefings shall be held if significant changes, which might affect the safety of the employees, occur during the course of the work.*

**1926.952(d)(1)**—*Extent of briefing. Short discussion.* A brief discussion is satisfactory if the work involved is routine and if the employees, *by virtue of training and experience*, can reasonably be expected to recognize and avoid the hazards involved in the job.

**1926.952(d)(2)**—*Detailed discussion. A more extensive discussion shall be conducted:*

**1926.952(d)(2)(i)**—If the work is complicated or particularly hazardous, or

**1926.952(d)(2)(ii)**—If the employee cannot be expected to recognize and avoid the hazards involved in the job.

### **Qualified Person**

**1926.952(a)(1)**—*Before each job. Information provided by the employer.* In assigning an employee or a group of employees to perform a job, the employer shall provide the *employee in charge of the job* with all available **information** that relates to the determination of existing characteristics and conditions required by § 1926.950(d)—*Existing Characteristics and Conditions*.

**1926.952(a)(2)**—*Briefing by the employee in charge.* The employer shall ensure that the *employee in charge conducts a job briefing* that meets paragraphs (b)—*Subjects to be Covered*, (c)—*Number of Briefings*, and (d)—*Extent of Briefing* of this section with the employees involved *before they start each job*.

## **1926.953—ENCLOSED SPACES**

**Scope/Application:** *This section applies covers enclosed spaces that may be entered by employees. It does not apply to vented vaults if the employer makes a determination that the ventilation system is operating to protect employees before they enter the space. This section applies to routine entry into enclosed spaces required under Subpart V— Power Transmission and Distribution.*

*If, after the employer takes the precautions given in this section and in § 1926.965—Underground Electrical Installations, the hazards remaining in the enclosed space endanger the life of an entrant or could interfere with an entrant's escape from the space, then entry into the enclosed space shall meet the permit-space entry requirements of paragraphs (d) through (k) of § 1910.146—Permit-Required Confined Spaces*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—procedures, special precautions
- Inspections and Tests—testing
- Training and Communications—information, briefings
- Exposure Monitoring—testing spaces
- Qualified Person—first aid training, attendants

### **Programs, Plans and Procedures**

**1926.953(b)**—*Safe work practices.* The employer shall ensure the use of *safe work practices* for entry into, and work in, enclosed spaces and for rescue of employees from such spaces.

**1926.953(c)**—*Training.* Each employee who enters an enclosed space or who serves as an attendant *shall be trained in the hazards* of enclosed-space entry, in *enclosed-space entry procedures*, and in *enclosed-space rescue procedures*.

**1926.953(e)**—*Evaluating potential hazards.* Before any entrance cover to an enclosed space is removed, the employer *shall determine* whether it is safe to do so by checking for the presence of any atmospheric pressure or temperature differences and *by evaluating* whether there might be a hazardous atmosphere in the space. Any conditions making it unsafe to remove the cover shall be eliminated before the cover is removed.

**Note to paragraph (e):** *The determination called for in this paragraph may consist of a check of the conditions that might foreseeably be in the enclosed space. For example, the cover could be checked to see if it is hot and, if it is fastened in place, could be loosened gradually to release any residual pressure. An evaluation also needs to be made of whether conditions at the site could cause a hazardous atmosphere, such as an oxygen-deficient or flammable atmosphere, to develop within the space.*

**1926.953(j)**—*Testing for oxygen deficiency.* Before an employee enters an enclosed space, the atmosphere in the enclosed space *shall be tested for oxygen deficiency* with a direct-reading meter or similar instrument, capable of collection and immediate analysis of data samples without the need for offsite evaluation. If continuous forced-air ventilation is provided, testing is not required *provided that the procedures* used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

**1926.953(l)**—*Ventilation, and monitoring for flammable gases or vapors.* If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A *continuous monitoring program* to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.

**1926.953(m)**—*Specific ventilation requirements.* If continuous forced-air ventilation is used, it shall begin before entry is made and shall be maintained long enough for the *employer to be able to demonstrate* that a safe atmosphere exists before employees are allowed to enter the work area. The forced-air ventilation shall be so directed as to ventilate the immediate area where employees are present within the enclosed space and shall continue until all employees leave the enclosed space.

## **Inspections and Tests**

**1926.953(j)**—*Testing for oxygen deficiency.* Before an employee enters an enclosed space, the atmosphere in the enclosed space *shall be tested for oxygen deficiency* with a direct-reading meter or similar instrument, capable of collection and immediate analysis of **data samples** without the need for offsite evaluation. If continuous forced-air ventilation is provided, testing is not required *provided that the procedures* used ensure that employees are not exposed to the hazards posed by oxygen deficiency.

**1926.953(k)**—*Testing for flammable gases and vapors.* Before an employee enters an enclosed space, the internal atmosphere *shall be tested for flammable gases and vapors* with a direct-reading meter or similar instrument capable of collection and immediate analysis of data samples without the need for off-site evaluation. This *test shall be performed* after the oxygen testing and ventilation required by *paragraph (j) Testing for Oxygen Deficiency* of this section demonstrate that there is sufficient oxygen to ensure the accuracy of the test for flammability.

**1926.953(o)**—*Open flames.* If open flames are used in enclosed spaces, *a test for flammable gases and vapors shall be made immediately before* the open flame device is used and at least once per hour while the device is used in the space. *Testing shall be conducted more frequently* if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

## **Training and Communications**

**1926.953(c)**—*Training.* Each employee who enters an enclosed space or who serves as an attendant *shall be trained in the hazards* of enclosed-space entry, in *enclosed-space entry procedures*, and in *enclosed-space rescue procedures*.



**1926.953(h)—Attendants.** While work is being performed in the enclosed space, *an attendant with first-aid training* shall be immediately available outside the enclosed space to provide assistance if a hazard exists because of traffic patterns in the area of the opening used for entry. The attendant is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from: *Monitoring employees within the space* or ensuring that it is safe for employees to enter and exit the space.

### Exposure Monitoring

**1926.953(l)—Ventilation, and monitoring for flammable gases or vapors.** If flammable gases or vapors are detected or if an oxygen deficiency is found, forced-air ventilation shall be used to maintain oxygen at a safe level and to prevent a hazardous concentration of flammable gases and vapors from accumulating. A *continuous monitoring program* to ensure that no increase in flammable gas or vapor concentration above safe levels occurs may be followed in lieu of ventilation if flammable gases or vapors are initially detected at safe levels.

**1926.953(m)—Specific ventilation requirements.** If continuous forced-air ventilation is used, it shall begin before entry is made and shall be maintained long enough for the *employer to be able to demonstrate* that a safe atmosphere exists before employees are allowed to enter the work area. The forced-air ventilation shall be so directed as to ventilate the immediate area where employees are present within the enclosed space and shall continue until all employees leave the enclosed space.

**1926.953(o)—Open flames.** If open flames are used in enclosed spaces, *a test for flammable gases and vapors shall be made immediately before* the open flame device is used and at least once per hour while the device is used in the space. *Testing shall be conducted more frequently* if conditions present in the enclosed space indicate that once per hour is insufficient to detect hazardous accumulations of flammable gases or vapors.

### Qualified Person

**1926.953(c)—Training.** Each employee who enters an enclosed space or who serves as an attendant *shall be trained in the hazards* of enclosed-space entry, in *enclosed-space entry procedures*, and in *enclosed-space rescue procedures*.

**1926.953(h)—Attendants.** While work is being performed in the enclosed space, *an attendant with first-aid training* shall be immediately available outside the enclosed space to provide assistance if a hazard exists because of traffic patterns in the area of the opening used for entry. The attendant is not precluded from performing other duties outside the enclosed space if these duties do not distract the attendant from: *Monitoring employees within the space* or ensuring that it is safe for employees to enter and exit the space.

## 1926.954—PERSONAL PROTECTIVE EQUIPMENT

**Scope/Application:** *This section applies to personal protective equipment required under Subpart V—Power Transmission and Distribution.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—proficiency, demonstrate
- Inspections and Tests—inspections
- Qualified Person—qualified person

## Programs, Plans and Procedures

**1926.954(b)(3)(iii)(C)**—Until March 31, 2015, a *qualified employee* climbing or changing location on poles, towers, or similar structures need not use fall protection equipment, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing. On and after April 1, 2015, each *qualified employee* climbing or changing location on poles, towers, or similar structures unless *the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard* than climbing or changing location without it.

**Note 2 to paragraphs (b)(3)(iii)(B) and (b)(3)(iii)(C):** *Until the employer ensures that employees are proficient in climbing and the use of fall protection under § 1926.950(b)(7), the employees are not considered “qualified employees” for the purposes of paragraphs (b)(3)(iii)(B) and (b)(3)(iii)(C) of this section. These paragraphs require unqualified employees (including trainees) to use fall protection any time they are more than 1.2 meters (4 feet) above the ground.*

## Inspections and Tests

**1926.954(b)(3)(i)**—Work-positioning equipment *shall be inspected before use each day* to determine that the equipment is in safe working condition. Work-positioning equipment that is not in safe working condition may not be used.

**Note to paragraph (b)(3)(i):** *Appendix F to this subpart contains guidelines for inspecting work-positioning equipment.*

## Qualified Person

**1926.954(b)(3)(iii)(C)**—Until March 31, 2015, a *qualified employee* climbing or changing location on poles, towers, or similar structures need not use fall protection equipment, unless conditions, such as, but not limited to, ice, high winds, the design of the structure (for example, no provision for holding on with hands), or the presence of contaminants on the structure, could cause the employee to lose his or her grip or footing. On and after April 1, 2015, each *qualified employee* climbing or changing location on poles, towers, or similar structures unless *the employer can demonstrate that climbing or changing location with fall protection is infeasible or creates a greater hazard* than climbing or changing location without it.

**Note 2 to paragraphs (b)(3)(iii)(B) and (b)(3)(iii)(C):** *Until the employer ensures that employees are proficient in climbing and the use of fall protection under § 1926.950(b)(7), the employees are not considered “qualified employees” for the purposes of paragraphs (b)(3)(iii)(B) and (b)(3)(iii)(C) of this section. These paragraphs require unqualified employees (including trainees) to use fall protection any time they are more than 1.2 meters (4 feet) above the ground.*

## 1926.955—PORTABLE LADDERS AND PLATFORMS

**Scope/Application:** *This section applies to portable ladders and platforms required under Subpart V—Power Transmission and Distribution. Requirements for portable ladders contained in Subpart X—Stairways and Ladders of this part apply in addition to the requirements of this section, except as specifically noted in paragraph (b) of this section.*

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—demonstrate

## Programs, Plans and Procedures

**1926.955(c)**—*Conductive ladders.* Portable metal ladders and other portable conductive ladders may not be used near exposed energized lines or equipment. However, in specialized high-voltage work, conductive ladders shall be used when the *employer demonstrates that nonconductive ladders would present a greater hazard* to employees than conductive ladders.

## 1926.957—LIVE-LINE TOOLS

**Scope/Application:** *This section applies to live-line tools required under Subpart V—Power Transmission and Distribution.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections, tests

#### Inspections and Tests

**1926.957(a)—Design of tools.** Live-line tool rods, tubes, and poles shall be **designed** and constructed to withstand *minimum tests*. [Reference paragraph (a) for further requirements.]

**1926.957(b)(1)—Daily inspection.** *Each live-line tool shall be wiped clean and visually inspected for defects before use each day.*

**1926.957(b)(2)—Defects.** If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool *shall be removed from service and examined and tested* according to paragraph (b)(3) [Biennial inspection and testing] of this section before being returned to service.

**1926.957(b)(3)—Biennial inspection and testing.** Live-line tools used for primary employee protection shall be removed from service every 2 years, and whenever required under paragraph (b)(2) of this section, for *examination, cleaning, repair, and testing*. [Reference paragraph (b) for further requirements.]

**1926.957(b)(3)(i)**—Each tool *shall be thoroughly examined* for defects.

**1926.957(b)(3)(iv)**—The *test method used shall be designed* to verify the tool's integrity along its entire working length and, if the tool is made of fiberglass-reinforced plastic, its integrity under wet conditions.

**1926.957(b)(3)(v)(C)**—*Other tests* that the employer can demonstrate are equivalent.

**Note to paragraph (b):** *Guidelines for the examination, cleaning, repairing, and inservice testing of live-line tools are specified in the Institute of Electrical and Electronics Engineers' IEEE Guide for Maintenance Methods on Energized Power Lines, IEEE Std 516-2009.*

## 1926.958—MATERIALS HANDLING AND STORAGE

**Scope/Application:** *This section applies to materials handling and storage required under Subpart V—Power Transmission and Distribution. Materials handling and storage shall comply with applicable material-handling and material-storage requirements in this part, including those in Subparts N—Helicopters, Hoists, Elevators, and Conveyors and CC—Cranes & Derricks in Construction of this part.*

### STANDARD HIGHLIGHTS

- Qualified Person—qualified person

#### Qualified Person

**1926.958(b)(1)—Unrestricted areas.** In areas to which access is not restricted to *qualified persons* only, materials or equipment may not be stored closer to energized lines or exposed energized parts of equipment than the following distances, plus a distance that provides for the maximum sag and side swing of all conductors and for the height and movement of material-handling equipment:

**1926.958(b)(2)—Restricted areas.** In areas restricted to *qualified employees*, materials may not be stored within the working space about energized lines or equipment.

**Note to paragraph (b)(2):** *Paragraph (b) of § 1926.966—Substations specifies the size of the working space.*

## 1926.959—MECHANICAL EQUIPMENT

**Scope/Application:** *This section applies to mechanical equipment required under Subpart V—Power Transmission and Distribution. Mechanical equipment shall be operated in accordance with applicable requirements in this part, including Subparts N—Helicopters, Hoists, Elevators, and Conveyors, O—Motor Vehicles, Mechanical Equipment, and Marine Operations, and CC—Cranes & Derricks in Construction of this part, except that § 1926.600(a)(6)—Equipment does not apply to operations performed by qualified employees.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—demonstrate, measures
- Inspections and Tests—inspections
- Qualified Person—qualified person

### Program, Plans and Procedures

**1926.959(d)(3)(iii)**—Each employee shall be protected from hazards that could arise from mechanical equipment contact with energized lines or equipment. The *measures used shall ensure* that employees will not be exposed to hazardous differences in electric potential. Unless the employer *can demonstrate* that the methods in use protect each employee from the hazards that could arise if the mechanical equipment contacts the energized line or equipment, *the measures used* shall include all of the following techniques: *[Reference paragraph (d)(3)(iii) for specific information.]*

### Inspections and Tests

**1926.959(a)(2)**—*Inspection before use.* The critical safety components of mechanical elevating and rotating equipment shall receive a *thorough visual inspection before use on each shift.*

### Qualified Person

**1926.959(d)(1)**—*Minimum approach distance.* Mechanical equipment shall be operated so that the minimum approach distances, established by the employer under § 1926.960(c)(1)(i)—*Equipment*, are maintained from exposed energized lines and equipment. However, the insulated portion of an aerial lift operated by a *qualified employee* in the lift is exempt from this requirement if the applicable minimum approach distance is maintained between the uninsulated portions of the aerial lift and exposed objects having a different electrical potential.

## 1926.960—WORKING ON OR NEAR EXPOSED ENERGIZED PARTS

**Scope/Application:** *This section applies to working on or near exposed energized parts required under Subpart V—Power Transmission and Distribution.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections, hazard assessment
- Qualified Person—qualified person

### Inspections and Tests

**1926.960(g)(1)**—*Hazard assessment.* The employer *shall assess the workplace to identify employees* exposed to hazards from flames or from electric arcs.

**1926.960(j)**—*Non-current-carrying metal parts.* Non-current-carrying metal parts of equipment or devices, such as transformer cases and circuit-breaker housings, shall be treated as energized at the highest voltage to which these parts are exposed, unless the employer *inspects the installation and determines* that these parts are grounded before employees begin performing the work.

## Qualified Person

**1926.960(b)(1)(i)**—Only *qualified employees* may work on or with exposed energized lines or parts of equipment.

**1926.960(b)(1)(ii)**—Only *qualified employees* may work in areas containing unguarded, uninsulated energized lines or parts of equipment operating at 50 volts or more.

## 1926.961—DEENERGIZING LINES AND EQUIPMENT FOR EMPLOYEE PROTECTION

**Scope/Application:** *This section applies to the deenergizing of transmission and distribution lines and equipment for the purpose of protecting employees. Conductors and parts of electric equipment that have been deenergized under procedures other than those required by this section shall be treated as energized.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Training and Communications—requests
- Qualified Person—operator in charge, designated person
- Signs, Markings and Tags—tags

### Programs, Plans and Procedures

**1926.961(c)(4)(iii)**—The employer has *procedures for manually overriding any network protector* that incorporate provisions for determining, before anyone places a network protector in a closed position, that: The line connected to the network protector is not deenergized for the protection of any employee working on the line; and (if the line connected to the network protector is not deenergized for the protection of any employee working on the line) the primary conductors for the network protector are energized.

### Training and Communications

**1926.961(c)(9)**—*Transferring clearances.* To transfer the clearance, the *employee in charge* (or the employee's supervisor if the employee in charge must leave the worksite due to illness or other emergency) *shall inform* the system operator and employees in the crew; and the new *employee in charge* shall be responsible for the clearance.

**1926.961(c)(10)(i)**—*Notify each employee* under that clearance of the pending release of the clearance;

**1926.961(c)(11)**—*Person releasing clearance.* Only the *employee in charge who requested* the clearance may release the clearance, unless the employer transfers responsibility under *paragraph (c)(9)—Transferring Clearances* of this section.

## Qualified Person

**1926.961(b)(1)**—*System operator.* If a *system operator is in charge* of the lines or equipment and their means of disconnection, the employer shall designate one *employee in the crew to be in charge* of the clearance and shall comply with all of the requirements of *paragraph (c)—Deenergizing Lines and Equipment* of this section in the order specified.

**1926.961(b)(2)**—*No system operator.* If no *system operator is in charge* of the lines or equipment and their means of disconnection, the employer shall designate one employee in the *crew to be in charge* of the clearance and to perform the functions that the system operator would otherwise perform under this section. All of the requirements of *paragraph (c)—Deenergizing Lines and Equipment* of this section apply, in the order specified, except as provided in *paragraph (b)(3)—Single Crews Working With The Means of Disconnection Under the Control of the Employee in Charge of the Clearance* of this section.



**1926.961(b)(3)**—*Single crews working with the means of disconnection under the control of the employee in charge of the clearance.* If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to, and under the sole control of, the *employee in charge* of the clearance, *paragraphs (c)(1), (c)(3), and (c)(5)—Deenergizing Lines and Equipment* of this section do not apply. Additionally, the employer does not need to use the **tags** required by the remaining provisions of *paragraph (c)—Deenergizing Lines and Equipment* of this section.

**1926.961(b)(4)(i)**—The crews shall coordinate their activities under this section with a *single employee in charge* of the clearance for all of the crews and follow the requirements of this section as if all of the employees formed a single crew.

**1926.961(b)(4)(ii)**—Each crew shall independently comply with this section and, if there is no *system operator in charge* of the lines or equipment, shall *have separate tags* and coordinate deenergizing and reenergizing the lines and equipment with the other crews.

**1926.961(c)(1)**—*Request to deenergize.* The employee that the employer designates pursuant to *paragraph (b)—General* of this section as being *in charge* of the clearance shall make a request of the system operator to deenergize the particular section of line or equipment. The *designated employee* becomes the *employee in charge* (as this term is used in *paragraph (c)—Deenergizing Lines and Equipment* of this section) and is responsible for the clearance.

**1926.961(c)(6)**—*Test for energized condition.* After the applicable requirements in *paragraphs (c)(1) through (c)(5)—Deenergizing Lines and Equipment* of this section have been followed and the system operator gives a clearance to the *employee in charge*, the employer shall ensure that the lines and equipment are deenergized *by testing the lines* and equipment to be worked with a device designed to detect voltage.

**1926.961(c)(9)**—*Transferring clearances.* To transfer the clearance, the *employee in charge* (or the employee's supervisor if the employee in charge must leave the worksite due to illness or other emergency) shall inform the system operator and employees in the crew; and the new *employee in charge* shall be responsible for the clearance.

**1926.961(c)(11)**—*Person releasing clearance.* Only the *employee in charge* who requested the clearance may release the clearance, unless the employer transfers responsibility under *paragraph (c)(9)—Transferring Clearances* of this section.

## Signs, Markings and Tags

**1926.961(b)(4)(ii)**—Each crew shall independently comply with this section and, if there is no *system operator in charge* of the lines or equipment, shall *have separate tags* and coordinate deenergizing and reenergizing the lines and equipment with the other crews.

**1926.961(b)(3)**—*Single crews working with the means of disconnection under the control of the employee in charge of the clearance.* If only one crew will be working on the lines or equipment and if the means of disconnection is accessible and visible to, and under the sole control of, the *employee in charge* of the clearance, *paragraphs (c)(1), (c)(3), and (c)(5)—Deenergizing Lines and Equipment* of this section do not apply. Additionally, the employer does not need to use the tags required by the remaining provisions of *paragraph (c)—Deenergizing Lines and Equipment* of this section.

**1926.961(c)(2)**—*Open disconnecting means.* The employer shall ensure that all switches, disconnectors, jumpers, taps, and other means through which known sources of electric energy may be supplied to the particular lines and equipment to be deenergized are open. The employer shall render such means inoperable, unless its **design** does not so permit, and then ensure that such means are **tagged** to indicate that employees are at work.

**1926.961(c)(3)**—*Automatically and remotely controlled switches.* The employer shall ensure that automatically and remotely controlled switches that could cause the opened disconnecting means to close are also **tagged at the points of control**. The employer shall render the automatic or remote control feature inoperable, unless its **design** does not so permit.

**1926.961(c)(4)**—*Network protectors.* The employer need not use the tags mentioned in *paragraphs (c)(2) and (c)(3)—Deenergizing Lines and Equipment* of this section on a network protector for work on the primary feeder for the network protector's associated network transformer when the employer can demonstrate all of the following conditions: [Reference paragraph (c)(4) for specific information.]

**1926.961(c)(5)—Tags.** *Tags shall prohibit operation* of the disconnecting means and shall indicate that employees are at work.

**1926.961(c)(6)—Test for energized condition.** After the applicable requirements in *paragraphs (c)(1) through (c)(5)* —*Deenergizing Lines and Equipment* of this section have been followed and the system operator gives a clearance to *the employee in charge*, the employer shall ensure that the lines and equipment are deenergized by *testing the lines* and equipment to be worked with a device designed to detect voltage.

**1926.961(c)(12)—Removal of tags.** No one may remove **tags** *without the release* of the associated clearance as specified under *paragraphs (c)(10) and (c)(11)—Releasing Clearances* of this section.

**1926.961(c)(13)—Reenergizing lines and equipment.** The employer shall ensure that no one initiates action to reenergize the lines or equipment at a point of disconnection until all protective grounds have been removed, all crews working on the lines or equipment release their clearances, all employees are clear of the lines and equipment, and all *protective tags are removed* from that point of disconnection.

## **1926.962—GROUNDING FOR THE PROTECTION OF EMPLOYEES**

**Scope/Application:** *This section applies to grounding of transmission and distribution lines and equipment for the purpose of protecting employees. Paragraph (d) of this section also applies to protective grounding of other equipment as required elsewhere in this Subpart. This section covers grounding of transmission and distribution lines and equipment when this subpart requires protective grounding and whenever the employer chooses to ground such lines and equipment for the protection of employees.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—procedures, measures
- Inspections and Tests—tests

### **Programs, Plans and Procedures**

**1926.962(c)—Equipotential zone.** Temporary protective grounds shall be placed at such locations and arranged in such a manner that the employer *can demonstrate* will prevent each employee from being exposed to hazardous differences in electric potential.

**1926.962(e)—Testing.** The employer shall ensure that, unless a previously installed ground is present, *employees test lines and equipment and verify* the absence of nominal voltage before employees install any ground on those lines or that equipment.

**1926.962(f)(1)—Order of connection.** The employer shall ensure that, when an employee attaches a ground to a line or to equipment, the employee attaches the ground-end connection first and then attaches the other end by means of a liveline tool. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool *if the employer ensures that the line or equipment is not energized at the time the ground is connected or if the employer can demonstrate* that each employee is protected from hazards that may develop if the line or equipment is energized.

**1926.962(f)(2)—Order of removal.** The employer shall ensure that, when an employee removes a ground, the employee removes the grounding device from the line or equipment using a live-line tool before he or she removes the groundend connection. For lines or equipment operating at 600 volts or less, the employer may permit the employee to use insulating equipment other than a live-line tool *if the employer ensures that the line or equipment is not energized at the time the ground is disconnected or if the employer can demonstrate* that each employee is protected from hazards that may develop if the line or equipment is energized.

**1926.962(h)**—*Removal of grounds for test.* The employer may permit employees to remove grounds temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment, shall isolate each employee from any hazards involved, and shall implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

## **Inspections and Tests**

**1926.962(e)**—*Testing.* The employer shall ensure that, unless a previously installed ground is present, employees test lines and equipment and verify the absence of nominal voltage before employees install any ground on those lines or that equipment.

**1926.962(h)**—*Removal of grounds for test.* The employer may permit employees to remove grounds temporarily during tests. During the test procedure, the employer shall ensure that each employee uses insulating equipment, shall isolate each employee from any hazards involved, and shall implement any additional measures necessary to protect each exposed employee in case the previously grounded lines and equipment become energized.

## **1926.963—TESTING AND TEST FACILITIES**

**Scope/Application:** This section provides for safe work practices for high-voltage and high-power testing performed in laboratories, shops, and substations, and in the field and on electric transmission and distribution lines and equipment. It applies only to testing involving interim measurements using high voltage, high power, or combinations of high voltage and high power, and not to testing involving continuous measurements as in routine metering, relaying, and normal line work. OSHA considers routine inspection and maintenance measurements made by qualified employees to be routine line work not included in the scope of this section, provided that the hazards related to the use of intrinsic high voltage or high-power sources require only the normal precautions associated with routine work specified in the other paragraphs of this subpart. Two typical examples of such excluded test work procedures are “phasing-out” testing and testing for a “no-voltage” condition.

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—safe work practices
- Inspections and Tests—tests, test area
- Training and Communications—training
- Qualified Person—test operator in charge
- Signs, Markings and Tags—markings

### **Programs, Plans and Procedures**

**1926.963(b)(1)**—*Safe work practices.* The employer shall establish and enforce work practices for the protection of each worker from the hazards of high-voltage or high-power testing at all test areas, temporary and permanent. Such work practices shall include, as a minimum, test area safeguarding, grounding, the safe use of measuring and control circuits, and a means providing for periodic safety checks of field test areas.

**1926.963(b)(2)**—*Training.* The employer shall ensure that each employee, upon initial assignment to the test area, receives training in safe work practices, with retraining provided as required by § 1926.950(b)—General.

**1926.963(d)(1)**—*Establish and implement practices.* The employer shall establish and implement safe grounding practices for the test facility.

**1926.963(f)(1)**—*Before each test.* Safety practices governing employee work at temporary or field test areas shall provide, at the beginning of each series of tests, for a routine safety check of such test areas.

## Inspections and Tests

**1926.963(c)(1)**—*Safeguarding*. The employer shall provide safeguarding *within test areas* to control access to test equipment or to apparatus under test that could become energized as *part of the testing* by either direct or inductive coupling and to prevent accidental employee contact with energized parts.

**1926.963(c)(2)**—*Permanent test areas*. The employer shall guard *permanent test areas* with walls, fences, or other barriers designed to keep employees out of the *test areas*.

**1926.963(c)(3)**—*Temporary test areas*. In field testing, or at a temporary test site not guarded by permanent fences and gates, the employer shall ensure the use of one of the following means to prevent *employees without authorization* from entering. [Reference paragraph (c)(3) for specific information.]

**1926.963(d)(1)(i)**—The employer shall maintain at ground potential all conductive parts accessible to the *test operator* while the equipment is operating at high voltage.

**1926.963(d)(1)(ii)**—Wherever ungrounded terminals of test equipment or apparatus *under test* may be present, they shall be treated as energized *until tests* demonstrate that they are deenergized.

**1926.963(d)(4)**—*Equipment grounding conductors*. For tests in which using the equipment grounding conductor in the equipment power cord to ground the *test equipment* would result in greater hazards to test personnel or prevent the taking of satisfactory measurements, the employer may use a ground clearly indicated *in the test set-up* if the employer can demonstrate that this ground affords protection for employees equivalent to the protection afforded by an equipment grounding conductor in the power supply cord.

**1926.963(d)(5)**—*Grounding after tests*. The employer shall ensure that, when any employee enters the *test area* after equipment is deenergized, a ground is placed on the high-voltage terminal and any other exposed terminals.

**1926.963(d)(6)**—*Grounding test vehicles*. If the employer uses a test trailer or test vehicle in *field testing*, its chassis shall be grounded. The employer shall protect each employee against hazardous touch potentials with respect to the vehicle, instrument panels, and other conductive parts accessible to employees with bonding, insulation, or isolation.

**1926.963(f)(1)**—*Before each test*. *Safety practices* governing employee work at temporary or *field test areas* shall provide, at the beginning of each *series of tests*, for a routine safety check of such *test areas*.

**1926.963(f)(2)**—*Conditions to be checked*. The *test operator in charge* shall conduct these *routine safety checks* before each *series of tests* and shall verify at least the following conditions. [Reference paragraph (f) for further requirements.]

## Training and Communications

**1926.963(b)(2)**—*Training*. The employer shall ensure that each employee, *upon initial assignment* to the test area, receives *training in safe work practices*, with retraining provided as required by § 1926.950(b)—*General*.

## Qualified Person

**1926.963(c)(3)**—*Temporary test areas*. In field testing, or at a temporary test site not guarded by permanent fences and gates, the employer shall ensure the use of one of the following means to prevent *employees without authorization* from entering. [Reference paragraph (c)(3) for specific information.]

**1926.963(d)(1)(i)**—The employer shall maintain at ground potential all conductive parts accessible to the *test operator* while the equipment is operating at high voltage.

**1926.963(e)(4)**—*Test observer.* If any employee will be present in the test area *during testing*, a *test observer* shall be present. The *test observer* shall be capable of implementing the immediate deenergizing of test circuits for safety purposes.

**1926.963(f)(2)**—*Conditions to be checked.* The *test operator in charge* shall conduct these *routine safety checks* before each series of tests and shall verify at least the following conditions. [Reference paragraph (f) for further requirements.]

## Signs, Markings and Tags

**1926.963(f)(2)(iii)**—Clearly **marked** test-power disconnects are readily available in an emergency.

## 1926.964—OVERHEAD LINES AND LIVE-LINE BAREHAND WORK

**Scope/Application:** This section provides additional requirements for work performed on or near overhead lines and equipment and for live-line barehand work.

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—measures, determination, demonstrate, techniques
- Inspections and Tests—checks
- Training and Communications—communications, training

### Programs, Plans and Procedures

**1926.964(b)(1)**—*Tension stringing method.* When lines that employees are installing or removing can contact energized parts, the employer shall use the *tension stringing method*, *barriers*, or *other equivalent measures* to minimize the possibility that conductors and cables the employees are installing or removing will contact energized power lines or equipment.

**1926.964(b)(2)**—*Conductors, cables, and pulling and tensioning equipment.* For conductors, cables, and pulling and tensioning equipment, the employer shall provide the *protective measures* required by § 1926.959(d)(3)—*Extra Precautions* when employees are installing or removing a conductor or cable close enough to energized conductors that any of the following failures could energize the pulling or tensioning equipment or the conductor or cable being installed or removed: [Reference paragraph (b)(2) for specific information.]

**1926.964(b)(4)(i)**—Before employees install lines parallel to existing energized lines, the employer shall *make a determination* of the approximate voltage to be induced in the new lines, or work shall proceed on the assumption that the induced voltage is hazardous.

**1926.964(b)(4)(ii)**—Unless the employer *can demonstrate* that the lines that employees are installing are not subject to the induction of a hazardous voltage or unless the lines are treated as energized, temporary protective grounds shall be placed at such locations and arranged in such a manner that the *employer can demonstrate* will prevent exposure of each employee to hazardous differences in electric potential.

**1926.964(c)(1)**—*Training.* Before an employee uses or supervises the use of the *live-line barehand technique* on energized circuits, the employer shall ensure that the employee *completes training* conforming to § 1926.950(b)—*Training* in the *technique* and in the safety requirements of paragraph (c)—*Live-Line Barehand Work* of this section.

**1926.964(c)(2)**—*Existing conditions.* Before any employee uses the *live-line barehand technique* on energized highvoltage conductors or parts, the employer shall ascertain the following information in addition to information about other existing conditions required by § 1926.950(d) *Existing characteristics and conditions*. [Reference paragraph (c) for further requirements.]



**1926.964(c)(5)—Adverse weather conditions.** The employer shall ensure that employees do not perform work when adverse weather conditions would make the work hazardous even after the employer *implements the work practices* required by this subpart. Additionally, employees may not perform work when winds reduce the phase-to-phase or phase-to-ground clearances at the work location below the minimum approach distances specified in *paragraph (c)(13)—Minimum Approach Distance* of this section, unless insulating guards cover the grounded objects and other lines and equipment.

**1926.964(c)(13)—Minimum approach distance.** The employer shall ensure that employees maintain the minimum approach distances, *established by the employer under § 1926.960(c)(1)(i)—Minimum Approach Distance*, from all grounded objects and from lines and equipment at a potential different from that to which the live-line barehand equipment is bonded, unless insulating guards cover such grounded objects and other lines and equipment.

**1926.964(c)(14)—Approaching, leaving, and bonding to energized part.** The employer shall ensure that, while an employee is approaching, leaving, or bonding to an energized circuit, the employee maintains the minimum approach distances, *established by the employer under § 1926.960(c)(1)(i)—Minimum Approach Distance*, between the employee and any grounded parts, including the lower boom and portions of the truck and between the employee and conductive objects energized at different potentials.

**1926.964(c)(15)—Positioning bucket near energized bushing or insulator string.** While the bucket is alongside an energized bushing or insulator string, the employer shall ensure that employees maintain the phase-to-ground minimum approach distances, *established by the employer under § 1926.960(c)(1)(i)—Minimum Approach Distance*, between all parts of the bucket and the grounded end of the bushing or insulator string or any other grounded surface.

**1926.964(d)(1)—Working beneath towers and structures.** The employer shall ensure that no employee is under a tower or structure while work is in progress, except when the *employer can demonstrate* that such a working position is necessary to assist employees working above.

**1926.964(d)(2)—Tag lines.** The employer shall ensure that employees use tag lines or other similar devices to maintain control of tower sections being raised or positioned, unless the employer *can demonstrate* that the use of such devices would create a greater hazard to employees.

**1926.964(d)(4)—Adverse weather conditions.** The employer shall ensure that, except during *emergency restoration procedures*, employees discontinue work when adverse weather conditions would make the work hazardous in spite of the *work practices* required by this subpart.

## Inspections and Tests

**1926.964(a)(2)—Checking structure before climbing.** Before allowing employees to subject elevated structures, such as poles or towers, to such stresses as climbing or the installation or removal of equipment may impose, the *employer shall ascertain that the structures are capable of sustaining the additional or unbalanced stresses*. If the pole or other structure cannot withstand the expected loads, the employer shall brace or otherwise support the pole or structure so as to prevent failure.

**1926.964(c)(10)—Check controls.** The employer shall ensure that, before employees elevate an aerial lift into the work position, the *employees check all controls* (ground level and bucket) to determine that they are in proper working condition.

**1926.964(c)(12)—Boom-current test.** The employer shall ensure that employees *perform a boom-current test before starting work each day, each time during the day* when they encounter a higher voltage, and when changed conditions indicate a need for an *additional test*.

**1926.964(c)(12)(i)**—This *test shall consist* of placing the bucket in contact with an energized source equal to the voltage to be encountered for a *minimum of 3 minutes*.

## Training and Communications

**1926.964(b)(9)—Communications.** The employer shall ensure that employees maintain *reliable communications*, through twoway radios or other equivalent means, between the reel tender and the pullingrig operator.

**1926.964(c)(1)—Training.** Before an employee uses or supervises the use of the live-line barehand technique on energized circuits, the employer shall ensure that the employee *completes training* conforming to § 1926.950(b)—*Training* in the *technique* and in the safety requirements of *paragraph (c)—Live-Line Barehand Work* of this section.

**1926.964(c)(2)—Existing conditions.** Before any employee uses the *live-line barehand technique* on energized highvoltage conductors or parts, the employer shall ascertain the *following information* in addition to information about other existing conditions required by § 1926.950(d)—*Existing Characteristics and Conditions*. [Reference paragraph (c) for further requirements.]

## **1926.965—UNDERGROUND ELECTRICAL INSTALLATIONS**

**Scope/Application:** *This section provides additional requirements for work on underground electrical installations.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—demonstrate
- Inspections and Tests—inspections
- Training and Communications—communications, first aid training
- Qualified Person—first aid trained person

### **Programs, Plans and Procedures**

**1926.965(d)(3)—Entry without attendant.** For the *purpose of inspection, housekeeping, taking readings, or similar work*, an employee working alone may enter, for brief periods of time, a manhole or vault where energized cables or equipment are in service if the employer *can demonstrate* that the employee will be protected from all electrical hazards.

**1926.965(h)(1)—Cables with abnormalities.** Where a cable in a manhole or vault has one or more abnormalities that could lead to a fault or be an indication of an impending fault, the employer shall deenergize the cable with the abnormality before any employee may work in the manhole or vault, except when service-load conditions and a lack of feasible alternatives require that the cable remain energized. In that case, employees may enter the manhole or vault provided the employer protects them from the possible effects of a failure using shields or other devices that are capable of containing the adverse effects of a fault. The employer shall treat the following abnormalities as indications of impending faults unless the employer *can demonstrate* that the conditions could not lead to a fault: Oil or compound leaking from cable or joints, broken cable sheaths or joint sleeves, hot localized surface temperatures of cables or joints, or joints swollen beyond normal tolerance.

### **Inspections and Tests**

**1926.965(d)(3)—Entry without attendant.** For the *purpose of inspection, housekeeping, taking readings, or similar work*, an employee working alone may enter, for brief periods of time, a manhole or vault where energized cables or equipment are in service if the employer *can demonstrate* that the employee will be protected from all electrical hazards.

**1926.965(g)—Moving cables.** Except when *paragraph (h)(2)—Work-Related Faults* of this section permits employees to perform work that could cause a fault in an energized cable in a manhole or vault, the employer shall ensure that employees *inspect energized* cables to be moved for abnormalities.

### **Training and Communications**

**1926.965(d)(1)—When required.** While work is being performed in a manhole or vault containing energized electric equipment, an *employee with first-aid training shall be available* on the surface in the immediate vicinity of the manhole or vault entrance to render emergency assistance.

**1926.965(d)(4)—Communications.** The employer shall ensure that employees *maintain reliable communications*, through two way radios or other equivalent means, among all employees involved in the job.

### **Qualified Person**

**1926.965(d)(1)—When required.** While work is being performed in a manhole or vault containing energized electric equipment, an *employee with first-aid training shall be available* on the surface in the immediate vicinity of the manhole or vault entrance to render emergency assistance.

## **1926.966—SUBSTATIONS**

***Scope/Application:*** This section provides additional requirements for substations and for work performed in them.

### **STANDARD HIGHLIGHTS**

- Training and Communications—job briefings
- Qualified Person—qualified person, employee in charge
- Signs, Markings and Tags—signs

### **Training and Communications**

**1926.966(g)(2)—Job briefing.** The *job briefing required by § 1926.952—Job Briefing* shall cover **information** on special system conditions affecting employee safety, including the location of energized equipment in or adjacent to the work area and the limits of any deenergized work area.

### **Qualified Person**

**1926.966(e)(2)—Prevent access by unqualified persons.** Fences, screens, partitions, or walls shall enclose the rooms and other spaces so as to minimize the possibility that *unqualified persons* will enter.

**1926.966(e)(3)—Restricted entry.** *Unqualified persons* may not enter the rooms or other spaces while the electric supply lines or equipment are energized.

**1926.966(e)(4)—Warning signs.** The employer shall *display signs at entrances* to the rooms and other spaces warning *unqualified persons to keep out*.

**1926.966(e)(5)—Entrances to rooms and other.** The employer shall keep each entrance to a room or other space locked, unless the entrance is under the observation of a person who is attending the room or other space for the purpose of *preventing unqualified employees from entering*.

**1926.966(f)(2)—Maintaining guards during operation.** Except for fuse replacement and other necessary access by *qualified persons*, the employer shall maintain guarding of energized parts within a compartment during operation and maintenance functions to prevent accidental contact with energized parts and to prevent dropped tools or other equipment from contacting energized parts.

**1926.966(g)(1)—Report upon entering.** Upon entering an attended substation, each employee, other than employees regularly working in the station, shall report his or her presence to the *employee in charge* of substation activities to receive information on special system conditions affecting employee safety.

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

**1926.966(e)(4)—Warning signs.** The employer shall *display signs at entrances* to the rooms and other spaces warning *unqualified persons to keep out*.

## 1926.967—SPECIAL CONDITIONS

**Scope/Application:** *This section provides requirements for special conditions.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—inspections
- Signs, Markings and Tags—signs

#### Inspections and Tests

**1926.967(e)(2)**—*Maintaining flotation devices in safe condition.* The employer shall maintain each personal flotation device in safe condition and shall *inspect each personal flotation device frequently* enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use.

#### Signs, Markings and Tags

**1926.967(g)(1)**—*Traffic control devices.* ***Traffic-control signs and traffic-control devices*** used for the protection of employees shall meet § 1926.200(g)(2).

**1926.967(g)(2)**—*Controlling traffic.* Before employees begin work in the vicinity of vehicular or pedestrian traffic that may endanger them, the employer *shall place **warning signs or flags*** and other traffic control devices in conspicuous locations to alert and channel approaching traffic.

## 29 CFR Subpart W—Rollover Protective Structures; Overhead Protection

### 1926.1000—ROLLOVER PROTECTIVE STRUCTURES (ROPS) FOR MATERIAL HANDLING EQUIPMENT

**Scope/Application:** *This section applies to the following types of material handling equipment: To all rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments, that are used in construction work.*

**Exception:** *This requirement does not apply to sideboom pipelaying tractors.*

#### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—labels affixed to structure

#### Signs, Markings and Tags

**1926.1000(e)—Labeling.** *Each ROPS shall have **information** permanently affixed to the structure. [Reference paragraph (e) for specific requirements.]*

### 1926.1001—MINIMUM PERFORMANCE CRITERIA FOR ROLLOVER PROTECTIVE STRUCTURES FOR DESIGNATED SCRAPERS, LOADERS, DOZERS, GRADERS, AND CRAWLER TRACTORS

**Scope/Application:** *This section prescribes minimum performance criteria for rollover protective structures (ROPS) for rubber-tired self-propelled scrapers; rubber-tired front-end loaders and rubber-tired dozers; crawler tractors, and crawler-type loaders, and motor graders. The vehicle and ROPS as a system shall have the structural characteristics prescribed in paragraph (f) [Performance Requirements] of this section for each type of machine described in this paragraph.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—test procedures
- Inspections and Tests—static laboratory tests
- Recordkeeping—certification
- Certification—material certification

#### Programs, Plans and Procedures

**1926.1001(e)—Test procedure.** *The test procedure shall include requirements in a specific sequence. [Reference paragraph (e) for specific requirements.]*

#### Inspections and Tests

**1926.1001(b)**—The static laboratory test prescribed herein will determine the adequacy of the structures used to protect the operator under specific conditions. *[Reference paragraph (b) for specific requirements.]*

**1926.1001(e)**—Test procedure. *The test procedure shall include requirements in a specific sequence. [Reference paragraph (e) for specific requirements.]*

**1926.1001(e)(3)**—The low temperature impact strength of the material used in the ROPS *shall be verified by suitable material tests or **material certification** (see paragraph (f)(2)(iv) [Specific Performance Requirements] of this section).*

**1926.1001(f)(2)(iii)**—The load magnitude for purposes of compliance with paragraph (e)(2)—Test Procedure of this section is equal to the vehicle weight. The *test of load magnitude* shall only be made after the requirements of paragraph (f)(2)(i) [Specific Performance Requirements] of this section are met.



## Recordkeeping

**1926.1001(e)(3)**—The low temperature impact strength of the material used in the ROPS *shall be verified by suitable material tests or **material certification*** (see paragraph (f)(2)(iv) [Specific Performance Requirements] of this section).

## Certification

**1926.1001(e)(3)**—The low temperature impact strength of the material used in the ROPS *shall be verified by suitable material tests or **material certification*** (see paragraph (f)(2)(iv) [Specific Performance Requirements] of this section).

## 1926.1002—PROTECTIVE FRAMES (ROLL-OVER PROTECTIVE STRUCTURES, KNOWN AS ROPS) FOR WHEEL-TYPE AGRICULTURAL AND INDUSTRIAL TRACTORS USED IN CONSTRUCTION

**Scope/Application:** *The purpose of this section is to set forth requirements for frames used to protect operators of wheel-type agricultural and industrial tractors that will minimize the possibility of operator injury resulting from accidental upsets during normal operation. With respect to agricultural and industrial tractors, the provisions of 29 CFR 1926.1001 [Minimum Performance Criteria for Rollover Protective Structures for Designated Scrapers, Loaders, Dozers, Graders, and Crawler Tractors] and 1926.1003 [Overhead Protection for Operators of Agricultural and Industrial Tractors] for rubber-tired dozers and rubber-tired loaders may be used instead of the requirements of this section.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Inspections and Tests—tests, test procedure
- Recordkeeping—tests
- Certification—material certification

### Programs, Plans and Procedures

**1926.1002(f)**—*Other test procedures.* When the field-upset test is not used to determine ROPS performance, *either the static test or the dynamic test, contained in paragraph (g) [Static Test] or (h) [Dynamic Test] of this section, shall be made.*

**1926.1002(g)(2)(v)**—The *test procedure shall be repeated* on the same frame using L (rear input; see Figure W-18) and Eir. Rear-load application shall be distributed uniformly along a maximum projected dimension of 27 in. (686 mm) and a maximum area of 160 sq. in. (1,032 sq. cm) normal to the direction of load application. The load shall be applied to the upper extremity of the frame at the point that is midway between the centerline of the seat and the inside of the frame upright.

### Inspections and Tests

**1926.1002(c)(1)**—Either a *laboratory test or a field test* is required to determine the performance requirements set forth in paragraph (i) [Performance Requirements] of this section.

**1926.1002(d)(6)**—The low-temperature impact strength of the material used in the protective structure *shall be verified by suitable material tests or **material certifications*** according to 29 CFR 1926.1001(f)(2)(iv) [Specific Performance Requirements].

**1926.1002(e)(2)**—Agricultural tractors *shall be tested* at the weight set forth in paragraph (e)(1) [Vehicle Weight] of this section.

**1926.1002(e)(3)**—Industrial tractors *shall be tested* with items of integral or mounted equipment and ballast that are sold as standard equipment or approved by the vehicle manufacturer for use with the vehicle when the protective frame is expected to provide protection for the operator with such equipment installed. The total vehicle weight and front-end weight as tested shall not be less than the weights established in *paragraph (e)(1) [Vehicle Weight]* of this section.

**1926.1002(e)(4)(i)**—The *test shall be conducted* on a dry, firm soil bank as illustrated in Figure W-15. The soil in the impact area shall have an average cone index in the 0-in. to 6-in. (0-mm to 153-mm) layer not less than 150 according to American Society of Agricultural Engineers (“ASAE”) recommendation ASAE R313.1-1971 (“Soil cone penetrometer”), as reconfirmed in 1975, which is incorporated by reference. The incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The path of vehicle travel shall be  $12^{\circ} \pm 2^{\circ}$  to the top edge of the bank.

**1926.1002(f)**—*Other test procedures.* When the field-upset test is not used to determine ROPS performance, *either the static test or the dynamic test, contained in paragraph (g) [Static Test] or (h) [Dynamic Test] of this section, shall be made.*

**1926.1002(g)(2)(v)**—The *test procedure shall be repeated* on the same frame using L (rear input; see Figure W-18) and Eir. Rear-load application shall be distributed uniformly along a maximum projected dimension of 27 in. (686 mm) and a maximum area of 160 sq. in. (1,032 sq. cm) normal to the direction of load application. The load shall be applied to the upper extremity of the frame at the point that is midway between the centerline of the seat and the inside of the frame upright.

**1926.1002(h)(1)(vii)**—When any cables, props, or blocking shift or break *during the test, the test shall be repeated.*

**1926.1002(i)(3)**—*Static test performance requirements.* **Design factors** shall be incorporated in each **design** to *withstand the overturn test* as specified by *this paragraph (i) [Performance Requirements]*. The structural requirements will be met generally when FER is greater than 1.0 and FSB is greater than K-1 in both side and rear loadings.

**1926.1002(i)(4)**—*Dynamic test performance requirements.* **Design factors** shall be incorporated in each **design** to *withstand the overturn test* specified by *this paragraph (i) [Performance Requirements]*. The structural requirements will be met generally when the dimensions in this *paragraph (i) [Performance Requirements]* are used during both side and rear loads.

## Recordkeeping

**1926.1002(d)(3)**—Instantaneous and permanent frame deformation *shall be measured and recorded for each segment of the test.*

**1926.1002(d)(6)**—The low-temperature impact strength of the material used in the protective structure *shall be verified by suitable material tests or material certifications* according to 29 CFR 1926.1001(f)(2)(iv) *[Specific Performance Requirements]*.

## Certification

**1926.1002(d)(6)**—The low-temperature impact strength of the material used in the protective structure *shall be verified by suitable material tests or material certifications* according to 29 CFR 1926.1001(f)(2)(iv) *[Specific Performance Requirements]*.

## **1926.1003—OVERHEAD PROTECTION FOR OPERATORS OF AGRICULTURAL AND INDUSTRIAL TRACTORS**

**Scope/Application:** *This standard applies to wheel-type agricultural and industrial tractors used in construction work (see 29 CFR 1926.1002(b) [Applicability] and (j) [Definitions]). In the case of machines to which 29 CFR 1926.604 [Site Clearing] also applies, the overhead protection may be either the type of protection provided in 29 CFR 1926.604 [Site Clearing], or the type of protection provided by this section.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—test procedures
- Inspections and Tests—procedures

### **Programs, Plans and Procedures**

**1926.1003(d)(1)**—*Drop test procedure. The same frame shall be subjected to the drop test following either the static or dynamic test.*

**1926.1003(e)(1)**—*Crush test procedure. The same frame shall be subjected to the crush test following the drop test and static or dynamic test.*

### **Inspections and Tests**

**1926.1003(d)(1)**—*Drop test procedure. The same frame shall be subjected to the drop test following either the static or dynamic test.*

**1926.1003(e)(1)**—*Crush test procedure. The same frame shall be subjected to the crush test following the drop test and static or dynamic test.*

## 29 CFR Subpart X—Stairways and Ladders

### 1926.1053—LADDERS

**Scope/Application:** *This subpart applies to all stairways and ladders used in construction, alteration, repair (including painting and decorating), and demolition workplaces covered under 29 CFR part 1926, and also sets forth, in specified circumstances, when ladders and stairways are required to be provided. Additional requirements for ladders used on or with scaffolds are contained in subpart L—Scaffolds. The following requirements apply to all ladders as indicated, including job-made ladders.*

**Exception:** *This subpart does not apply to integral components of equipment covered by subpart CC [Cranes and Derricks in Construction]. Subpart CC exclusively sets forth the circumstances when ladders and stairways must be provided on equipment covered by subpart CC.*

#### STANDARD HIGHLIGHTS

- Inspections and Tests—periodic inspections by competent person
- Competent Person—inspections
- Signs, Markings and Tags—markings, tags

#### Inspections and Tests

**1926.1053(b)(15)**—*Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.*

#### Competent Person

**1926.1053(b)(15)**—*Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use.*

#### Signs, Markings and Tags

**1926.1053(b)(16)**—*Portable ladders with structural defects, such as, but not limited to, broken or missing rungs, cleats, or steps, broken or split rails, corroded components, or other faulty or defective components, shall either be immediately **marked** in a manner that readily identifies them as defective, or be **tagged** with “Do Not Use” or similar language, and shall be withdrawn from service until repaired.*

### 1926.1060—TRAINING REQUIREMENTS

**Scope/Application:** *This subpart applies to all stairways and ladders used in construction, alteration, repair (including painting and decorating), and demolition workplaces covered under 29 CFR part 1926, and also sets forth, in specified circumstances, when ladders and stairways are required to be provided. Additional requirements for ladders used on or with scaffolds are contained in subpart L—Scaffolds.*

**Exception:** *This subpart does not apply to integral components of equipment covered by subpart CC [Cranes and Derricks in Construction]. Subpart CC exclusively sets forth the circumstances when ladders and stairways must be provided on equipment covered by subpart CC.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—training program, procedures
- Training and Communications—initial and retraining, competent person
- Competent Person—training

## Programs, Plans and Procedures

**1926.1060(a)**—The employer *shall provide a **training program*** for each employee using ladders and stairways, as necessary. The ***program*** shall enable each employee to recognize hazards related to ladders and stairways, and *shall train each employee in the procedures* to be followed to minimize these hazards.

## Training and Communications

**1926.1060(a)**—The employer *shall provide a **training program*** for each employee using ladders and stairways, as necessary. The ***program*** shall enable each employee to recognize hazards related to ladders and stairways, and *shall train each employee in the procedures* to be followed to minimize these hazards.

**1926.1060(a)(1)**—The employer *shall ensure that each employee has been trained by a competent person* in specific areas, as applicable. *[Reference paragraph (a)(1) for specific requirements.]*

**1926.1060(b)**—*Retraining shall be provided* for each employee as necessary so that the employee maintains the understanding and knowledge acquired through compliance with this section.

## Competent Person

**1926.1060(a)(1)**—The employer shall ensure that each employee has *been trained by a competent person* in specific areas as applicable. *[Reference paragraph (a)(1) for specific requirements.]*



## 29 CFR Subpart Y—Commercial Diving Operations

### 1926.1076—QUALIFICATIONS OF DIVE TEAM

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.410 [Qualifications of Dive Team] of this chapter.*

### 1910.410—QUALIFICATIONS OF DIVE TEAM

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 [Protection of Human Subjects, U.S. Department of Health and Human Services] or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

#### STANDARD HIGHLIGHTS

- Training and Communications—initial training
- Qualified Person—designated person-in-charge

#### Training and Communications

**1910.410(a)(1)**—Each dive team member *shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner. [Reference paragraph (a) for specific information.]*

#### Qualified Person

**1910.410(c)(2)**—The *designated person-in-charge shall have experience and training in the conduct of the assigned diving operation.*

### 1926.1080—SAFE PRACTICES MANUAL

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.420 [Safe Practices Manual] of this chapter.*

### 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, Plans and Procedures—safe practices manual
- Recordkeeping—safe practices manual

## Programs, Plans and Procedures

**1910.420(a)**—General. The employer *shall develop and maintain a safe practices manual which shall be made available* at the dive location to each dive team member. [Reference paragraph (a)(1) for specific information.]

## Recordkeeping

**1910.420(a)**—General. The employer *shall develop and maintain a safe practices manual which shall be made available* at the dive location to each dive team member. [Reference paragraph (a)(1) for specific information.]

## 1926.1081—PRE-DIVE PROCEDURES

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.421 [Pre-Dive Procedures] of this chapter.*

## 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, Plans and Procedures—emergency list on-site, first aid handbook on site, reporting procedures
- Inspections and Tests—assessment, inspection before dive
- Recordkeeping—first aid handbook
- Training and Communications—briefing prior to dive
- Qualified Person—first aid kit
- Signs, Markings and Tags—flag displayed

## Programs, Plans and Procedures

**1910.421(b)**—Emergency aid. A **list** shall be **kept** at the dive location of the telephone or call numbers.

**1910.421(c)(1)**—A first aid kit appropriate for the diving operation and **approved** by a **physician** shall be **available** at the dive location.

**1910.421(c)(3)**—In addition to any other first aid supplies, an American Red Cross standard **first aid handbook** or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be **available** at the dive location.

**1910.421(f)(2)**—Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and indicate to the dive team member the procedure for reporting physical problems or adverse physiological effects during and after the dive.

## Inspections and Tests

**1910.421(d)**—Planning and assessment. Planning of a diving operation shall include an assessment of the safety and health aspects. [Reference paragraph (d) for specific information.]

**1910.421(g)**—Equipment inspection. The breathing gas supply system including reserve breathing gas supplies, masks, helmets, thermal protection, and bell handling mechanism (when appropriate) shall be inspected prior to each dive. [Reference paragraph (g) for specific information.]

## Recordkeeping

**1910.421(c)(1)**—A *first aid kit appropriate for the diving operation and **approved** by a **physician** shall be **available** at the dive location.*

**1910.421(c)(3)**—In addition to any other first aid supplies, an American Red Cross standard **first aid handbook** or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be **available** at the dive location.

## Training and Communications

**1910.421(f)(1)**—Dive team members *shall be briefed. [Reference paragraph (f) for specific information.]*

## Qualified Person

**1910.421(c)(1)**—A *first aid kit appropriate for the diving operation and **approved** by a **physician** shall be **available** at the dive location.*

## Signs, Markings and Tags

**1910.421(h)**—Warning signal. When diving from surfaces other than vessels in areas capable of supporting marine traffic, a rigid replica of the *international code flag “A” at least one meter in height shall be displayed at the dive location in a manner which allows all-round visibility, and shall be illuminated during night diving operations.*

## 1926.1083—POST-DIVE PROCEDURES

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.423 [Post-Dive Procedures] of this chapter.*

## 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

- Programs, Plans and Procedures—investigate each incident, written evaluations
- Recordkeeping—records
- Training and Communications—employee instructions

## Programs, Plans and Procedures

**1910.423(e)(1)**—*Investigate and evaluate each incident of decompression sickness based on the **recorded information**, consideration of the past performance of decompression table used, and individual susceptibility. [Reference paragraph (e) for specific information.]*

**1910.423(e)(3)**—***Prepare a written evaluation** of the decompression procedure assessment, including any corrective action taken, within 45 days of the incident of decompression sickness. [Reference paragraph (e) for specific information.]*

## Recordkeeping

**1910.423(d)(1)**—***Information shall be recorded and maintained** for each diving operation. [Reference paragraph (d) for specific information.]*

**1910.423(d)(2)**—For each dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas, *additional information shall be recorded and maintained.* [Reference paragraph (d) for additional information.]

**1910.423(d)(3)**—For each dive in which decompression sickness is suspected or symptoms are evident, *additional information shall be recorded and maintained.* [Reference paragraph (d) for specific information.]

**1910.423(e)(1)**—Investigate and evaluate each incident of decompression sickness based on the **recorded information**, consideration of the past performance of decompression table used, and individual susceptibility. [Reference paragraph for specific information.]

**1910.423(e)(3)**—*Prepare a written evaluation* of the decompression procedure assessment, including any corrective action taken, *within 45 days of the incident* of decompression sickness. [Reference paragraph (e) for specific information.]

## **Training and Communications**

**1910.423(b)(1)(ii)**—Instruct the diver to report any physical problems or adverse physiological effects including symptoms of decompression sickness.

**1910.423(b)(1)(iii)**—Advise the diver of the location of a decompression chamber which is ready for use.

**1910.423(b)(2)**—For any dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas as a breathing mixture, the employer *shall instruct* the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).

## **1926.1090—EQUIPMENT**

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at 1910.430 [Equipment] of this chapter.*

## **1910.430—EQUIPMENT**

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 [Protection of Human Subjects, U.S. Department of Health and Human Services] or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

## **STANDARD HIGHLIGHTS**

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

## **Programs, Plans and Procedures**

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the **name or initials** of the person performing the work.

## Inspections and Tests

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the **name or initials** of the person performing the work.

**1910.430(b)(4)**—The output of air compressor systems *shall be tested for air purity every 6 months by means of samples* taken at the connection to the distribution system, except that non-oil lubricated compressors need not be tested for oil mist.

**1910.430(c)(1)(iii)**—*Be tested at least annually* to 1.5 times their working pressure.

**1910.430(f)(3)(ii)**—Mufflers on intake and exhaust lines, which *shall be regularly inspected* and maintained.

**1910.430(g)(2)**—Each depth gauge *shall be deadweight tested or calibrated against a master reference gauge every 6 months, and when there is a discrepancy greater than two percent (2 percent) of full scale* between any two equivalent gauges.

## Recordkeeping

**1910.430(a)(2)**—Each equipment *modification, repair, test, calibration or maintenance* service shall be **recorded** by means of a **tagging or logging system**, and include the date and nature of work performed, and the **name or initials** of the person performing the work.

## 29 CFR 1926.1091—RECORDKEEPING REQUIREMENTS

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.440 [Recordkeeping Requirements] of this chapter.*

## 1910.440—RECORDKEEPING REQUIREMENTS

**Scope/Application:** *This standard applies to diving and related support operations conducted in connection with all types of work and employments, including general industry, construction, ship repairing, shipbuilding, shipbreaking and longshoring.*

**Exception:** *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 [Protection of Human Subjects, U.S. Department of Health and Human Services] or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

## STANDARD HIGHLIGHTS

- Recordkeeping—retention requirements

## Recordkeeping

**1910.440(a)(2)**—The employer *shall record the occurrence of any diving-related injury or illness* which requires any dive team member to be hospitalized for 24 hours or more, specifying the circumstances of the incident and the extent of any injuries or illnesses.

**1910.440(b)(1)**—Upon the request of the Assistant Secretary of Labor for Occupational Safety and Health, or the Director, National Institute for Occupational Safety and Health, Department of Health and Human Services of their designees, the employer *shall make available for inspection and copying any record or document* required by this standard.



**1910.440(b)(2)**—*Records and documents required by this standard shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Medical Records]. Safe practices manuals (Sec. 1910.420), depth-time profiles (Sec. 1910.422), recordings of dives (Sec. 1910.423), decompression procedure assessment evaluations (Sec. 1910.423), and records of hospitalizations (Sec. 1910.440) shall be provided in the same manner as employee exposure records or analyses using exposure or medical records. Equipment inspections and testing records which pertain to employees (Sec. 1910.430) shall also be provided upon request to employees and their designated representatives.*

**1910.440(b)(3)**—*Records and documents required by this standard shall be retained by the employer for the following period:*

**1910.440(b)(3)(ii)**—*Safe practices manual (Sec. 1910.420)—current document only.*

**1910.440(b)(3)(iii)**—*Depth-time profile (Sec. 1910.422)—until completion of the recording of dive, or until completion of decompression procedure assessment where there has been an incident of decompression sickness.*

**1910.440(b)(3)(iv)**—*Recording of dive (Sec. 1910.423)—1 year, except 5 years where there has been an incident of decompression sickness.*

**1910.440(b)(3)(v)**—*Decompression procedure assessment evaluations (Sec. 1910.423)—5 years.*

**1910.440(b)(3)(vi)**—*Equipment inspections and testing records (Sec. 1910.430)—current entry or tag, or until equipment is withdrawn from service.*

**1910.440(b)(3)(vii)**—*Records of hospitalizations (Sec. 1910.440)—5 years.*

## 29 CFR Subpart Z—Toxic and Hazardous Substances

### 1926.1101—ASBESTOS

**Scope/Application:** *This section regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b) [Construction Work—Definition], including but not limited to the following: demolition or salvage of structures where asbestos is present; removal or encapsulation of materials containing asbestos; construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain asbestos; installation of products containing asbestos; asbestos spill/emergency cleanup; and transportation, disposal, storage, containment of and housekeeping activities involving asbestos or products containing asbestos, on the site or location at which construction activities are performed. Coverage under this standard shall be based on the nature of the work operation involving asbestos exposure.*

**Exception:** *This section does not apply to asbestos-containing asphalt roof coatings, cements and mastics.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—work controls, respirator program, medical surveillance program
- Inspections and Tests—inspections before work and beginning of each shift, tests
- Recordkeeping—retention requirements, records
- Certification—written certifications
- Training and Communications—multi-employer worksites, awareness training, written opinions
- Exposure Monitoring—initial, periodic, and daily monitoring, posted results
- Medical Surveillance—program, initial and annual inspections
- Competent Person—duties, exposure assessment, inspections
- Qualified Person—certified industrial hygienist, licensed professional engineer
- Signs, Markings and Tags—posted signs, regulated areas

#### Programs, Plans and Procedures

**1926.1101(g)(1)**—*Engineering controls and work practices for all operations covered by this section. The employer shall use engineering controls and work practices in all operations covered by this section, regardless of the levels of exposure. [Reference paragraph (g)(1) for specific information.]*

**1926.1101(g)(4)**—*Class I Requirements. In addition to the provisions of paragraphs (g)(1) and (2) [Methods of Compliance] of this section, engineering controls and work practices and procedures shall be used. [Reference paragraph (g)(4) and (g)(5) for specific information.]*

**1926.1101(g)(6)(ii)**—*A **certified industrial hygienist or licensed professional engineer** who is also qualified as a project designer as defined in paragraph (b) [Definitions] of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall **certify in writing** that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the **planned control method** will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (g)(4)(ii)(B) [Class I Requirements] of this section.*

**1926.1101(g)(8)(vi)(B)**—*A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall **certify in writing**, that the different or *modified controls* are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this **standard**. The **evaluation** shall include and be based on **data** representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and *by employees whose training and experience* are equivalent to employees who are to perform the current job.*

**1926.1101(g)(9)**—*Work Practices and Engineering Controls for Class III asbestos work.* Class III asbestos work *shall be conducted using engineering and work practice controls* which minimize the exposure to employees performing the asbestos work and to bystander employees.

**1926.1101(h)(2)(i)**—The employer *must implement a **respiratory protection program** in accordance with 29 CFR 1910.134 (b) through (d) (except (d)(1)(iii)), and (f) through (m) [Respiratory Protection],* which covers each employee required by this section to use a respirator.

**1926.1101(k)(9)(v)**—*Training for Class III employees shall be consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). Such a course shall also include “hands-on” training and shall take at least 16 hours. **Exception:** For Class III operations for which the competent person determines that the EPA curriculum does not adequately cover the training needed to perform that activity, training shall include as a minimum all the elements included in paragraph (k)(9)(viii) [Employee Information and Training] of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) [Methods of Compliance] of this section which specifically relate to that activity, and shall include “hands-on” training in the work practices applicable to each category of material that the employee disturbs.*

**1926.1101(k)(9)(viii)**—The **training program** *shall be conducted in a manner that the employee is able to understand.* In addition to the content required by provisions in paragraphs (k)(9)(iii) through (vi) [Employee Information and Training] of this section, the employer shall ensure that each such employee is informed of additional information. [Reference paragraph (k)(9)(viii) for specific information.]

**1926.1101(k)(10)(iii)**—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 J [Smoking Cessation Program Information for Asbestos] to this section.*

**1926.1101(m)(1)(i)(A)**—The employer *shall institute a **medical surveillance program** for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit. For purposes of this paragraph, any day in which a worker engages in Class II or Class III operations or a combination thereof on intact material for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in this **standard**, shall not be counted.*

**1926.1101(o)(2)**—Required *inspections by the competent person. Section 1926.20(b)(2) [General Safety and Health Provisions for Construction] which requires **health and safety prevention programs** to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.*

**1926.1101(o)(4)(i)**—For Class I and II asbestos work the *competent person shall be trained* in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this **standard**; the identification of asbestos; *removal procedures*, where appropriate; and *other practices for reducing the hazard*. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of **EPA’s Model Accredited Plan (40 CFR part 763, subpart E, Appendix C)**, such as a course conducted by an EPA-approved or state-approved training provider, *certified* by EPA or a state, or a course equivalent in stringency, content, and length.

**1926.1101(o)(4)(ii)**—For Class III and IV asbestos work, the *competent person shall be trained* in aspects of asbestos handling appropriate for the nature of the work, to *include procedures* for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this **standard**, and the identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content, and length. *Competent persons for Class III and IV work, may also be trained pursuant to the requirements of paragraph (o)(4)(i) [Competent Person] of this section.*

## Inspections and Tests

**1926.1101(g)(5)(i)(B)(1)**—*Before beginning work within the enclosure and at the beginning of each shift, the NPE [negative pressure enclosure] shall be inspected for breaches and smoke-tested for leaks, and any leaks sealed.*

**1926.1101(g)(11)(i)**—*Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt corrective measures to eliminate such hazards, shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.*

**1926.1101(i)(4)(i)**—*The competent person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work.*

**1926.1101(k)(5)(ii)**—*An employer or owner may demonstrate that PACM does not contain more than 1 percent asbestos by the following:*

**1926.1101(k)(5)(ii)(A)**—*Having a completed inspection conducted pursuant to the requirements of AHERA (40 CFR Part 763, subpart E) which demonstrates that the material is not ACM; or*

**1926.1101(k)(5)(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**.*

**1926.1101(o)(2)**—*Required inspections by the competent person. Section 1926.20(b)(2) [General Safety and Health Provisions for Construction] which requires **health and safety prevention programs** to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.*

**1926.1101(o)(3)**—*Additional inspections. In addition, the competent person shall make frequent and regular inspections of the job sites, in order to perform the duties set out below in paragraph (o)(3)(i) and (ii) [Additional Inspections] of this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and at any time at employee request. For Class II, III, and IV jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.*

## Recordkeeping

**1926.1101(f)(2)(ii)**—*Basis of Initial Exposure Assessment: Unless a negative exposure assessment has been made pursuant to paragraph (f)(2)(iii) [Exposure Assessments and Monitoring] of this section, the initial exposure assessment shall, if feasible, be based on monitoring conducted pursuant to paragraph (f)(1)(iii) [Exposure Assessments and Monitoring] of this section. The assessment shall take into consideration both the **monitoring results** and all observations, information or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, until the employer conducts exposure monitoring and **documents** that employees on that job will not be exposed in excess of the PELs, or otherwise makes a negative exposure assessment pursuant to paragraph (f)(2)(iii) [Exposure Assessments and Monitoring] of this section, the employer shall presume that employees are exposed in excess of the TWA and excursion limit.*

**1926.1101(f)(2)(iii)**—*Negative Exposure Assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the **standard**, the employer may demonstrate that employee exposures will be below the PELs by **data** which conform to specific criteria. [Reference paragraph (f)(2)(iii) for specific information.]*



**1926.1101(f)(5)**—Employee notification of **monitoring results**. The employer *must, as soon as possible but no later than 5 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.

**1926.1101(g)(6)(ii)**—A **certified industrial hygienist or licensed professional engineer** who is also qualified as a project designer as defined in paragraph (b) [Definitions] of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall **certify in writing** that the **planned control method** is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the **planned control method** will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (g)(4)(ii) (B) [Class I Requirements] of this section.

**1926.1101(g)(8)(vi)(B)**—A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall **certify in writing**, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this **standard**. The **evaluation** shall include and be based on **data** representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and *by employees whose training and experience are equivalent to employees who are to perform the current job*.

**1926.1101(k)(2)(ii)**—Building and/or facility owners shall notify the following persons of the presence, location and quantity of ACM [asbestos-containing material] or PACM, at the work sites in their buildings and facilities. **Notification** either *shall be in writing, or shall consist of a personal communication* between the owner and the person to whom **notification** must be given or their authorized representatives:

**1926.1101(k)(10)(i)**—The employer shall make readily **available** to affected employees without cost, **written materials** relating to the **employee training program**, including a **copy** of this **regulation**.

**1926.1101(k)(10)(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**.

**1926.1101(m)(3)**—**Information** provided to the **physician**. The employer shall provide specific **information** to the examining **physician**. [Reference paragraph (m)(3) for specific information.]

**1926.1101(m)(4)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination. [Reference paragraph (m)(4)(i) for specific information.]

**1926.1101(m)(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 asbestos.

**1926.1101(m)(4)(iii)**—The employer shall provide a **copy** of the **physician's written opinion** to the affected employee within 30 days from its **receipt**.

**1926.1101(n)(1)(i)**—Where the employer has relied on **objective data** that *demonstrates* that products made from or containing asbestos or the activity involving such products or material are not capable of releasing fibers of asbestos in concentrations at or above the permissible exposure limit and/or excursion limit under the expected conditions of processing, use, or handling to satisfy the requirements of paragraph (f) [Exposure Assessments and Monitoring], the employer shall establish and **maintain** an accurate **record** of **objective data** reasonably relied upon in support of the exemption.

**1926.1101(n)(1)(ii)**—The **record** shall include specific **information**. [Reference paragraph (n)(4)(ii) for specific information.]

**1926.1101(n)(1)(iii)**—The employer shall **maintain** this **record** for the duration of the employer's reliance upon such **objective data**.



**1926.1101(n)(2)(i)**—The employer *shall keep an accurate **record** of all **measurements*** taken to monitor employee exposure to asbestos as prescribed in *paragraph (f) [Exposure Assessments and Monitoring]* of this section. Note: The employer may utilize the services of *competent organizations* such as industry trade associations and employee associations to ***maintain the records*** required by this section. *[Reference paragraph (n)(2)(ii) for specific information.]*

**1926.1101(n)(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].*

**1926.1101(n)(3)(i)**—The employer *shall establish and **maintain** an accurate **record*** for each employee subject to medical surveillance by *paragraph (m)* of this section, in accordance with 29 CFR 1910.1020—*Access to Employee Exposure and Medical Records*. *[Reference paragraph (n)(3)(ii) for specific information.]*

**1926.1101(n)(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].*

**1926.1101(n)(4)**—***Training records***. The employer *shall **maintain** all **employee training records** for one (1) year beyond the last date of employment by that employer.*

**1926.1101(n)(5)**—***Data to Rebut PACM***. Where the building owner and employer have relied on data to demonstrate that PACM is not asbestos-containing, *such **data** shall be **maintained** for as long as they are relied upon to rebut the presumption.*

**1926.1101(n)(6)**—***Records of required notifications***. Where the building owner has communicated and received information concerning the identification, location and quantity of ACM and PACM, ***written records** of such notifications and their content shall be **maintained** by the building owner for the duration of ownership and shall be transferred to successive owners of such buildings/facilities.*

## **Certification**

**1926.1101(g)(6)(ii)**—A ***certified industrial hygienist or licensed professional engineer*** who is also qualified as a project designer as defined in *paragraph (b) [Definitions]* of this section, *shall evaluate the work area, the projected work practices and the engineering controls and shall **certify in writing** that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the **planned control method** will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in *paragraph (g) (4)(ii)(B) [Class I Requirements]* of this section.*

**1926.1101(g)(8)(vi)(B)**—A *competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall **certify in writing**, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this **standard**. The **evaluation** shall include and be based on **data** representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.*

## **Training and Communications**

**1926.1101(d)(1)**—*On multi-employer worksites, an employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the employer's work with asbestos and/or PACM [presumed asbestos containing material], of the existence of and requirements pertaining to regulated areas, and the measures taken to ensure that employees of such other employers are not exposed to asbestos.*

**1926.1101(f)(5)**—***Employee notification of monitoring results***. The employer *must, as soon as possible but no later than 5 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.*

**1926.1101(g)(8)(vi)(B)**—*A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall **certify in writing**, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this **standard**. The **evaluation** shall include and be based on **data** representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, and by employees whose training and experience are equivalent to employees who are to perform the current job.*

**1926.1101(g)(10)**—*Class IV asbestos work. Class IV asbestos jobs shall be conducted by employees trained pursuant to the **asbestos awareness training program** set out in paragraph (k)(9) [Employee Information and Training] of this section. In addition, all Class IV jobs shall be conducted in conformity with the requirements set out in paragraph (g)(1) [Methods of Compliance] of this section, mandating wet methods, HEPA vacuums, and prompt clean up of debris containing ACM or PACM.*

**1926.1101(g)(11)(ii)**—*All employees performing work covered by this paragraph (g)(11) [Alternative Methods of Compliance for Installation, Removal, Repair, and Maintenance of Certain Roofing and Pipeline Coating Materials] shall be trained in a **training program** that meets the requirements of paragraph (k)(9)(viii) [Employee Information and Training] of this section.*

**1926.1101(k)(2)(ii)**—*Building and/or facility owners shall notify the following persons of the presence, location and quantity of ACM [asbestos-containing material] or PACM, at the work sites in their buildings and facilities. **Notification** either shall be in **writing**, or shall consist of a personal communication between the owner and the person to whom **notification** must be given or their authorized representatives:*

**1926.1101(k)(3)(ii)**—*Before work under this **standard** is performed employers of employees who will perform such work shall inform the following persons of the location and quantity of ACM and/or PACM present in the area and the precautions to be taken to insure that airborne asbestos is confined to the area.*

**1926.1101(k)(3)(iii)**—*Within 10 days of the completion of such work, the employer whose employees have performed work subject to this **standard**, shall inform the building/facility owner and employers of employees who will be working in the area of the current location and quantity of PACM and/or ACM remaining in the area and **final monitoring results**, if any.*

**1926.1101(k)(4)**—*In addition to the above requirements, all employers who discover ACM and/or PACM on a worksite shall convey **information** concerning the presence, location and quantity of such newly discovered ACM and/or PACM to the owner and to other employers of employees working at the work site, within 24 hours of the discovery.*

**1926.1101(k)(6)**—*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**.*

**1926.1101(k)(7)(iii)**—*The employer shall ensure that employees working in and contiguous to regulated areas comprehend the **warning signs** required to be **posted** by paragraph (k)(7)(i) [Signs] of this section. Means to ensure employee comprehension may include the use of **foreign languages, pictographs and graphics**.*

**1926.1101(k)(8)(vii)**—*When a building owner or employer identifies previously installed PACM and/or ACM, **labels or signs** shall be **affixed or posted** so that employees will be notified of what materials contain PACM and/or ACM. 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 (k)(6) [Communication of Hazards] of this section may be **posted** in lieu of **labels** so long as they contain **information** required for **labeling**. The employer shall ensure, to the extent feasible, that employees who come in contact with these **signs or labels** can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, **pictographs, graphics, and awareness training**.*

**1926.1101(k)(9)(i)**—The employer *shall train each employee* who is likely to be exposed in excess of a PEL, and each employee who performs Class I through IV asbestos operations, in accordance with the requirements of this section. Such *training shall be conducted* at no cost to the employee. The employer *shall institute a **training program** and ensure employee participation in the **program***. [Reference paragraph (k)(9)(iv) for specific information.]

**1926.1101(k)(9)(ii)**—Training shall be provided prior to or at the time of initial assignment and at least annually thereafter.

**1926.1101(k)(9)(v)**—Training for Class III employees shall be consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). Such a course *shall also include “hands-on” training and shall take at least 16 hours*. **Exception:** For Class III operations for which the *competent person* determines that the EPA curriculum does not adequately cover the training needed to perform that activity, training shall include as a minimum all the elements included in paragraph (k)(9)(viii) [Employee Information and Training] of this section and in addition, the *specific work practices and engineering controls* set forth in paragraph (g) [Methods of Compliance] of this section which specifically relate to that activity, and shall include “hands-on” training in the work practices applicable to each category of material that the employee disturbs.

**1926.1101(k)(9)(viii)**—The **training program** shall be conducted in a manner that the employee is able to understand. In addition to the content required by provisions in paragraphs (k)(9)(iii) through (vi) [Employee Information and Training] of this section, the employer shall ensure that each such employee is informed of additional information. [Reference paragraph (k)(9)(viii) for specific information.]

**1926.1101(k)(10)(iii)**—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 J [Smoking Cessation Program Information for Asbestos] to this section.

**1926.1101(m)(1)(ii)(B)**—Persons other than such **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.

**1926.1101(m)(3)**—**Information provided to the physician**. The employer shall provide specific **information** to the examining **physician**. [Reference paragraph (m)(3) for specific information.]

**1926.1101(m)(4)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination. [Reference paragraph (m)(4)(i) for specific information.]

**1926.1101(m)(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 asbestos.

**1926.1101(m)(4)(iii)**—The employer shall provide a **copy** of the **physician’s written opinion** to the affected employee within 30 days from its **receipt**.

**1926.1101(o)(4)(i)**—For Class I and II asbestos work the *competent person shall be trained* in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this **standard**; the identification of asbestos; *removal procedures*, where appropriate; and other practices for reducing the hazard. Such *training shall be obtained in a comprehensive course* for supervisors that meets the criteria of **EPA’s Model Accredited Plan** (40 CFR part 763, subpart E, Appendix C), such as a course conducted by an **EPA-approved or state-approved** training provider, **certified** by EPA or a state, or a course equivalent in stringency, content, and length.

**1926.1101(o)(4)(ii)**—For Class III and IV asbestos work, the *competent person shall be trained* in aspects of asbestos handling appropriate for the nature of the work, to *include procedures* for setting up glove bags and mini-enclosures, *practices for reducing asbestos exposures*, use of wet methods, the contents of this **standard**, and the identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content, and length. *Competent persons for Class III and IV work, may also be trained pursuant to the requirements of paragraph (o)(4)(i) [Competent Person] of this section.*



## Exposure Monitoring

**1926.1101(f)(1)(i)**—Each employer who has a workplace or work operation where exposure monitoring is required under this section *shall perform monitoring* to determine accurately the airborne concentrations of asbestos to which employees may be exposed.

**1926.1101(f)(2)(i)**—Each employer who has a workplace or work operation covered by this **standard** shall ensure that a “*competent person*” *conducts an exposure assessment immediately before or at the initiation of the operation* to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure **data** or the lack of a “negative exposure assessment,” and to provide **information** necessary to assure that all control systems planned are appropriate for that operation and will work properly.

**1926.1101(f)(2)(ii)**—*Basis of Initial Exposure Assessment:* Unless a negative exposure assessment has been made pursuant to paragraph (f)(2)(iii) [Exposure Assessments and Monitoring] of this section, the initial exposure assessment shall, if feasible, be based on monitoring conducted pursuant to paragraph (f)(1)(iii) [Exposure Assessments and Monitoring] of this section. The assessment shall take into consideration both, the **monitoring results** and all observations, **information** or calculations which indicate employee exposure to asbestos, including any previous monitoring conducted in the workplace, or of the operations of the employer which indicate the levels of airborne asbestos likely to be encountered on the job. For Class I asbestos work, *until the employer conducts exposure monitoring and documents that employees on that job will not be exposed* in excess of the PELs, or otherwise makes a negative exposure assessment pursuant to paragraph (f)(2)(iii) [Exposure Assessments and Monitoring] of this section, the employer shall presume that employees are exposed in excess of the TWA and excursion limit.

**1926.1101(f)(2)(iii)**—Negative Exposure Assessment: For any one specific asbestos job which will be performed by employees who have been *trained in compliance* with the **standard**, the employer may demonstrate that employee exposures *will be below the PELs by data which conform to specific criteria.* [Reference paragraph (f)(2)(iii) for specific information.]

**1926.1101(f)(3)(i)**—*Class I and II operations.* The employer *shall conduct daily monitoring* that is representative of the exposure of each employee who is assigned to work within a regulated area who is performing Class I or II work, unless the employer pursuant to (f)(2)(iii) [Exposure Assessments and Monitoring] of this section, has made a negative exposure assessment for the entire operation.

**1926.1101(f)(3)(ii)**—All operations under the **standard** other than Class I and II operations. The employer *shall conduct periodic monitoring of all work where exposures are expected to exceed a PEL, at intervals sufficient to document the validity* of the exposure prediction.

**1926.1101(f)(4)(ii)**—*Additional monitoring.* Notwithstanding the provisions of paragraph (f)(2) [Initial Exposure Assessment] and (3) [Periodic Monitoring], and (f)(4) [Termination of Monitoring] of this section, the employer *shall institute the exposure monitoring required under paragraph (f)(3) [Periodic Monitoring]* of this section whenever there has been a change in process, control equipment, personnel or work practices that may result in new or additional exposures above the 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 permissible exposure limit and/or excursion limit. Such additional monitoring is required regardless of whether a “negative exposure assessment” was previously produced for a specific job.

**1926.1101(f)(5)**—*Employee notification of monitoring results.* The employer *must, as soon as possible but no later than 5 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

## Medical Surveillance

**1926.1101(m)(1)(i)(A)**—The employer *shall institute a medical surveillance program* for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit. For purposes of this paragraph, any day in which a worker engages in Class II or Class III operations or a combination thereof on intact material for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in this **standard**, shall not be counted.

**1926.1101(m)(2)(i)**—Frequency. The employer *shall make available medical examinations and consultations* to each employee covered under *paragraph (m)(1)(i) [Medical Surveillance]* of this section *on the following schedules*:

**1926.1101(m)(2)(i)(A)**—*Prior to assignment* of the employee to an area where negative-pressure respirators are worn.

**1926.1101(m)(2)(i)(B)**—When the employee is assigned to an area where exposure to asbestos may be at or above the permissible exposure limit for 30 or more days per year, or engage in Class I, II, or III work for a combined total of 30 or more days per year, *a medical examination must be given within 10 working days following the thirtieth day of exposure.*

**1926.1101(m)(2)(i)(C)**—*And at least annually thereafter.*

**1926.1101(m)(2)(i)(D)**—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 specified by the physician.* [Reference paragraph (m)(2)(ii) for specific information.]

**1926.1101(m)(2)(ii)(D)**—*Any other examinations or tests deemed necessary* by the examining **physician**.

**1926.1101(m)(3)**—**Information provided to the physician.** The employer *shall provide specific information to the examining physician.* [Reference paragraph (m)(3) for specific information.]

**1926.1101(m)(4)(i)**—The employer *shall obtain a written opinion from the examining physician.* This **written opinion** *shall contain the results of the medical examination.* [Reference paragraph (m)(4)(i) for specific information.]

**1926.1101(m)(4)(iii)**—The employer *shall provide a copy of the physician's written opinion to the affected employee within 30 days from its receipt.*

### **Competent Person**

**1926.1101(e)(6)**—**Competent Persons.** The employer *shall ensure that all asbestos work performed within regulated areas is supervised by a competent person*, as defined in *paragraph (b) [Definitions]* of this section. The *duties of the competent person* are set out in *paragraph (o) [Competent Person]* of this section.

**1926.1101(f)(2)(i)**—Each employer who has a workplace or work operation covered by this **standard** shall ensure that a “competent person” *conducts an exposure assessment immediately before or at the initiation of the operation* to ascertain expected exposures during that operation or workplace. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a “negative exposure assessment,” and to provide information necessary to assure that all control systems planned are appropriate for that operation and will work properly.

**1926.1101(g)(4)(i)**—All Class I work, including the installation and operation of the control system *shall be supervised by a competent person as defined in paragraph (b) [Definitions]* of this section.

**1926.1101(g)(6)(ii)(A)**—Where the TSI or surfacing material to be removed is 25 linear or 10 square feet or less, the *evaluation required in paragraph (g)(6) [Alternative Control Methods for Class I Work]* of this section *may be performed by a “competent person”*, and may omit consideration of perimeter or clearance monitoring otherwise required.

**1926.1101(g)(7)(i)**—*All Class II work shall be supervised by a competent person as defined in paragraph (b) [Definitions]* of this section.

**1926.1101(g)(8)(ii)(C)**—Cutting machines *shall be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.*



**1926.1101(g)(8)(vi)(B)**—A *competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall **certify in writing***, that the different or modified controls are adequate to reduce direct and indirect employee exposure to below the PELs under all expected conditions of use and that the method meets the requirements of this **standard**. The evaluation shall include and be based on **data** representing employee exposure during the use of such method under conditions which closely resemble the conditions under which the method is to be used for the current job, *and by employees whose training and experience are equivalent to employees who are to perform the current job.*

**1926.1101(g)(11)(i)**—*Before work begins and as needed during the job, a competent person who is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, and who has the authority to take prompt **corrective measures** to eliminate such hazards, shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.*

**1926.1101(i)(4)(i)**—The *competent person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work.*

**1926.1101(o)(1)**—General. On all construction worksites covered by this **standard**, the employer *shall designate a competent person, having the **qualifications and authorities** for ensuring worker safety and health required by Subpart C, General Safety and Health Provisions for Construction (29 CFR 1926.20 through 1926.32).*

**1926.1101(o)(2)**—*Required inspections by the competent person. Section 1926.20(b)(2) [General Safety and Health Provisions for Construction] which requires **health and safety prevention programs** to provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons, is incorporated.*

**1926.1101(o)(3)**—*Additional Inspections. In addition, the competent person shall make frequent and regular inspections of the job sites, in order to perform the duties set out below in paragraph (o)(3)(i) and (ii) [Additional Inspections] of this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and at any time at employee request. For Class II, III, and IV jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.*

**1926.1101(o)(3)(i)**—On all worksites where employees are engaged in Class I or II asbestos work, the *competent person designated in accordance with paragraph (e)(6) [Competent Persons] of this section shall perform or supervise specific duties, as applicable: [Reference paragraph (o)(3)(i) for specific information.]*

**1926.1101(o)(4)(i)**—For Class I and II asbestos work the *competent person shall be trained* in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this **standard**; the identification of asbestos; *removal procedures*, where appropriate; and *other practices* for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of **EPA's Model Accredited Plan** (40 CFR part 763, subpart E, Appendix C), such as a course conducted by an **EPA-approved or state-approved** training provider, **certified** by EPA or a state, or a course equivalent in stringency, content, and length.

**1926.1101(o)(4)(ii)**—For Class III and IV asbestos work, the *competent person shall be trained* in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, *practices for reducing asbestos exposures*, use of wet methods, the contents of this **standard**, and the identification of asbestos. Such *training shall include successful completion of a course* that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content, and length. Competent persons for Class III and IV work, may also be trained pursuant to the requirements of paragraph (o)(4)(i) [Competent Person] of this section.

## **Qualified Person**

**1926.1101(e)(3)**—Access. *Access to regulated areas shall be limited to authorized persons and to persons authorized by the Act or regulations issued pursuant thereto.*

**1926.1101(g)(6)(ii)**—A *certified industrial hygienist or licensed professional engineer* who is also qualified as a project designer as defined in paragraph (b) [Definitions] of this section, shall evaluate the work area, the projected work practices and the engineering controls and shall **certify in writing** that the planned control method is adequate to reduce direct and indirect employee exposure to below the PELs under worst-case conditions of use, and that the planned control method will prevent asbestos contamination outside the regulated area, as measured by clearance sampling which meets the requirements of EPA's Asbestos in Schools rule issued under AHERA, or perimeter monitoring which meets the criteria in paragraph (g) (4)(ii)(B) [Class I Requirements] of this section.

**1926.1101(k)(5)(ii)**—An employer or owner *may demonstrate* that PACM does not contain more than 1 percent asbestos by the following:

**1926.1101(k)(5)(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**.*

**1926.1101(k)(5)(iii)**—The employer and/or building owner may demonstrate that flooring material including associated mastic and backing does not contain asbestos, *by a determination of an industrial hygienist* based upon recognized analytical techniques showing that the material is not ACM.

**1926.1101(m)(3)**—**Information** provided to the **physician**. The employer shall provide specific **information** to the examining **physician**. [Reference paragraph (m)(3) for specific information.]

**1926.1101(m)(4)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the results of the medical examination. [Reference paragraph (m)(4)(i) for specific information.]

**1926.1101(m)(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 asbestos.

**1926.1101(m)(4)(iii)**—The employer shall provide a **copy** of the **physician's written opinion** to the affected employee within 30 days from its **receipt**.

## **Signs, Markings and Tags**

**1926.1101(e)(2)**—**Demarcation**. The regulated area shall be **demarcated** in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. Where critical barriers or negative pressure enclosures are used, they may **demarcate** the regulated area. **Signs** shall be provided and displayed pursuant to the requirements of paragraph (k)(7) [Signs] of this section.

**1926.1101(k)(6)**—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.*

**1926.1101(k)(7)(i)**—**Warning signs** that **demarcate** the regulated area shall be provided and displayed at each location where a regulated area is required to be established by paragraph (e) [Regulated Areas] of this section. **Signs** shall be **posted** at such a distance from such a location that an employee may read the **signs** and take necessary protective steps before entering the area **marked** by the **signs**. [Reference paragraph (k)(7)(ii) for specific information.]

**1926.1101(k)(7)(iii)**—The employer shall ensure that employees working in and contiguous to regulated areas *comprehend the warning signs required to be posted by paragraph (k)(7)(i) [Signs]* of this section. *Means to ensure employee comprehension may include the use of foreign languages, pictographs and graphics.*

**1926.1101(k)(8)(vii)**—When a building owner or employer identifies previously installed PACM and/or ACM, *labels or signs shall be affixed or posted* so that employees will be notified of what materials contain PACM and/or ACM. 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 (k)(6) [Communication of Hazards] of this section may be posted in lieu of labels so long as they contain information required for labeling.* The employer shall ensure, *to the extent feasible, that employees who come in contact with these signs or labels can comprehend them.* Means to ensure employee comprehension may include the use of foreign languages, *pictographs, graphics, and awareness training.*

### **1926.1103—13 CARCINOGENS (4-NITROBIPHENYL, ETC.)**

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

### **1910.1003—13 CARCINOGENS (4-NITROBIPHENYL, ETC.)**

**Scope/Application:** *This section applies to any area in which the 13 carcinogens addressed by this section are manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3) and (4) of this section. The 13 carcinogens include the following: 4-Nitrobiphenyl (1926.1003), alpha-Naphthylamine (1926.1004), methyl chloromethyl ether (1926.1006), 3,3'-Dichlorobenzidine (and its salts) (1926.1007), bis-Chloromethyl ether (1926.1008), beta-Naphthylamine (1926.1009), Benzidine (1926.1010), 4-Aminodiphenyl (1926.1011), Ethyleneimine (1926.1012), beta-Propiolactone (1926.1013), 2-Acetylaminofluorene (1926.1014), 4-Dimethylaminoazo-benzene (1926.1015), and N-Nitrosodimethylamine (1926.1016) and are identical to the requirements in 1910.1003.*

**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, Plans and Procedures—respirator program, medical surveillance program, emergency procedures, hazard communication program
- Recordkeeping—records
- Training and Communications—initial and annual training
- Medical Surveillance—program, initial, annual, and emergency examinations, written opinion
- Qualified Person—physician
- Signs, Markings and Tags—posted signs, labels, posted emergency procedures

#### **Programs, Plans and Procedures**

**1910.1003(d)(1)—Respiratory program.** The employer *must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b), (c), (d) (except (d)(1)(iii) and (iv), and (d)(3)), and (e) through (m), which covers each employee required by this section to use a respirator.*

**1910.1003(e)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for each carcinogen listed in paragraph (e)(1)(iv) [List of Carcinogens] of this section.*

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (e)(4) [Training and Indoctrination]* of this section.

**1910.1003(e)(2)(v)**—Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

**1910.1003(e)(4)(i)**—Each employee prior to being authorized to enter a regulated area, shall receive a **training and indoctrination program**. [Reference paragraph (e) for specific information.]

**1910.1003(e)(4)(ii)**—Specific **emergency procedures** shall be prescribed, and **posted**, and employees shall be familiarized with their terms, and rehearsed in their application.

**1910.1003(g)**—*Medical surveillance*. At no cost to the employee, a **program of medical surveillance** shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

### Recordkeeping

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (e)(4) [Training and Indoctrination]* of this section.

**1910.1003(g)(2)(i)**—Employers of employees examined pursuant to this paragraph shall cause to be **maintained** complete and accurate **records** of all such medical examinations. **Records** shall be **maintained** for the duration of the employee's employment.

**1910.1003(g)(2)(ii)**—**Records** required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020 (a) through (e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These **records** shall also be provided upon request to the Director.

**1910.1003(g)(2)(iii)**—Any **physician** who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]

### Training and Communications

**1910.1003(e)(1)(iii)**—Employers shall include the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in *paragraph (e)(1)(iv) [List of Carcinogens]* and to **safety data sheets**, and is trained in accordance with the requirements of HCS and *paragraph (e)(4) [Training and Indoctrination]* of this section.

**1910.1003(e)(2)(v)**—Appropriate **signs and instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

**1910.1003(e)(4)(i)**—Each employee prior to being authorized to enter a regulated area, shall receive a **training and indoctrination program** [Reference paragraph (e) for specific information.]

**1910.1003(e)(4)(i)(I)**—A review of this section at the employee's first **training and indoctrination program** and annually thereafter.

**1910.1003(g)(2)(iii)**—Any **physician** who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]



## Medical Surveillance

**1910.1003(d)(2)(iii)**—*Special medical surveillance by a **physician** shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency.*

**1910.1003(g)**—*Medical surveillance. At no cost to the employee, a **program of medical surveillance** shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.*

**1910.1003(g)(1)(i)**—*Before an employee is assigned to enter a regulated area, a preassignment physical examination by a **physician** shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.*

**1910.1003(g)(1)(ii)**—*Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.*

**1910.1003(g)(2)(iii)**—*Any **physician** who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]*

## Qualified Person

**1910.1003(d)(2)(iii)**—*Special medical surveillance by a **physician** shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency.*

**1910.1003(g)**—*Medical surveillance. At no cost to the employee, a **program of medical surveillance** shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.*

**1910.1003(g)(1)(i)**—*Before an employee is assigned to enter a regulated area, a preassignment physical examination by a **physician** shall be provided. The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.*

**1910.1003(g)(1)(ii)**—*Authorized employees shall be provided periodic physical examinations, not less often than annually, following the preassignment examination.*

**1910.1003(g)(2)(iii)**—*Any **physician** who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Reference paragraph (g) for specific information.]*

## Signs, Markings and Tags

**1910.1003(e)(1)(iii)**—*Employers shall include the carcinogens listed in paragraph (e)(1)(iv) [List of Carcinogens] of this section in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels on containers** of the carcinogens listed in paragraph (e)(1)(iv) [List of Carcinogens] and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (e)(4) [Training and Indoctrination] of this section.*

**1910.1003(e)(2)(i)**—*The employer shall post entrances to regulated areas with **signs** bearing a legend. [Reference paragraph (e)(2)(i) for specific information.]*

**1910.1003(e)(2)(ii)**—*The employer shall **post signs** at entrances to regulated areas containing operations covered in paragraph (c)(5) [Maintenance and Decontamination Activities] of this section.*

**1910.1003(e)(2)(v)**—*Appropriate **signs** and **instructions** shall be **posted** at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.*

**1910.1003(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.*



#### 1926.1104—ALPHA-NAPHTHYLAMINE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at 29 CFR 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1106—METHYL CHLOROMETHYL ETHER

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1107—3,3'-DICHLOROBENZIDINE (AND ITS SALTS)

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1108—BIS-CHLOROMETHYL ETHER

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1109—BETA-NAPHTHYLAMINE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1110—BENZIDINE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1111—4-AMINODIPHENYL

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1112—ETHYLENEIMINE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1113—BETA-PROPIOLACTONE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1114—2-ACETYLAMINOFLUORENE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

#### 1926.1115—4-DIMETHYLAMINOAZOBENZENE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

## 1926.1116—N-NITROSODIMETHYLAMINE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.*

## 1926.1117—VINYL CHLORIDE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1017 [Vinyl Chloride] of this chapter.*

## 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, Plans and Procedures—exposure monitoring program, respirator program, emergency plan, medical surveillance program, work practice controls, annual updates, hazard communication program
- Recordkeeping—retention requirements, medical records, safety data sheets
- Training and Communications—initially, annually
- Exposure Monitoring—program, monitoring quarterly, measurements, results posted
- Medical Surveillance—program, examinations, written opinions
- Qualified Person—physician
- Signs, Markings and Tags—labels, posting signs

### Programs, Plans and Procedures

**1910.1017(d)(1)**—A **program of initial monitoring and measurement** shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

**1910.1017(d)(2)**—Where a determination conducted under *paragraph (d)(1) [Monitoring]* of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a **program for determining exposures for each such employee** shall be established. Such a **program**:

**1910.1017(d)(2)(i)**—Must be repeated at least quarterly for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

**1910.1017(d)(2)(ii)**—*Must be repeated not less than every 6 months* for any employee exposed without regard to the use of respirators, at or above the action level.

**1910.1017(f)(2)**—Wherever *feasible engineering and work practice controls which can be instituted immediately* are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with *paragraph (g) [Respiratory Protection]* of this section. A **program** shall be *established and implemented* to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of *engineering and work practice controls*, as soon as feasible.

**1910.1017(f)(3)**—Such **plans** must be updated at least annually.

**1910.1017(g)(2)—Respirator program.** *The employer must implement a respiratory protection program in accordance 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (f) through (m) which covers each employee required by this section to use a respirator.*

**1910.1017(i)**—Emergency situations. A **written operational plan** for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1017(j)**—*Training.* Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a **program** relating to the hazards of vinyl chloride and precautions for its safe use. [Reference paragraph (j) for specific information.]

**1910.1017(j)(1)(ix)**—A review of this standard at the employee's first **training and indoctrination program**, and annually thereafter.

**1910.1017(k)**—*Medical surveillance.* A **program of medical surveillance** shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The **program** shall provide each such employee with an opportunity for *examinations and tests* in accordance with this paragraph. All medical examinations and *procedures* shall be performed by or under the supervision of a **licensed physician**, and shall be provided without cost to the employee.

**1910.1017(l)(1)(i)**—Chemical manufacturers, importers, distributors and employers shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for vinyl chloride and polyvinyl chloride.

**1910.1017(l)(1)(iii)**—Employers shall include vinyl chloride in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of vinyl chloride and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j) [Training] of this section.

**1910.1017(n)**—*Employee notification of monitoring results.* The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results and the steps being taken to reduce exposures within the permissible exposure limit either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

## Recordkeeping

**1910.1017(i)**—Emergency situations. A **written operational plan** for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1017(l)(1)(iii)**—Employers shall include vinyl chloride in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of vinyl chloride and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j) [Training] of this section.

**1910.1017(m)(2)**—**Records of required monitoring and measuring and medical records** shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These **records** shall be provided upon request to the Director. **Authorized personnel rosters** shall also be provided upon request to the Assistant Secretary and the Director.

**1910.1017(m)(2)(i)(C)**—Be **maintained** for not less than 30 years.

**1910.1017(m)(2)(iii)**—**Medical records** shall be **maintained** for the duration of the employment of each employee plus 20 years, or 30 years, whichever is longer.

## Training and Communications

**1910.1017(j)**—*Training.* Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a **program** relating to the hazards of vinyl chloride and precautions for its safe use. [Reference paragraph (j) for specific information.]

**1910.1017(j)(1)(ix)**—A review of this standard at the employee's first **training and indoctrination program**, and annually thereafter.

**1910.1017(k)(4)**—A **statement** of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining **physician** promptly after any examination. A **copy** of the **physician's statement** shall be provided each employee. [Reference paragraph (k) for specific information.]

**1910.1017(n)**—Employee notification of monitoring **results**. The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** and the steps being taken to reduce exposures within the permissible exposure limit either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

### Exposure Monitoring

**1910.1017(d)(1)**—A **program of initial monitoring and measurement** shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

**1910.1017(d)(2)**—Where a determination conducted under paragraph (d)(1) [Monitoring] of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a **program** for determining exposures for each such employee shall be established. Such a **program**:

**1910.1017(d)(2)(i)**—Must be repeated at least quarterly for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.

**1910.1017(d)(2)(ii)**—Must be repeated not less than every 6 months for any employee exposed without regard to the use of respirators, at or above the action level.

**1910.1017(n)**—Employee notification of **monitoring results**. The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** and the steps being taken to reduce exposures within the permissible exposure limit either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

### Medical Surveillance

**1910.1017(k)**—Medical surveillance. A **program of medical surveillance** shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The **program** shall provide each such employee with an opportunity for **examinations and tests** in accordance with this paragraph. All medical examinations and **procedures** shall be performed by or under the supervision of a **licensed physician**, and shall be provided without cost to the employee.

**1910.1017(k)(2)**—Examinations must be provided in accordance with this paragraph at least annually.

**1910.1017(k)(2)(i)**—Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer.

**1910.1017(k)(2)(ii)**—Annually for all other employees.

**1910.1017(k)(3)**—Each employee exposed to an emergency shall be afforded appropriate medical surveillance.

**1910.1017(k)(4)**—A **statement** of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be **obtained** from the examining **physician** promptly after any examination. A **copy** of the **physician's statement** shall be provided each employee. [Reference paragraph (k) for specific information.]

**1910.1017(k)(7)**—If the examining **physician** determines that **alternative medical examinations** to those required by paragraph (k)(1) [Medical Surveillance] of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of paragraph (k)(1) [Medical Surveillance] of this section, if the employer obtains a **statement** from the examining **physician** setting forth the alternative examinations and the rationale for substitution. This **statement** shall be **available** upon request for examination and **copying** to authorized representatives of the Assistant Secretary and the Director.

## Qualified Person

**1910.1017(k)**—*Medical surveillance. A **program of medical surveillance** shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The **program** shall provide each such employee with an opportunity for **examinations and tests** in accordance with this paragraph. All medical examinations and **procedures** shall be performed by or under the **supervision of a licensed physician**, and shall be provided without cost to the employee.*

**1910.1017(k)(4)**—*A **statement** of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining **physician** promptly after any examination. A **copy of the physician's statement** shall be provided each employee.*

**1910.1017(k)(7)**—*If the examining **physician** determines that **alternative medical examinations to those required by paragraph (k)(1) [Medical Surveillance]** of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of **paragraph (k)(1) [Medical Surveillance]** of this section, if the employer obtains a **statement** from the examining **physician** setting forth the alternative examinations and the rationale for substitution. This **statement** shall be **available upon request for examination and copying** to authorized representatives of the Assistant Secretary and the Director.*

## Signs, Markings and Tags

**1910.1017(l)(1)(iii)**—*Employers shall include vinyl chloride in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has **access to labels on containers of vinyl chloride and to safety data sheets**, and is trained in accordance with the requirements of HCS and **paragraph [Training]** of this section.*

**1910.1017(l)(2)(i)**—*The employer shall **post** entrances to regulated areas with legible **signs** bearing a legend. [Reference paragraph (l)(2)(i) for specific information.]*

**1910.1017(l)(2)(ii)**—*The employer shall **post signs** at areas containing hazardous operations or where emergencies currently exist.*

**1910.1017(l)(3)(i)**—*In addition to the other requirements in this **paragraph (l) [Hazard Communication]**, the employer shall ensure that **labels for containers of polyvinyl chloride resin waste** from reactors or other waste contaminated with vinyl chloride are legible and include specific information. [Reference paragraph (l)(3)(i) for specific information.]*

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



## 1926.1118—INORGANIC ARSENIC

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at 29 CFR 1910.1018 [Inorganic Arsenic] of this chapter.*

## 1910.1018—INORGANIC ARSENIC

**Scope/Application:** *This section applies to all occupational exposures to inorganic arsenic except that this section does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.*

**Exception:** *This standard does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.*

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

**1910.1018(g)(1)(i)**—The employer *shall institute at the earliest possible time but not later than December 31, 1979, engineering and work practice controls* to reduce exposures to or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible.

**1910.1018(g)(2)(i)**—The employer *shall establish and implement a **program** to reduce exposures* to or below the permissible exposure limit by means of *engineering and work practice controls*.

**1910.1018(h)(2)(i)**—The employer *must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

**1910.1018(k)(4)**—A *written housekeeping and maintenance plan shall be kept which shall list appropriate frequencies for carrying out housekeeping operations, and for cleaning and maintaining dust collection equipment. The **plan** shall be **available** for inspection* by the Assistant Secretary.

**1910.1018(k)(5)**—Maintenance of equipment. *Periodic cleaning of dust collection and ventilation equipment and checks of their effectiveness shall be carried out to maintain the effectiveness of the system and a **notation kept** of the last check of effectiveness and cleaning or maintenance.*

**1910.1018(n)(1)(i)**—Employees covered. The employer *shall institute a **medical surveillance program**.*

**1910.1018(o)(1)(ii)**—The ***training program** shall be provided* by October 1, 1978, for employees covered by this provision, *at the time of initial assignment for those subsequently covered by this provision, and at least annually for other covered employees thereafter.*

**1910.1018(p)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for inorganic arsenic.*

**1910.1018(p)(1)(iii)**—Employers *shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.*

## Recordkeeping

**1910.1018(k)(4)**—A **written housekeeping and maintenance plan** shall be **kept** which shall list appropriate frequencies for carrying out housekeeping operations, and for cleaning and *maintaining* dust collection equipment. The **plan** shall be **available** for inspection by the Assistant Secretary.

**1910.1018(k)(5)**—Maintenance of equipment. *Periodic cleaning* of dust collection and ventilation equipment and checks of their effectiveness shall be carried out to *maintain* the effectiveness of the system and a **notation kept** of the last check of effectiveness and cleaning or maintenance.

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.

**1910.1018(q)(1)(i)**—The employer shall establish and **maintain** an accurate **record** of all monitoring required by paragraph (e) [Exposure Monitoring] of this section.

**1910.1018(q)(1)(iii)**—The employer shall **maintain** these **monitoring records** for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

**1910.1018(q)(2)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance as required by paragraph (n) [Medical Surveillance] of this section.

**1910.1018(q)(2)(iv)**—The employer shall **maintain** or assure that the **physician maintains** those **medical records** for at least 40 years, or for the duration of employment plus 20 years whichever is longer.

**1910.1018(q)(3)(i)**—The employer shall make **available** upon request all **records** required to be **maintained** by paragraph [Recordkeeping] of this section to the Assistant Secretary and the Director for examination and **copying**.

**1910.1018(q)(3)(ii)**—**Records** required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Employee Exposure and Medical Records].

## Training and Communications

**1910.1018(e)(5)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to affected employees.

**1910.1018(e)(5)(ii)**—Whenever the **results** indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall include in the **written notice a statement** that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

**1910.1018(n)(6)(iii)**—The employer shall provide a **copy** of the **written opinion** to the affected employee.

**1910.1018(o)(1)(i)**—The employer shall train each employee who is subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is the possibility of skin or eye irritation from inorganic arsenic, in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**. [Reference paragraph (o)(1) for specific information.]

**1910.1018(o)(1)(ii)**—The **training program** shall be provided by October 1, 1978, for employees covered by this provision, at the time of initial assignment for those subsequently covered by this provision, and at least annually for other covered employees thereafter.

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.

## Exposure Monitoring

**1910.1018(e)(2)**—*Initial monitoring.* Each employer who has a workplace or work operation covered by this standard *shall monitor each such workplace and work operation* to accurately determine the airborne concentration of inorganic arsenic to which employees may be exposed.

**1910.1018(e)(3)(ii)**—If the *initial monitoring*, required by this section, or subsequent monitoring reveals employee exposure to be above the permissible exposure limit, the employer *shall repeat monitoring at least quarterly*.

**1910.1018(e)(3)(iii)**—If the *initial monitoring*, required by this section, or subsequent monitoring reveals employee exposure to be above the action level and below the permissible exposure limit the employer *shall repeat monitoring at least every six months*.

**1910.1018(e)(3)(iv)**—The employer *shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven (7) days apart, are below the action level* at which time the employer may discontinue monitoring for that employee until such time as any of the events in *paragraph (e)(4) [Additional Monitoring]* of this section occur.

**1910.1018(e)(4)**—*Additional monitoring.* Whenever there has been a production, process, control or personal change which may result in new or additional exposure to inorganic arsenic, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to inorganic arsenic, *additional monitoring which complies with paragraph (e) [Exposure Monitoring] of this section shall be conducted*.

**1910.1018(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to affected employees.

**1910.1018(e)(5)(ii)**—Whenever the *results* indicate that the representative employee exposure exceeds the permissible exposure limit, the employer *shall include in the written notice a statement* that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

## Medical Surveillance

**1910.1018(n)(1)(i)**—Employees covered. The employer *shall institute a medical surveillance program*.

**1910.1018(n)(2)**—*Initial examinations.* By December 1, 1978, *for employees initially covered by the medical provisions of this section, or thereafter at the time of initial assignment* to an area where the employee is likely to be exposed over the action level at least 30 days per year, the employer *shall provide each affected employee an opportunity for a medical examination*.

**1910.1018(n)(3)(i)**—*Examinations must be provided* in accordance with this paragraph *at least annually*.

**1910.1018(n)(3)(ii)**—Whenever a covered employee has not taken the examinations specified in *paragraphs (n)(2)(i) and (n)(2)(ii) [Initial Examinations]* of this section *within six (6) months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment*.

**1910.1018(n)(5)**—*Information provided to the physician.* The employer *shall provide information to the examining physician*. [Reference paragraph (n)(5) for specific information.]

**1910.1018(n)(6)(i)**—The employer *shall obtain a written opinion from the examining physician*. [Reference paragraph (n)(6) for specific information.]

**1910.1018(n)(6)(iii)**—The employer *shall provide a copy of the written opinion* to the affected employee.

## Qualified Person

**1910.1018(n)(5)**—*Information provided to the physician.* The employer *shall provide information to the examining physician*.

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

## Signs, Markings and Tags

**1910.1018(j)(2)(vii)(A)**—The employer shall ensure that the containers of contaminated protective clothing and equipment in the workplace or which are to be removed from the *workplace* are **labeled** and that the **labels** include specific information. [Reference paragraph (j)(2)(vii)(A) for specific information.]

**1910.1018(p)(1)(iii)**—Employers shall include inorganic arsenic in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of inorganic arsenic and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (o) [Training Program] of this section.

**1910.1018(p)(2)(i)**—The employer shall **post signs** demarcating regulated areas bearing a **legend**. [Reference paragraph (p)(2)(i) for specific information.]

**1910.1018(p)(2)(iii)**—The employer shall ensure that **signs** required by this paragraph (p) [Hazard Communication] are illuminated and cleaned as necessary so that the legend is readily visible.

## 1926.1126—CHROMIUM (VI)

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

**Exception:** Exposures that occur in the application of pesticides regulated by the Environmental Protection Agency or another Federal government agency (e.g., the treatment of wood with preservatives); exposures to portland cement; or where the employer has objective data demonstrating that a material containing chromium or a specific process, operation, or activity involving chromium cannot release dusts, fumes, or mists of chromium (VI) in concentrations at or above 0.5 µg/m<sup>3</sup> as an 8-hour time-weighted average (TWA) under any expected conditions of use.

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—work controls, respirator program
- Recordkeeping—retention requirements
- Training and Communications—employee training, inform launderer
- Exposure Monitoring—initial, 3 months, and 6 months monitoring, written results, posted
- Medical Surveillance—initial and annual examinations, emergency and termination examinations
- Qualified Person—physician
- Signs, Markings and Tags—labels

### Programs, Plans and Procedures

**1926.1126(e)(1)(i)**—Except as permitted in paragraph (e)(1)(ii) [Engineering and Work Practice Controls] of this section, the employer shall use *engineering and work practice controls* to reduce and maintain employee exposure to chromium (VI) to or below the PEL unless the employer can demonstrate that such controls are not feasible. Wherever feasible *engineering and work practice controls* are not sufficient to reduce employee exposure to or below the PEL, the employer shall use them to reduce employee exposure to the lowest levels achievable, and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (f) [Respiratory Protection] of this section.

**1926.1126(f)(2)—Respiratory protection program.** Where respirator use is required by this section, the employer shall institute a **respiratory protection program** in accordance with 29 CFR 1910.134 [Respiratory Protection], which covers each employee required to use a respirator.

### Recordkeeping

**1926.1126(i)(2)(iii)**—Within 30 days after a **PLHCP's written medical opinion** recommends an additional examination.



**1926.1126(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**. [Reference paragraph (i)(4) for specific information.]

**1926.1126(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, which contains specific information. [Reference paragraph (i)(5) for specific information.]

**1926.1126(k)(1)(i)**—The employer shall **maintain** an accurate **record** of all air monitoring conducted to comply with the requirements of this section.

**1926.1126(k)(1)(ii)**—This **air monitoring record** shall include specific **information**. [Reference paragraph (k)(1)(ii) for specific information.]

**1926.1126(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].

**1926.1126(k)(2)(i)**—**Historical monitoring data**. Where the employer has relied on **historical monitoring data** to determine exposure to chromium (VI), the employer shall establish and **maintained** an accurate **record** of the **historical monitoring data** relied upon.

**1926.1126(k)(2)(ii)**—The **historical monitoring record** shall include **information** that reflects specific conditions. [Reference paragraph (k)(2)(ii) for specific information.]

**1926.1126(k)(2)(iii)**—The employer shall ensure that **historical exposure records** are **maintain** and made **available** in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1926.1126(k)(3)(i)**—**Objective data**. The employer shall **maintain** an accurate **record** of all objective data relied upon to comply with the requirements of this section.

**1926.1126(k)(3)(ii)**—This **objective data record** shall include at least specific information. [Reference paragraph (k)(3)(ii) for specific information.]

**1926.1126(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].

**1926.1126(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. [Reference paragraph (k)(4)(ii) for specific information.]

**1926.1126(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].

## **Training and Communications**

**1926.1126(d)(4)(i)**—Within 5 work days after making an exposure determination in accordance with paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section, the employer shall individually notify each affected employee in **writing of the results** of that determination or post the results in an appropriate location accessible to all affected employees.

**1926.1126(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.



**1926.1126(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.

**1926.1126(j)(2)**—*Employee information and training.* The employer *shall ensure that each employee can demonstrate knowledge of information.* [Reference paragraph (j)(2)(i) for specific information.]

## **Exposure Monitoring**

**1926.1126(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.

**1926.1126(d)(2)(i)**—*Scheduled monitoring option.* 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.

**1926.1126(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.*

**1926.1126(d)(2)(iv)**—If monitoring reveals employee exposures to be above the PEL, the employer *shall perform periodic monitoring at least every three months.*

**1926.1126(d)(3)**—*Performance-oriented option.* The employer *shall determine the 8-hour TWA exposure for each employee on the basis of any combination of **air monitoring data, historical monitoring data, or objective data** sufficient to accurately characterize employee exposure to chromium (VI).*

**1926.1126(d)(4)(i)**—*Within 5 work days after making an exposure determination in accordance with paragraph (d)(2) [Scheduled Monitoring Option] or paragraph (d)(3) [Performance-Oriented Option] of this section, the employer shall individually notify each affected employee in **writing of the results** of that determination or **post the results** in an appropriate location accessible to all affected employees.*

**1926.1126(d)(4)(ii)**—Whenever the exposure determination indicates that employee exposure is above the PEL, the employer *shall describe in the **written notification the corrective action** being taken to reduce employee exposure to or below the PEL.*

## **Medical Surveillance**

**1926.1126(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. [Reference paragraph (i)(1)(i) and (i)(3) for specific information.]

**1926.1126(i)(2)**—*Frequency.* The employer *shall provide a medical examination:*

**1926.1126(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.*

**1926.1126(i)(2)(ii)**—*Annually.*

**1926.1126(i)(2)(iii)**—*Within 30 days after a PLHCP's **written medical opinion** recommends an additional examination.*

**1926.1126(i)(2)(iv)**—*Whenever an employee shows signs or symptoms of the adverse health effects associated with chromium (VI) exposure.*

**1926.1126(i)(2)(v)**—*Within 30 days after exposure during an emergency which results in an uncontrolled release of chromium (VI).*

**1926.1126(i)(2)(vi)**—*At the termination of employment, unless the last examination that satisfied the requirements of paragraph (i) of this section was less than six months prior to the date of termination.*

**1926.1126(i)(3)(iii)**—*Any additional tests deemed appropriate by the examining **PLHCP**.*

**1926.1126(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**. [Reference paragraph (i)(4) for specific information.]

**1926.1126(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, which contains specific information. [Reference paragraph (i)(5) for specific information.]

### Signs, Markings and Tags

**1926.1126(g)(2)(iv)**—Bags or containers of contaminated protective clothing or equipment that are removed from change rooms for laundering, cleaning, maintenance, or disposal *shall be **labeled*** in accordance with the requirements of the *Hazard Communication Standard, Sec. 1910.1200*.

## 1926.1127—CADMIUM

**Scope/Application:** *This standard applies to all occupational exposures to cadmium and cadmium compounds, in all forms, in all construction work where an employee may potentially be exposed to cadmium. Construction work is defined as work involving construction, alteration and/or repair, including but not limited to the following: wrecking, demolition or salvage of structures where cadmium or materials containing cadmium are present; use of cadmium containing-paints and cutting, brazing, burning, grinding or welding on surfaces that were painted with cadmium-containing paints; construction, alteration, repair, maintenance, or renovation of structures, substrates, or portions thereof, that contain cadmium, or materials containing cadmium; cadmium welding; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys; installation of products containing cadmium; electrical grounding with cadmium welding, or electrical work using cadmium-coated conduit; maintaining or retrofitting cadmium-coated equipment; cadmium contamination/emergency cleanup; and transportation, disposal, storage, or containment of cadmium or materials containing cadmium on the site or location at which construction activities are performed.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—work controls, compliance program, respirator program, emergency action plan
- Inspections and Tests—material testing
- Recordkeeping—retention requirements
- Training and Communications—hazard communication, records, initial training
- Exposure Monitoring—determination, initial and periodic monitoring, written results, posting
- Medical Surveillance—program, respirator use, initial and annual examinations
- Competent Person—review program
- Qualified Person—authorized person
- Signs, Markings and Tags—labels, posting signs, regulated areas

### Programs, Plans and Procedures

**1926.1127(f)(1)(i)**—Except as specified in paragraph (f)(1)(ii) [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.

**1926.1127(f)(4)(iv)**—*Procedures shall be developed and implemented to minimize employee exposure to cadmium when maintenance of ventilation systems and changing of filters is being conducted.*

**1926.1127(f)(5)(i)**—Where employee exposure to cadmium exceeds the PEL and the employer is required under *paragraph (f)(1) [Methods of Compliance]* of this section to implement controls to comply with the PEL, prior to the commencement of the job the employer *shall establish and implement a **written compliance program*** to reduce employee exposure to or below the PEL. 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.

**1926.1127(f)(5)(ii)**—***Written compliance programs** shall be reviewed and updated as often and as promptly as necessary to reflect significant changes in the employer's compliance status or significant changes in the lowest air cadmium level that is technologically feasible.*

**1926.1127(f)(5)(iii)**—*A competent person shall review the **comprehensive compliance program** initially and after each change.*

**1926.1127(g)(2)(i)**—The employer *must implement a **respiratory protection program*** in accordance with 29 CFR 1910.134 (b) through (d) (except (d)(1)(iii)), and (f) through (m) [*Respiratory Protection*], which covers each employee required by this section to use a respirator.

**1926.1127(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.

**1926.1127(l)(1)(i)(A)**—Currently exposed—The employer *shall institute a **medical surveillance program*** for all employees who are or may be exposed at or above the action level and all employees who perform the following tasks, operations or jobs: Electrical grounding with cadmium welding; cutting, brazing, burning, grinding or welding on surfaces that were painted with cadmium-containing paints; electrical work using cadmium-coated conduit; use of cadmium containing paints; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys; fusing of reinforced steel by cadmium welding; maintaining or retrofitting cadmium-coated equipment; and, wrecking and demolition where cadmium is present.

**1926.1127(l)(5)(i)(A)**—*Periodically reassess:* The employee's *work practices* and personal hygiene; the employee's respirator use, if any; the employee's smoking history and status; the ***respiratory protection program***; the hygiene facilities; the maintenance and effectiveness of the *relevant engineering controls*; and take all *reasonable steps* to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium.

**1926.1127(m)(2)(iii)**—The employer shall assure that ***signs*** required by this paragraph *are illuminated, cleaned, and maintain as necessary so that the legend is readily visible.*

**1926.1127(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 the training program.*

## **Inspections and Tests**

**1926.1127(d)(1)(i)**—Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer *shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level.* The employer *shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination.* Investigation shall include a review of *relevant **plans, past reports, safety data sheets***, and other ***available records***, and consultations with the property owner and discussions with appropriate individuals and agencies.

**1926.1127(m)(2)(iii)**—The employer shall assure that **signs** required by this paragraph *are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.*

## **Recordkeeping**

**1926.1127(d)(1)(i)**—Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer *shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level.* The employer *shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination.* Investigation shall include a review of relevant **plans, past reports, safety data sheets**, and other **available records**, and consultations with the property owner and discussions with appropriate individuals and agencies.

**1926.1127(d)(2)(iv)**—Where a determination conducted under *paragraphs (d)(1) [Exposure Monitoring] or (d)(2) [Exposure Monitoring]* of this section is made that a potentially exposed employee is not exposed to airborne concentrations of cadmium at or above the action level, the employer *shall make a written record of such determination. The record shall include at least the monitoring data developed under paragraphs (d)(2)(i)-(iii) [Exposure Monitoring] of this section, where applicable, and shall also include the date of determination, and the name and social security number of each employee.*

**1926.1127(f)(5)(i)**—Where employee exposure to cadmium exceeds the PEL and the employer is required under *paragraph (f)(1) [Methods of Compliance]* of this section to implement controls to comply with the PEL, prior to the commencement of the job the employer *shall establish and implement a written compliance program* to reduce employee exposure to or below the PEL. 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.

**1926.1127(f)(5)(ii)**—**Written compliance programs** *shall be reviewed and updated as often and as promptly as necessary to reflect significant changes in the employer's compliance status or significant changes in the lowest air cadmium level that is technologically feasible.*

**1926.1127(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.

**1926.1127(l)(2)(iii)**—Recent Examination: *An initial examination is not required to be provided if adequate records show that the employee has been examined in accordance with the requirements of paragraph (l)(2)(ii) [Initial Examination] of this section within the past 12 months. In that case, such records shall be maintained as part of the employee's medical record and the prior exam shall be treated as if it were an initial examination for the purposes of paragraphs (l)(3) [Actions Triggered by Initial Biological Monitoring] and (4) [Periodic Medical Surveillance] of this section.*

**1926.1127(l)(9)**—**Information provided to the physician:** The employer shall provide **information** to the examining **physician**. *[Reference paragraph (i)(9) for specific information.]*

**1926.1127(l)(10)(i)**—The employer *shall promptly obtain a written medical opinion from the examining physician* for each medical examination performed on each employee. This **written opinion** shall contain specific information. *[Reference paragraph (l)(10)(i) for specific information.]*

**1926.1127(l)(13)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple physician review upon the employee doing the following within fifteen (15) days after receipt of this notice, or receipt of the initial physician's written opinion, whichever is later: [Reference paragraph (l)(13) for specific information.]*



**1926.1127(l)(16)—Reporting.** *In addition to other medical events that are required to be reported on the **OSHA Form No. 300**, the employer shall report any abnormal condition or disorder caused by occupational exposure to cadmium associated with employment as specified in Chapter (V)(E) of the Reporting Guidelines for Occupational Injuries and Illnesses.*

**1926.1127(m)(1)—General.** *In communications concerning cadmium hazards, employers shall comply with the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59, including but not limited to the requirements concerning **warning signs and labels**, **safety data sheets** (SDS), and employee information and training. In addition, employers shall comply with the specific requirements: [Reference paragraph (m)(1) for specific information.]*

**1926.1127(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 the training program.

**1926.1127(n)(1)(i)—**The employer shall establish and keep an accurate **record** of all **air monitoring** for cadmium in the workplace. [Reference paragraph (n)(1)(ii) for specific information.]

**1926.1127(n)(1)(iii)—**The employer shall **maintain** this **record** for at least thirty (30) years, in accordance with Sec. 1926.33 [Access to Employee Exposure and Medical Records] of this part.

**1926.1127(n)(1)(iv)—**The employer shall also provide a **copy** of the **results** of an **employee's air monitoring** prescribed in paragraph (d) [Exposure Monitoring] of this **standard** to an industry trade association and to the employee's union, if any, or, if either of such associations or unions do not exist, to another comparable organization that is competent to **maintain** such **records** and is reasonably accessible to employers and employees in the industry.

**1926.1127(n)(2)(ii)—**The employer shall **maintain** the **objective data record** for at least 30 years of the objective data relied upon.

**1926.1127(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. [Reference paragraph (n)(3)(ii) for specific information.]

**1926.1127(n)(3)(iii)—**The employer shall assure that this **record** [Medical Surveillance] is **maintained** for the duration of employment plus thirty (30) years, in accordance with Sec. 1926.33 [Access to Employee Exposure and Medical Records] of this part.

**1926.1127(n)(3)(iv)—**At the employee's request, the employer shall promptly provide a **copy** of the employee's medical **record**, or update as appropriate, to a medical doctor or a union specified by the employee.

**1926.1127(n)(4)(i)—**Except as otherwise provided for in this section, access to all **records** required to be **maintained** by paragraphs (n)(1) through (3) [Recordkeeping] of this section shall be in accordance with the provisions of 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1926.1127(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.

## **Training and Communications**

**1926.1127(d)(5)(i)—**The employer must, as soon as possible but no later than 5 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. [Reference paragraph (d)(5)(ii) for more information.]



**1926.1127(i)(3)(v)**—The employer *shall inform* any person who launders or cleans protective clothing or equipment contaminated with cadmium of the potentially harmful effects of exposure to cadmium, and that the clothing and equipment should be laundered or cleaned in a manner to effectively prevent the release of airborne cadmium in excess of the PEL.

**1926.1127(l)(10)(iii)**—The employer *shall instruct the **physician*** not to reveal orally or in the **written medical opinion** given to the employer specific findings or diagnoses unrelated to occupational exposure to cadmium.

**1926.1127(l)(15)**—**Information** the employer must provide the employee. [Reference paragraph (l)(15) for specific information.]

**1926.1127(m)(1)**—General. *In communications concerning cadmium hazards, employers shall comply with the requirements of OSHA's Hazard Communication Standard for the construction industry, 29 CFR 1926.59, including but not limited to the requirements concerning **warning signs and labels**, **safety data sheets** (SDS), and employee information and training. In addition, employers shall comply with the specific requirements: [Reference paragraph (m)(1) for specific information.]*

**1926.1127(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 the training program.*

**1926.1127(m)(4)(ii)**—*Training shall be provided prior to or at the time of initial assignment to a job involving potential exposure to cadmium and at least annually thereafter. [Reference paragraph (m)(4) for specific information.]*

**1926.1127(m)(5)**—Multi-employer workplace. In a multi-employer workplace, an employer who produces, uses, or stores cadmium in a manner that may expose employees of other employers to cadmium *shall notify those employers* of the potential hazard in accordance with paragraph (e) [Written Hazard Communication Program] of the hazard communication standard for construction, 29 CFR 1926.59 [Hazard Communication].

**1926.1127(n)(3)(iv)**—At the employee's request, the employer *shall promptly provide a **copy** of the employee's **medical record**, or update* as appropriate, to a medical doctor or a union specified by the employee.

## Exposure Monitoring

**1926.1127(d)(1)(i)**—Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer *shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination. Investigation shall include a review of relevant **plans**, **past reports**, **safety data sheets**, and other **available records**, and consultations with the property owner and discussions with appropriate individuals and agencies.*

**1926.1127(d)(2)(i)**—*Initial monitoring.* Except as provided for in paragraph (d)(2)(iii) [Exposure Monitoring] of this section, where a determination conducted under paragraph (d)(1)(i) [Exposure Monitoring] of this section shows the possibility of employee exposure to cadmium at or above the action level, the employer *shall conduct exposure monitoring as soon as practicable* that is representative of the exposure for each employee in the workplace who is or may be exposed to cadmium at or above the action level.

**1926.1127(d)(2)(ii)**—In addition, if the employee periodically performs tasks that may expose the employee to a higher concentration of airborne cadmium, the employee *shall be monitored while performing those tasks.*

**1926.1127(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 assure that the **monitoring results** reflect with reasonable accuracy the employee's typical exposure levels, given the variability in the tasks performed, *work practices*, and environmental conditions on the job site, and to assure the adequacy of respiratory selection and the effectiveness of *engineering and work practice controls*.

**1926.1127(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 or *competent person* has any reason to suspect that any other change might result in such further exposure.

**1926.1127(d)(5)(i)**—The employer *must*, as soon as possible but no later than 5 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. [Reference paragraph (d)(5)(ii) for more information.]

## **Medical Surveillance**

**1926.1127(g)(2)(ii)**—If an employee exhibits breathing difficulty during fit testing or respirator use, the employer *must* provide the employee with a medical examination in accordance with paragraph (l)(6)(ii) [Examination for Respirator Use] of this section to determine if the employee can use a respirator while performing the required duties.

**1926.1127(l)(1)(i)(A)**—Currently exposed—The employer *shall* institute a **medical surveillance program** for all employees who are or may be exposed at or above the action level and all employees who perform the following tasks, operations or jobs: Electrical grounding with cadmium welding; cutting, brazing, burning, grinding or welding on surfaces that were painted with cadmium-containing paints; electrical work using cadmium-coated conduit; use of cadmium containing paints; cutting and welding cadmium-plated steel; brazing or welding with cadmium alloys; fusing of reinforced steel by cadmium welding; maintaining or retrofitting cadmium-coated equipment; and, wrecking and demolition where cadmium is present.

**1926.1127(l)(1)(i)(B)**—Previously exposed—The employer *shall* also institute a **medical surveillance program** for all employees who might previously have been exposed to cadmium by the employer prior to the effective date of this **standard** in tasks specified under paragraph (l)(1)(i)(A) [Medical Surveillance] of this section, unless the employer demonstrates that the employee did not in the years prior to the effective date of this section work in those tasks for the employer with exposure to cadmium for an aggregated total of more than 12 months.

**1926.1127(l)(1)(ii)**—To determine an employee's fitness for using a respirator, the employer *shall* provide the limited medical examination specified in paragraph (l)(6) [Examination for Respirator Use] of this section.

**1926.1127(l)(1)(iii)**—The employer shall assure that all medical examinations and procedures required by this section *are performed by or under the supervision of a licensed physician*, who has read and is familiar with the health effects section of appendix A [Substance Safety Data Sheet—Cadmium] to this section, the regulatory text of this section, the protocol for sample handling and lab selection in appendix F [Nonmandatory Protocol for Biological Monitoring] to this section, and the questionnaire of appendix D [Occupational Health History Interview with Reference to Cadmium Exposure] to this section. [Reference paragraph (l)(1) for specific information.]

**1926.1127(l)(2)(i)**—For employees covered by medical surveillance under paragraph (l)(1)(i) [Medical Surveillance] of this section, the employer *shall* provide an initial medical examination. 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. [Reference paragraph (l)(2)(ii) for specific information.]

**1926.1127(l)(2)(ii)(B)**—Biological monitoring that includes specific tests.[Reference paragraph (l)(2)(ii)(b) and (l)(3) for specific information.]

**1926.1127(l)(2)(iii)**—Recent Examination: An initial examination is not required to be provided if adequate **records** show that the employee has been examined in accordance with the requirements of paragraph (l)(2)(ii) [Initial Examination] of this section within the past 12 months. In that case, such **records** shall be maintained as part of the employee's medical **record** and the prior exam shall be treated as if it were an initial examination for the purposes of paragraphs (l)(3) [Actions Triggered by Initial Biological Monitoring] and (4) [Periodic Medical Surveillance] of this section.

**1926.1127(l)(3)**—*Actions triggered by initial biological monitoring.* [Reference paragraph (l)(3) for specific information.]

**1926.1127(l)(4)(i)**—For each employee who is covered by medical surveillance under *paragraph (l)(1)(i)(A) [Medical Surveillance]* of this section because of current or anticipated exposure to cadmium, 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] of this section 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.* [Reference paragraph (l)(4)(ii) for specific information.]

**1926.1127(l)(4)(iii)**—*Periodic biological monitoring shall be provided in accordance with paragraph (l)(2)(ii)(B) [Initial Examination] of this section.*

**1926.1127(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) [Initial Examination], (3) [Actions Triggered by Initial Biological Monitoring] or (4) [Periodic Medical Surveillance]* of this section, the employer shall take the following steps and continue to take them until the **physician** determines that they are no longer necessary.

**1926.1127(l)(5)(i)(A)**—*Periodically reassess:* The employee's *work practices* and personal hygiene; the employee's respirator use, if any; the employee's smoking history and status; the **respiratory protection program**; the hygiene facilities; the maintenance and effectiveness of the relevant *engineering controls*; and take all *reasonable steps* to correct the deficiencies found in the reassessment that may be responsible for the employee's excess exposure to cadmium.

**1926.1127(l)(5)(i)(B)**—*Provide semi-annual medical reexaminations* to evaluate the abnormal clinical sign(s) of cadmium toxicity until the results are normal or the employee is medically removed.

**1926.1127(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 *(l)(6)(i)(A)-(D) [Examination for Respirator Use]* of this section. 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. [Reference paragraph (l)(6)(i) for specific information.]

**1926.1127(l)(6)(iv)**—Where the results of the examination required under *paragraphs (l)(6)(i), (ii) or (iii) [Examination for Respirator Use]* of this section are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so *shall be periodically evaluated by a physician*.

**1926.1127(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.

**1926.1127(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 where necessary, to any employee to whom at any prior time the employer was required to provide medical surveillance under *paragraphs (l)(1)(i) [Medical Surveillance] or (l)(7) [Emergency Examinations]* 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) [Actions Triggered by Initial Biological Monitoring] or (l)(5) [Actions Triggered by Medical Examinations]* of this section.

**1926.1127(l)(9)**—**Information provided to the physician:** The employer shall provide **information** to the examining **physician**. [Reference paragraph (i)(9) for specific information.]

**1926.1127(l)(10)(i)**—The employer *shall promptly obtain a **written medical opinion** from the examining **physician*** for each medical examination performed on each employee. This **written opinion** shall contain specific information. *[Reference paragraph (l)(10)(i) for specific information.]*

**1926.1127(l)(13)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple **physician** review upon the employee doing the following within fifteen (15) days after **receipt of this notice**, or **receipt of the initial **physician's written opinion****, whichever is later.* *[Reference paragraph (l)(13) for specific information.]*

### **Competent Person**

**1926.1127(d)(1)(i)**—Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer *shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a competent person who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination. Investigation shall include a review of relevant **plans, past reports, safety data sheets**, and other **available records**, and consultations with the property owner and discussions with appropriate individuals and agencies.*

**1926.1127(d)(1)(ii)**—Where cadmium has been determined to be present in the workplace, and it has been determined that there is a possibility the employee's exposure will be at or above the action level, *the competent person shall identify employees potentially exposed to cadmium at or above the action level.*

**1926.1127(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 or competent person has any reason to suspect that any other change might result in such further exposure.*

**1926.1127(f)(5)(iii)**—A competent person shall review the **comprehensive compliance program** initially and after each change.

### **Qualified Person**

**1926.1127(e)(3)**—Access. Access to regulated areas *shall be limited to authorized persons.*

**1926.1127(l)(6)(iv)**—Where the results of the examination required under paragraphs (l)(6)(i), (ii) or (iii) *[Examination for Respirator Use]* of this section are abnormal, medical limitation or prohibition of respirator use shall be considered. If the employee is allowed to wear a respirator, the employee's ability to continue to do so *shall be periodically evaluated by a **physician**.*

**1926.1127(l)(10)(i)**—The employer *shall promptly obtain a **written medical opinion** from the examining **physician*** for each medical examination performed on each employee. This **written opinion** shall contain specific information. *[Reference paragraph (l)(10)(i) for specific information.]*

**1926.1127(l)(13)(ii)**—The employer *shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** provided by the employer conducts a medical examination or consultation pursuant to this section. The employer may condition its participation in, and payment for, multiple **physician** review upon the employee doing the following within fifteen (15) days after **receipt of this notice**, or **receipt of the initial **physician's written opinion****, whichever is later.* *[Reference paragraph (l)(13) for specific information.]*



## Signs, Markings and Tags

**1926.1127(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).

**1926.1127(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, including employees who are or may be incidentally in the regulated areas, and that protects persons outside the area from exposure to airborne concentrations of cadmium in excess of the PEL.*

**1926.1127(i)(2)(iv)**—The employer shall assure that containers of contaminated protective clothing and equipment that are to be taken out of the change rooms or the workplace for laundering, cleaning, maintenance or disposal *shall bear **labels** in accordance with paragraph (m)(2) [Warning Signs]* of this section.

**1926.1127(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)(2) [Warning Signs]* of this section.

**1926.1127(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.*

**1926.1127(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)(3)(ii) [Warning Labels]* of this section.

**1926.1127(m)(2)(iii)**—The employer shall assure that **signs** required by this paragraph *are illuminated, cleaned, and maintained as necessary so that the legend is readily visible.*

**1926.1127(m)(3)(iii)**—Where feasible, installed cadmium products *shall have a visible **label** or other indication that cadmium is present.*

## 1926.1128—BENZENE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.1028 [Benzene] of this chapter.*

## 1910.1028—BENZENE

**Scope/Application:** *This section applies to all occupational exposures to benzene.*

**Exception:** *This standard does not apply to the storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities; Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid; containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene; oil and gas drilling, production and servicing operations; coke oven batteries; the cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) [Methods of Compliance], paragraph (e)(1) [Exposure Monitoring—General], and paragraph (e)(6) [Accuracy of Monitoring].*



## STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

**1910.1028(f)(2)(i)**—When any exposures are over the PEL, the employer *shall establish and implement a **written program*** to reduce employee exposure to or below the PEL primarily by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section.

**1910.1028(f)(2)(ii)**—The **written program** *shall include a schedule for development and implementation of the engineering and work practice controls*. These **plans** *shall be reviewed and revised* as appropriate based on the most recent **exposure monitoring data**, to reflect the current status of the **program**.

**1910.1028(g)(2)(i)**—The employer *must implement a **respiratory protection program*** in accordance with *Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1) and (2)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1028(i)(1)(i)**—The employer *shall make **available a medical surveillance program*** for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

**1910.1028(i)(3)(iii)**—For persons required to use respirators for at least 30 days a year, a pulmonary function test *shall be performed every three (3) years*. A specific evaluation of the cardiopulmonary system *shall be made at the time of the pulmonary function test*.

**1910.1028(j)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for benzene.

**1910.1028(j)(1)(iii)**—Employers *shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200)*. Employers *shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (j)(3) [Information and Training]* of this section.

**1910.1028(j)(3)(ii)**—The **training program** *shall be in accordance with the requirements of 29 CFR 1910.1200(h)(1) and (2) [Hazard Communication]* and shall include specific information on benzene for each category of information included in that section.

### Recordkeeping

**1910.1028(f)(2)(i)**—When any exposures are over the PEL, the employer *shall establish and implement a **written program*** to reduce employee exposure to or below the PEL primarily by means of *engineering and work practice controls*, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section.

**1910.1028(f)(2)(ii)**—The **written program** *shall include a schedule for development and implementation of the engineering and work practice controls*. These **plans** *shall be reviewed and revised* as appropriate based on the most recent exposure monitoring data, to reflect the current status of the **program**.

**1910.1028(i)(6)**—*Information provided to the physician.* The employer shall **provide information** to the examining **physician**. [Reference paragraph (i)(6) for specific information.]

**1910.1028(i)(7)(i)**—For each examination under this section, the employer shall obtain and provide the employee with a **copy** of the examining **physician's written opinion** within 15 days of the examination.

**1910.1028(j)(1)(iii)**—Employers shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

**1910.1028(k)(1)(i)**—The employer shall establish and **maintain** an accurate **record** of all measurements required by paragraph (e) [Monitoring] of this section, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1028(k)(2)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance required by paragraph (i) [Medical Surveillance] of this section, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1028(k)(2)(iii)**—The employer shall **maintain** this **record** for at least the duration of employment plus 30 years, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1028(k)(4)**—*Transfer of records.* The employer shall comply with the requirements involving transfer of **records** as set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

### **Training and Communications**

**1910.1028(i)(1)(iii)**—The employer shall assure that persons other than **licensed physicians** who administer the pulmonary function testing required by this section shall complete a **training course** in **spirometry** sponsored by an appropriate **governmental, academic or professional institution**.

**1910.1028(i)(6)**—*Information provided to the physician.* The employer shall **provide information** to the examining **physician**. [Reference paragraph (i)(6) for specific information.]

**1910.1028(i)(7)(i)**—For each examination under this section, the employer shall obtain and provide the employee with a **copy** of the examining **physician's written opinion** within 15 days of the examination.

**1910.1028(i)(8)(ii)**—*Following the examination and evaluation* by the hematologist/internist, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the **physician** in consultation with the hematologist/internist. This **decision** shall be communicated in **writing** to the employer and employee. In the case of removal, the **physician** shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

**1910.1028(i)(8)(iv)**—Whenever an employee is temporarily removed from benzene exposure pursuant to paragraph (i)(8)(i) or (i)(8)(ii) [Medical Removal Plan] of this section, the employer shall transfer the employee to a comparable job for which the employee is qualified (*or can be trained for in a short period*) and where benzene exposures are as low as possible, but in no event higher than the action level. The employer shall maintain the employee's current wage rate, seniority and other benefits. If there is no such job available, the employer shall provide medical removal protection benefits until such a job becomes available or for 6 months, whichever comes first.

**1910.1028(i)(8)(v)**—Whenever an employee is removed permanently from benzene exposure based on a **physician's** recommendation pursuant to paragraph (i)(8)(iii) [Medical Removal Plan] of this section, the employee shall be given the opportunity to transfer to another position which is available or later becomes available for which the employee is qualified (*or can be trained for in a short period*) and where benzene exposures are as low as possible but in no event higher than the action level. The employer shall assure that such employee suffers no reduction in current wage rate, seniority or other benefits as a result of the transfer.

**1910.1028(j)(1)(iii)**—Employers shall include benzene in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of benzene and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

**1910.1028(j)(3)(i)**—The employer shall provide employees with **information** and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with **information** and training at least annually thereafter. [Reference paragraph (j)(3) for specific information.]

### Exposure Monitoring

**1910.1028(e)(1)(i)**—Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee's average exposure to airborne benzene.

**1910.1028(e)(2)(ii)**—The initial monitoring required under paragraph (e)(2)(i) [Initial Monitoring] of this section shall be completed by 60 days after the effective date of this standard or within 30 days of the introduction of benzene into the workplace. Where the employer has monitored within one year prior to the effective date of this standard and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring **results** to satisfy the requirements of paragraph (e)(2)(i) [Initial Monitoring] of this section.

**1910.1028(e)(3)(i)**—If the monitoring required by paragraph (e)(2)(i) [Initial Monitoring] of this section reveals employee exposure at or above the action level but at or below the TWA, the employer shall repeat such monitoring for each such employee at least every year.

**1910.1028(e)(3)(ii)**—If the monitoring required by paragraph (e)(2)(i) [Initial Monitoring] of this section reveals employee exposure above the TWA, the employer shall repeat such monitoring for each such employee at least every six (6) months.

**1910.1028(e)(3)(iv)**—Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.

**1910.1028(e)(5)(i)**—The employer shall institute the exposure monitoring required under paragraphs (e)(2) [Initial Monitoring] and (e)(3) [Periodic Monitoring and Monitoring Frequency] of this section when there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene, or when the employer has any reason to suspect a change which may result in new or additional exposures.

**1910.1028(e)(5)(ii)**—Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, the employer shall monitor (using area or personal sampling) after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

**1910.1028(e)(7)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.

### Medical Surveillance

**1910.1028(i)(1)(i)**—The employer shall make available a **medical surveillance program** for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

**1910.1028(i)(3)(i)**—The employer shall provide each employee covered under paragraph (i)(1)(i) [Medical Surveillance] of this section with a **medical examination** annually following the previous examination.

**1910.1028(i)(3)(iii)**—For persons required to use respirators for at least 30 days a year, a **pulmonary function test** shall be performed every three (3) years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.

**1910.1028(i)(4)(i)**—In addition to the surveillance required by *paragraph (i)(1)(i) [Medical Surveillance]*, if an employee is exposed to benzene in an emergency situation, the employer *shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours*. The urine specific gravity shall be corrected to 1.024.

**1910.1028(i)(5)(i)**—Where the **results** of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count *shall be repeated within 2 weeks*.

**1910.1028(i)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [Reference paragraph (i)(6) for specific information.]

**1910.1028(i)(7)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days* of the examination.

**1910.1028(i)(8)(ii)**—Following the examination and evaluation by the **hematologist/internist**, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the **physician** in consultation with the hematologist/internist. This **decision** *shall be communicated in writing to the employer and employee*. In the case of removal, the **physician** shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

### Qualified Person

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

**1910.1028(i)(7)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days* of the examination.

**1910.1028(i)(8)(ii)**—Following the examination and evaluation by the **hematologist/internist**, a decision to remove an employee from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the **physician** in consultation with the hematologist/internist. This **decision** *shall be communicated in writing to the employer and employee*. In the case of removal, the **physician** shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

### Signs, Markings and Tags

**1910.1028(d)(1)**—The employer *shall establish a regulated area* wherever the airborne concentration of benzene exceeds or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes.

**1910.1028(j)(2)(i)**—The employer *shall post signs* at entrances to regulated areas.

**1910.1028(j)(2)(iii)**—The employer *shall ensure that labels or other appropriate forms of warning are provided for containers of benzene within the workplace*. There is no requirement to **label** pipes. The **labels** *shall comply with the requirements of paragraph (j)(1) [Hazard Communication] of this section and Sec. 1910.1200(f) [Labels and Other Forms of Warning]*.



## 1926.1129—COKE OVEN EMISSIONS

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.1029 [Coke Oven Emissions] of this chapter.*

## 1910.1029—COKE OVEN EMISSIONS

**Scope/Application:** *This section applies to the control of employee exposure to coke oven emissions, except that this section shall not apply to working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.*

**Exception:** *This standard does not apply to the working conditions with regard to which other Federal agencies exercise statutory authority to prescribe or enforce standards affecting occupational safety and health.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—written work practice controls, inspection program, respirator program, medical surveillance program, hazard communication program
- Inspections and Tests—inspection program, system, corrective action, signs cleaned
- Recordkeeping—retention requirements, safety data sheets
- Training and Communications—inform launderers, instruct physician, initial and annual training
- Exposure Monitoring—monitoring every 3 months, after new process or change, posted results
- Medical Surveillance—program, initial, annual, and “other” examinations
- Qualified Person—physician
- Signs, Markings and Tags—labels, posted, regulated areas

### Programs, Plans and Procedures

**1910.1029(f)(1)(i)(a)**—The employer *shall institute the engineering and work practice controls listed in paragraphs (f)(2), (f)(3) and (f)(4) [Priority of Compliance Methods] of this section in existing coke oven batteries at the earliest possible time, but not later than January 20, 1980, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1029(f)(1)(ii)(a)**—The employer *shall institute the best available engineering and work practice controls on all new or rehabilitated coke oven batteries to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1029(f)(1)(iii)(a)**—The employer *shall institute engineering and work practice controls on all beehive ovens at the earliest possible time to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.*

**1910.1029(f)(3)(i)(b)**—*Establishment and implementation of a detailed written charging procedure, designed and operated to eliminate emissions during charging for each battery.*



**1910.1029(f)(3)(i)(c)**—*Establishment and implementation of a detailed **written charging procedure, designed** and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.*

**1910.1029(f)(3)(ii)(d)**—An **inspection system and corrective action program** to control door emissions to the maximum extent possible.

**1910.1029(f)(3)(iv)**—*Maintenance and repair.* The employer shall operate existing coke oven batteries *pursuant to a detailed **written procedure of maintenance and repair established and implemented** for the effective control of coke oven emissions consisting of specific elements. [Reference paragraph (f)(3) for specific information.]*

**1910.1029(f)(6)(i)**—Each employer shall establish and implement a **written program** to reduce exposures solely by means of the *engineering and work practice controls* required in paragraph (f) [*Priority of Compliance Methods*] of this section.

**1910.1029(f)(6)(iii)**—If, after implementing all *controls* required by paragraph (f)(2)–(f)(4) [*Priority of Compliance Methods—Controls*] of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery the permissible exposure limit is still exceeded, the employer shall develop a detailed **written program and schedule for the implementation of any additional engineering controls and work practices** necessary to reduce exposure to or below the permissible exposure limit.

**1910.1029(f)(6)(iv)**—*Written plans for such programs shall be submitted, upon request, to the Secretary and the Director, and shall be **available** at the worksite for examination and **copying** by the Secretary, the Director, and the authorized employee representative. The **plans** required under paragraph (f)(6) [*Compliance Program*] of this section shall be revised and updated at least annually to reflect the current status of the **program**.*

**1910.1029(g)(2)**—**Respirator program.** *The employer must implement a **respiratory protection program** in accordance with 1910.134 [*Respiratory Protection*] (b) through (d) (except (d)(1)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

**1910.1029(j)(1)(i)**—Each employer shall institute a **medical surveillance program** for all employees who are employed in a regulated area at least 30 days per year.

**1910.1029(k)(1)(i)**—The employer shall train each employee who is employed in a regulated area in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**.

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program** established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200). The employer shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [*Employee Information and Training*] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.

## **Inspections and Tests**

**1910.1029(f)(3)(i)(a)(2)**—*Inspection and cleaning of goosenecks and standpipes prior to each charge to a specified minimum diameter sufficient to effectively move the evolved gases from the oven to the collector mains.*

**1910.1029(f)(3)(i)(a)(3)**—*Inspection for roof carbon build-up prior to each charge and removal of roof carbon as necessary to provide an adequate gas channel so that the gases are effectively moved from the oven into the collector mains.*

**1910.1029(f)(3)(i)(a)(4)**—*Inspection of the steam aspiration system prior to each charge so that sufficient pressure and volume is maintained to effectively move the gases from the oven to the collector mains.*

**1910.1029(f)(3)(i)(a)(5)**—*Inspection of steam nozzles and liquor sprays prior to each charge and cleaning as necessary so that the steam nozzles and liquor sprays are clean.*

**1910.1029(f)(3)(i)(a)(6)**—*Inspection of standpipe caps prior to each charge and cleaning and luting or both as necessary so that the gases are effectively moved from the oven to the collector mains.*

**1910.1029(f)(3)(i)(a)(7)**—*Inspection* of charging holes and lids for cracks, warpage and other defects *prior to each charge* and removal of carbon to prevent emissions, and application of luting material to standpipe and charging hole lids where necessary to obtain a proper seal.

**1910.1029(f)(3)(ii)(d)**—An ***inspection system and corrective action program*** to control door emissions to the maximum extent possible.

**1910.1029(f)(3)(iii)(b)(4)**—*Inspection, adjustment and correction* of heating flue temperatures and defective flues *at least weekly* and after any green push, so as to prevent green pushes.

**1910.1029(f)(3)(iv)(a)**—*Regular inspection* of all controls, including goosenecks, standpipes, standpipe caps, charging hold lids and castings, jumper pipes and air seals for cracks, misalignment or other defects and prompt implementation of the necessary repairs as soon as possible.

**1910.1029(f)(3)(iv)(c)**—*Regular inspection* of the damper system, aspiration system and collector main for cracks or leakage, and prompt implementation of the necessary repairs.

**1910.1029(f)(3)(iv)(d)**—*Regular inspection* of the heating system and prompt implementation of the necessary repairs.

**1910.1029(f)(3)(iv)(f)**—*Regular inspection* and patching of oven brickwork.

### **Recordkeeping**

**1910.1029(e)(3)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1029(f)(3)(i)(b)**—*Establishment and implementation of a detailed written charging procedure, designed* and operated to eliminate emissions during charging for each battery.

**1910.1029(f)(3)(i)(c)**—*Establishment and implementation of a detailed written charging procedure, designed* and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.

**1910.1029(f)(6)(i)**—Each employer *shall establish and implement a written program* to reduce exposures solely by means of the *engineering and work practice controls* required in *paragraph (f) [Priority of Compliance Methods]* of this section.

**1910.1029(f)(6)(iii)**—If, after implementing all controls required by *paragraph (f)(2)–(f)(4) [Priority of Compliance Methods—Controls]* of this section, or after January 20, 1980, whichever is sooner, or after completion of a new or rehabilitated battery the permissible exposure limit is still exceeded, the employer *shall develop a detailed written program and schedule for the implementation of any additional engineering controls and work practices* necessary to reduce exposure to or below the permissible exposure limit.

**1910.1029(f)(6)(iv)**—*Written plans for such programs shall be submitted, upon request, to the Secretary and the Director, and shall be available at the worksite for examination and copying by the Secretary, the Director, and the authorized employee representative. The plans required under paragraph (f)(6) [Compliance Program] of this section shall be revised and updated at least annually to reflect the current status of the program.*

**1910.1029(j)(1)(iii)**—The employer *shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a signed statement from the employee* indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(4)**—***Information provided to the physician.*** The employer shall ***provide information to the examining physician.*** *[Reference paragraph (j)(4) for specific information.]*

**1910.1029(j)(5)(i)**—The employer *shall obtain a written opinion from the examining physician.* *[Reference paragraph (j)(5)(i) for specific information.]*

**1910.1029(j)(5)(ii)**—The employer *shall instruct the physician* not to reveal in the ***written opinion*** specific findings or diagnoses unrelated to occupational exposure.

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy of the written opinion** to the affected employee.

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200)**. The employer shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [Employee Information and Training] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.

**1910.1029(m)(1)**—Exposure measurements. The employer shall establish and **maintain** an accurate **record** of all **measurements** taken to monitor employee exposure to coke oven emissions required in paragraph (e) of this section. [Reference paragraph (m)(1) for specific information.]

**1910.1029(m)(1)(ii)**—The employer shall **maintain this record** for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

**1910.1029(m)(2)**—Medical surveillance. The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance as required by paragraph (j) [Medical Surveillance] of this section. [Reference paragraph (m)(2)(i) for specific information.]

**1910.1029(m)(2)(iii)**—The employer shall **maintain medical records** required under paragraph (m)(2) [Recordkeeping] of this section for at least 40 years, or for the duration of employment plus 20 years, whichever is longer.

**1910.1029(m)(4)(i)**—Whenever the employer ceases to do business, the successor employer shall receive and **retain** all **records** required to be **maintained** by paragraph (m) [Recordkeeping] of this section.

**1910.1029(m)(4)(ii)**—The employer shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

## **Training and Communications**

**1910.1029(e)(3)(i)**—The employer must, within 15 working days after the **receipt** of the **results** of any **monitoring** performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.

**1910.1029(h)(2)(vi)**—The employer shall inform any person who cleans or launders protective clothing required by this section, of the potentially harmful effects of exposure to coke oven emissions.

**1910.1029(j)(1)(iii)**—The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a **signed statement** from the employee indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(4)**—**Information provided to the physician.** The employer shall **provide information to the examining physician**. [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(ii)**—The employer shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy of the written opinion** to the affected employee.

**1910.1029(k)(1)(i)**—The employer shall train each employee who is employed in a regulated area in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**.

**1910.1029(k)(1)(ii)**—The **training program** shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area. [Reference paragraph (k)(1)(iv) for specific information.]

**1910.1029(k)(1)(iii)**—The **training program** shall be provided at least annually for all employees who are employed in the regulated area, except that training regarding the occupational safety and health hazards associated with exposure to coke oven emissions and the purpose, proper use, and limitations of respiratory protective devices shall be provided at least quarterly until January 20, 1978.

**1910.1029(l)(1)**—Hazard communication—general. The employer shall include coke oven emissions in the **program** established to comply with the Hazard Communication Standard (HCS) (Sec. 1910.1200). The employer shall ensure that each employee has access to **labels** on containers of chemicals and substances associated with coke oven processes and to **safety data sheets**, and is trained in accordance with the provisions of HCS and paragraph (k) [Employee Information and Training] of this section. The employer shall ensure that at least the following hazard is addressed: Cancer.

### Exposure Monitoring

**1910.1029(e)(1)(i)**—Each employer who has a place of employment where coke oven emissions are present shall monitor employees employed in the regulated area to measure their exposure to coke oven emissions.

**1910.1029(e)(1)(iv)**—The employer shall repeat the monitoring and measurements required by this paragraph (e)(1) [Monitoring Program] at least every three months.

**1910.1029(e)(2)**—Redetermination. Whenever there has been a production, process, or control change which may result in new or additional exposure to coke oven emissions, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements required by paragraph (e)(1) [Monitoring Program] of this section for those employees affected by such change or increase.

**1910.1029(e)(3)(i)**—The employer must, within 15 working days after the receipt of the **results** of any **monitoring** performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.

### Medical Surveillance

**1910.1029(j)(1)(i)**—Each employer shall institute a **medical surveillance program** for all employees who are employed in a regulated area at least 30 days per year.

**1910.1029(j)(1)(ii)**—This **program** shall provide each employee covered under paragraph (j)(1)(i) [Medical Surveillance] of this section with an opportunity for medical examinations in accordance with this paragraph (j) [Medical Surveillance]. [Reference paragraph (j)(1) for specific information.]

**1910.1029(j)(1)(iii)**—The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a **signed statement** from the employee indicating that the employee understands the risk involved in the refusal to be examined.

**1910.1029(j)(2)**—Initial examinations. At the time of initial assignment to a regulated area or upon the institution of the **medical surveillance program**, the employer shall provide a medical examination for employees covered under paragraph (j)(1)(i) [Medical Surveillance] of this section [Reference paragraph (j)(2) for specific information.]

**1910.1029(j)(3)(i)**—The employer shall provide the examinations specified in paragraphs (j)(2)(i)-(vi) [Initial Examinations] of this section at least annually for employees covered under paragraph (j)(1)(i) [Medical Surveillance] of this section.

**1910.1029(j)(3)(ii)**—The employer must provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually for employees 45 years of age or older or with five (5) or more years employment in the regulated area.

**1910.1029(j)(3)(iii)**—Whenever an employee who is 45 years of age or older or with five (5) or more years employment in a regulated area transfers or is transferred from employment in a regulated area, the employer must continue to provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually as long as that employee is employed by the same employer or a successor employer.



**1910.1029(j)(3)(iv)**—Whenever an employee has not taken the examinations specified in *paragraphs (j)(3)(i)-(iii) [Periodic Examinations]* of this section with the six (6) months preceding the termination of employment the employer shall provide such examinations to the employee *upon termination of employment*.

**1910.1029(j)(4)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. [Reference paragraph (j)(5)(i) for specific information.]

**1910.1029(j)(5)(iii)**—The employer shall provide a **copy** of the **written opinion** to the affected employee.

#### **Qualified Person**

**1910.1029(j)(4)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician**. [Reference paragraph (j)(4) for specific information.]

**1910.1029(j)(5)(i)**—The employer shall obtain a **written opinion** from the examining **physician**. [Reference paragraph (j)(5)(i) for specific information.]

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

**1910.1029(d)(1)**—The employer shall establish regulated areas and shall limit access to them to authorized persons.

**1910.1029(l)(2)(i)**—The employer shall **post signs** in the regulated area bearing the legends. [Reference paragraph (l)(2)(i) for specific information.]

**1910.1029(l)(2)(iv)**—The employer shall ensure that **signs** required by this paragraph (l)(2) [Signs] are illuminated and cleaned as necessary so that the legend is readily visible.

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

### **1926.1144—1,2-DIBROMO-3-CHLOROPROPANE**

**Scope/Application:** The requirements applicable to construction work under this section are identical to those set forth at § 1910.1044 [1,2-Dibromo-3-Chloropropane] of this chapter.

### **1910.1044—1,2-DIBROMO-3-CHLOROPROPANE**

**Scope/Application:** This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP).

**Exception:** This standard does not apply to: exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or the storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquid.

#### **STANDARD HIGHLIGHTS**

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



## Programs, Plans and Procedures

**1910.1044(g)(1)**—Priority of compliance methods. The employer *shall institute engineering and work practice controls* to reduce and maintain employee exposures to DBCP at or below the permissible exposure limit, except to the extent that the employer establishes that such controls are not feasible. Where *feasible engineering and work practice controls* are not sufficient to reduce employee exposures to within the permissible exposure limit, the employer shall none-the-less use them to reduce exposures to the lowest level achievable by these controls, and shall supplement them by use of respiratory protection.

**1910.1044(g)(2)(i)**—The employer *shall establish and implement a **written program*** to reduce employee exposures to DBCP to or below the permissible exposure limit solely by means of *engineering and work practice controls* as required by *paragraph (g) (1) [Methods of Compliance]* of this section.

**1910.1044(h)(2)**—**Respirator program.** The employer *must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

**1910.1044(i)(1)(i)**—A **written plan for emergency situations** shall be developed for each workplace in which DBCP is present.

**1910.1044(m)(1)(i)**—The employer *shall make available a **medical surveillance program*** for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. *[Reference paragraph (m) for specific information.]*

**1910.1044(n)(1)(i)**—The employer *shall train each employee* who may be exposed to DBCP in accordance with the requirements of this section. The employer *shall institute a **training program** and ensure employee participation in the program.*

**1910.1044(o)(1)(iii)**—Employers shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers *shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (n) [Employee Information and Training]* of this section.

## Recordkeeping

**1910.1044(g)(2)(i)**—The employer *shall establish and implement a **written program*** to reduce employee exposures to DBCP to or below the permissible exposure limit solely by means of *engineering and work practice controls* as required by *paragraph (g) (1) [Methods of Compliance]* of this section.

**1910.1044(i)(1)(i)**—A **written plan for emergency situations** shall be developed for each workplace in which DBCP is present.

**1910.1044(o)(1)(iii)**—Employers *shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and *paragraph (n) [Employee Information and Training]* of this section

**1910.1044(p)(1)(i)**—The employer shall establish and **maintain** an **accurate record** of all **monitoring** required by *paragraph (f) [Exposure Monitoring]* of this section.

**1910.1044(p)(1)(iii)**—The employer *shall **maintain this record** for at least 40 years or the duration of employment plus 20 years, whichever is longer.*

**1910.1044(p)(2)(i)**—The employer *shall establish and **maintain** an **accurate record*** for each employee subject to medical surveillance required by *paragraph (m) [Medical Surveillance]* of this section.

**1910.1044(p)(2)(iii)**—The employer *shall **maintain this record** for at least 40 years or the duration of employment plus 20 years, whichever is longer.*

**1910.1044(p)(4)(i)**—If the employer ceases to do business, the *successor employer shall receive and **retain all records** required to be **maintained** by paragraph (p) [Recordkeeping]* of this section for the prescribed period.

**1910.1044(p)(4)(ii)**—The employer *shall also comply with any additional requirements involving transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].*

### **Training and Communications**

**1910.1044(f)(5)(i)**—The employer *must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.*

**1910.1044(m)(4)**—**Information provided to the physician.** The employer *shall provide the following **information** to the examining **physician**. [Reference paragraph (m)(4) for specific information.]*

**1910.1044(m)(5)(i)**—For each examination under this section, the employer *shall **obtain** and provide the employee with a **written opinion** from the examining **physician**.*

**1910.1044(m)(5)(ii)**—The employer *shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.*

**1910.1044(n)(1)(i)**—The employer *shall train each employee who may be exposed to DBCP in accordance with the requirements of this section. The employer shall institute a **training program** and ensure employee participation in the **program**.*

**1910.1044(o)(1)(iii)**—Employers shall include DBCP in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers *shall ensure that each employee has access to **labels** on containers of DBCP and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training] of this section.*

### **Exposure Monitoring**

**1910.1044(f)(2)**—**Initial.** Each employer who has a place of employment in which DBCP is present, *shall monitor each workplace and work operation to accurately determine the airborne concentrations of DBCP to which employees may be exposed.*

**1910.1044(f)(3)(i)**—If the monitoring required by this section reveals employee exposures to be at or below the permissible exposure limit, the employer *must repeat these measurements at least every 6 months.*

**1910.1044(f)(3)(ii)**—If the monitoring required by this section reveals employee exposures to be in excess of the permissible exposure limit, the employer *must repeat these measurements for each such employee at least quarterly. The employer must continue quarterly monitoring until at least two consecutive measurements, taken at least seven (7) days apart, are at or below the permissible exposure limit. Thereafter the employer must monitor at least every 6 months.*

**1910.1044(f)(4)**—**Additional.** Whenever there has been a production, process, control, or personnel change which may result in any new or additional exposure to DBCP, or whenever the employer has any reason to suspect new or additional exposures to DBCP, the employer *shall monitor the employees potentially affected by such change for the purpose of redetermining their exposure.*

**1910.1044(f)(5)(i)**—The employer *must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each employee of these **results** either individually in **writing** or by **posting the results** in an appropriate location that is accessible to employees.*

**1910.1044(i)(6)(i)**—**Following an emergency,** the employer *shall conduct monitoring which complies with paragraph (f) [Exposure Monitoring] of this section.*

**1910.1044(p)(1)(i)**—The employer shall establish and **maintain** an **accurate record** of all monitoring required by paragraph (f) [Exposure Monitoring] of this section.

### **Medical Surveillance**

**1910.1044(i)(5)**—**Medical surveillance.** For any employee exposed to DBCP in an emergency situation, the employer *shall provide medical surveillance in accordance with paragraph (m)(6) [Emergency Situations] of this section.*

**1910.1044(m)(1)(i)**—The employer *shall make available a **medical surveillance program*** for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. *[Reference paragraph (m) for specific information.]*

**1910.1044(m)(2)**—*Frequency and content. At the time of initial assignment, and annually thereafter, the employer shall provide a medical examination for employees who work in regulated areas.*

**1910.1044(m)(4)**—***Information provided to the physician.** The employer shall provide the following **information** to the examining **physician**. [Reference paragraph (m)(4) for specific information.]*

**1910.1044(m)(5)(i)**—For each examination under this section, the employer *shall obtain and provide the employee with a **written opinion*** from the *examining **physician***.

**1910.1044(m)(6)**—Emergency situations. If the employee is exposed to DBCP in *an emergency situation, the employer shall provide the employee with a sperm count test* as soon as practicable, or, if the employee has been vasectomized or is unable to produce a semen specimen, the hormone tests contained in *paragraph (m)(2)(iii) [Medical Surveillance]* of this section. The employer *shall provide these same tests three months later.*

### **Qualified Person**

**1910.1044(m)(4)**—***Information provided to the physician.** The employer shall provide the following **information** to the examining **physician**. [Reference paragraph (m)(4) for specific information.]*

**1910.1044(m)(5)(i)**—For each examination under this section, the employer *shall **obtain** and provide the employee with a **written opinion*** from the *examining **physician***.

**1910.1044(m)(5)(ii)**—The employer *shall instruct the **physician** not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure.*

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

**1910.1044(e)(1)**—The employer *shall establish, within each place of employment, regulated areas* wherever DBCP concentrations are in excess of the permissible exposure limit.

**1910.1044(j)(2)(v)**—Containers of DBCP-contaminated protective devices or work clothing which are to be taken out of change rooms or the workplace for cleaning, maintenance or disposal *shall bear **labels*** with the following information: CONTAMINATED WITH 1,2-Dibromo-3-chloropropane (DBCP), MAY CAUSE CANCER.

**1910.1044(k)(1)(iii)(b)**—Portable vacuum units used to collect DBCP may not be used for other cleaning purposes and *shall be **labeled** as prescribed by paragraph (j)(2)(v) of this section.*

**1910.1044(o)(2)(i)**—The employer *shall **post signs*** to clearly indicate all regulated areas.

**1910.1044(o)(3)(ii)**—The employer *shall ensure that the precautionary **labels** required by this paragraph (o)(3) [Labels] are readily visible and legible.*

## 1926.1145—ACRYLONITRILE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.1045 [Acrylonitrile] of this chapter.*

## 1910.1045—ACRYLONITRILE

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

**Exception:** *This standard does not apply to exposures which result solely from the processing, use, and handling of the following materials: ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers; materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight (8)-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and solid materials made from and/or containing AN which will not be heated above 170 °F during handling, use, or processing.*

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

**1910.1045(g)(1)(i)**—By November 2, 1980, the employer *shall institute engineering and work practice controls* to reduce and maintain employee exposures to AN, to or below the permissible exposure limits, except to the extent that the employer establishes that such controls are not feasible.

**1910.1045(g)(2)(i)**—The employer *shall establish and implement a **written program*** to reduce employee exposures to or below the permissible exposure limits solely by means of *engineering and work practice controls*, as required by paragraph (g)(1) [Engineering and Work Practice Controls] of this section. [Reference paragraph (g) for specific information.]

**1910.1045(g)(2)(v)**—The **plans** required by this paragraph *must be revised and updated at least annually* to reflect the current status of the **program**.

**1910.1045(h)(2)(i)**—The employer *must implement a **respiratory protection program*** in accordance with Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1910.1045(i)(1)(i)**—A **written plan for emergency situations** *shall be developed* for each workplace where liquid AN is present. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1045(n)(1)(i)**—The employer *shall institute a **program of medical surveillance*** for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer *shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph*. [Reference paragraph (n) (1) for specific information.]



**1910.1045(o)(1)(i)**—The employer *shall train each employee* exposed to AN above the action level, each employee whose exposures are maintained below the action level by *engineering and work practice controls*, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer *shall institute a **training program*** and ensure employee participation in the **program**. [Reference paragraph (o)(1)(i) for specific information.]

**1910.1045(p)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200)* for AN and AN-based materials not exempted under paragraph (a) (2) of this section.

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to **labels** on containers of AN and AN-based materials and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

### Inspections and Tests

**1910.1045(p)(2)(ii)**—The employer *shall ensure that **signs** required by this paragraph (p)(2) [Signs] are illuminated and cleaned* as necessary so that the legend is readily visible.

### Recordkeeping

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the **results*** of any monitoring performed under this section, *notify each affected employee of these **results** either individually in **writing** or by **posting the results*** in an appropriate location that is accessible to employees.

**1910.1045(g)(2)(i)**—The employer *shall establish and implement a **written program*** to reduce employee exposures to or below the permissible exposure limits solely by means of *engineering and work practice controls*, as required by paragraph (g)(1) [Engineering and Work Practice Controls] of this section. [Reference paragraph (g) for specific information.]

**1910.1045(i)(1)(i)**—A **written plan for emergency situations** shall be developed for each workplace where liquid AN is present. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1045(n)(5)**—**Information provided to the physician.** The employer shall **provide information** to the examining physician. [Reference paragraph (n)(5) for specific information.]

**1910.1045(n)(6)(iii)**—The employer *shall provide a **copy of the written opinion*** to the affected employee.

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to **labels** on containers of AN and AN-based materials and to **safety data sheets**, and is trained* in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training] of this section.

**1910.1045(q)(1)(i)**—Where the processing, use, and handling of materials made from or containing AN are exempted pursuant to paragraph (a)(2)(ii) [Scope] of this section, the employer *shall establish and **maintain** an accurate **record*** of objective data reasonably relied upon in support of the exemption.

**1910.1045(q)(1)(iii)**—The employer *shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.*

**1910.1045(q)(2)(i)**—The employer *shall establish and **maintain** an accurate **record*** of all monitoring required by paragraph (e) [Exposure Monitoring] of this section.

**1910.1045(q)(2)(iii)**—The employer *shall **maintain this record** for at least forty (40) years, or for the duration of employment plus twenty (20) years, whichever is longer.*

**1910.1045(q)(3)(i)**—The employer *shall establish and **maintain** an accurate **record*** for each employee subject to medical surveillance as required by paragraph (n) [Medical Surveillance] of this section.

**1910.1045(q)(3)(iii)**—The employer *shall assure that this **record** be **maintained** for at least forty (40) years, or for the duration of employment plus twenty (20) years, whichever is longer.*



**1910.1045(q)(5)(i)**—Whenever the employer *ceases to do business*, the successor employer shall receive and **retain** all records required to be ***maintained*** by this section for the prescribed period.

**1910.1045(q)(5)(ii)**—The employer *shall also comply with any additional requirements involving transfer of records set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records]*.

### **Training and Communications**

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

**1910.1045(j)(2)(v)**—The employer *shall inform any person who launders or cleans protective clothing or equipment* of the potentially harmful effects of exposure to AN.

**1910.1045(n)(5)**—***Information provided to the physician.*** The employer shall **provide information** to the examining physician. *[Reference paragraph (n)(5) for specific information.]*

**1910.1045(n)(6)(ii)**—The employer *shall instruct the physician* not to reveal in the **written opinion** specific findings or diagnoses unrelated to occupational exposure to AN.

**1910.1045(n)(6)(iii)**—The employer *shall provide a copy of the written opinion* to the affected employee.

**1910.1045(o)(1)(i)**—The employer *shall train each employee* exposed to AN above the action level, each employee whose exposures are maintained below the action level by *engineering and work practice controls*, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer *shall institute a training program* and ensure employee participation in the **program**. *[Reference paragraph (o)(1)(ii) for specific information.]*

**1910.1045(o)(1)(ii)**—*Training shall be provided at the time of initial assignment, or upon institution of the training program, and at least annually thereafter.*

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee *has access to labels on containers of AN and AN-based materials and to safety data sheets, and is trained* in accordance with the requirements of HCS and paragraph (o) *[Employee Information and Training]* of this section.

### **Exposure Monitoring**

**1910.1045(e)(2)**—***Initial monitoring.*** Each employer who has a place of employment in which AN is present *shall monitor each such workplace and work operation* to accurately determine the airborne concentrations of AN to which employees may be exposed.

**1910.1045(e)(3)(ii)**—If the monitoring required by this section reveals employee exposure to be at or above the action level but at or below the permissible exposure limits, the employer *must repeat such monitoring for each such employee at least every 6 months. The employer must continue these measurements every 6 months* until at least two consecutive measurements taken at *least seven (7) days a part*, are below the action level, and thereafter the employer may discontinue monitoring for that employee.

**1910.1045(e)(3)(iii)**—If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer must repeat these determinations for each such employee *at least quarterly. The employer must continue these quarterly measurements until* at least two consecutive measurements, taken at *least seven (7) days apart*, are at or below the permissible exposure limits, and thereafter the employer *must monitor at least every 6 months*.

**1910.1045(e)(4)**—***Additional monitoring.*** Whenever there has been a production, process, control, or personnel change which may result in new or additional exposures to AN, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to AN, *additional monitoring which complies with this paragraph shall be conducted*.

**1910.1045(e)(5)(i)**—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

### **Medical Surveillance**

**1910.1045(n)(1)(i)**—The employer *shall institute a program of medical surveillance* for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer *shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph. [Reference paragraph (n) for specific information.]*

**1910.1045(n)(2)**—*Initial examinations. At the time of initial assignment, or upon institution of the medical surveillance program, the employer shall provide each affected employee an opportunity for a medical examination.*

**1910.1045(n)(3)(i)**—The employer *shall provide the examinations specified in paragraph (n)(2) [Initial Examinations] of this section at least annually* for all employees specified in *paragraph (n)(1) [Medical Surveillance]* of this section.

**1910.1045(n)(3)(ii)**—If an employee has not had the examination specified in *paragraph (n)(2) [Initial Examinations]* of this section *within 6 months preceding termination of employment, the employer shall make such examination available to the employee prior to such termination.*

**1910.1045(n)(4)**—*Additional examinations. If the employee for any reason develops signs or symptoms which may be associated with exposure to AN, the employer shall provide an appropriate examination and emergency medical treatment.*

**1910.1045(n)(5)**—*Information provided to the physician. The employer shall provide information to the examining physician. [Reference paragraph (n)(5) for specific information.]*

**1910.1045(n)(6)(i)**—The employer *shall obtain a written opinion* from the examining *physician*.

**1910.1045(n)(6)(iii)**—The employer *shall provide a copy of the written opinion* to the affected employee.

### **Qualified Person**

**1910.1045(n)(5)**—*Information provided to the physician. The employer shall provide information to the examining physician.*

**1910.1045(n)(6)(iii)**—The employer *shall provide a copy of the written opinion* to the affected employee.

**1910.1045(n)(6)(ii)**—The employer *shall instruct the physician* not to reveal in the *written opinion* specific findings or diagnoses unrelated to occupational exposure to AN.

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

**1910.1045(f)(2)**—Regulated areas *shall be demarcated* and segregated from the rest of the workplace, in any manner that minimizes the number of persons who will be exposed to AN.

**1910.1045(h)(2)(ii)(B)**—A *label must be attached* to the cartridge or canister to indicate the date and time at which it is first installed on the respirator.

**1910.1045(p)(1)(iii)**—Employers shall include AN and AN-based materials in the *hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee *has access to labels on containers of AN and AN-based materials and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (o) [Employee Information and Training]* of this section.

**1910.1045(p)(2)(i)**—The employer *shall post signs to clearly indicate* all workplaces where AN concentrations exceed the permissible exposure limits. *[Reference paragraph (p)(2)(i) for specific information.]*

**1910.1045(p)(3)(i)**—The employer *shall ensure that precautionary labels are in compliance with paragraph (p)(1)(i) [Hazard Communication] of this section and are affixed to all containers* of liquid AN and AN-based materials not exempted under *paragraph (a)(2) of this section. The employer shall ensure that the labels remain affixed* when the materials are sold, distributed, or otherwise leave the employer's workplace.

## 1926.1147—ETHYLENE OXIDE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at § 1910.1047 [Ethylene Oxide] of this chapter.*

## 1910.1047—ETHYLENE OXIDE

**Scope/Application:** *This section applies to occupational exposure to ethylene oxide.*

**Exception:** *This standard does not apply to the processing, use, or handling of products containing EtO where objective data are reasonably relied upon that demonstrate that the product is not capable of releasing EtO in airborne concentrations at or above the action level under the expected conditions of processing, use, or handling that will cause the greatest possible release.*

### STANDARD HIGHLIGHTS

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

### Programs, Plans and Procedures

**1910.1047(f)(1)(i)**—The employer *shall institute engineering controls and work practices* to reduce and maintain employee exposure to or below the TWA and to or below the excursion limit, except to the extent that such controls are not feasible.

**1910.1047(f)(2)(i)**—Where the TWA or excursion limit is exceeded, the employer *shall establish and implement a **written program*** to reduce employee exposure to or below the TWA and to or below the excursion limit by means of *engineering and work practice controls*, as required by paragraph (f)(1) [Engineering and Work Practice Controls] of this section, and by the use of respiratory protection where required or permitted under this section.

**1910.1047(f)(2)(iii)**—*Written plans for a **program** required in paragraph (f)(2) [Compliance Program] shall be developed and furnished upon request for examination and **copying** to the Assistant Secretary, the Director, affected employees and designated employee representatives. Such **plans** shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's **compliance program**.*

**1910.1047(g)(2)**—**Respirator program.** *The employer must implement a **respiratory protection program** in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(i)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

**1910.1047(h)(1)(i)**—A *written plan for **emergency situations** shall be developed* for each workplace where there is a possibility of an emergency. Appropriate portions of the *plan* shall be implemented in the event of an emergency.

**1910.1047(h)(1)(iii)**—The *plan* shall include the elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, “**Emergency action plans**” and “**Fire prevention plans**,” respectively.

**1910.1047(i)(1)(i)(A)**—The employer *shall institute a **medical surveillance program*** for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least 30 days a year.

**1910.1047(j)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for EtO.*

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of EtO and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

### Recordkeeping

**1910.1047(d)(1)(iii)**—Where the employer can **document** that exposure levels are equivalent for similar operations in different work shifts, the employer need only determine *representative employee exposure* for that operation during one shift.

**1910.1047(f)(2)(i)**—Where the TWA or excursion limit is exceeded, the employer shall establish and implement a **written program** to reduce employee exposure to or below the TWA and to or below the excursion limit by means of *engineering and work practice controls*, as required by paragraph (f)(1) [Engineering and Work Practice Controls] of this section, and by the use of respiratory protection where required or permitted under this section.

**1910.1047(f)(2)(iii)**—**Written plans** for a **program** required in paragraph (f)(2) [Compliance Program] shall be developed and furnished upon request for examination and **copying** to the Assistant Secretary, the Director, affected employees and designated employee representatives. Such **plans** shall be reviewed at least every 12 months, and shall be updated as necessary to reflect *significant changes in the status of the employer's compliance program*.

**1910.1047(h)(1)(i)**—A **written plan** for **emergency situations** shall be developed for each workplace where there is a possibility of an emergency. Appropriate portions of the **plan** shall be implemented in the event of an emergency.

**1910.1047(h)(1)(iii)**—The **plan** shall include the elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, “**Emergency action plans**” and “**Fire prevention plans**,” respectively.

**1910.1047(i)(3)**—**Information provided to the physician**. The employer shall **provide information** to the examining **physician** as specified in the standard.

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of EtO and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

**1910.1047(k)(1)(i)**—Where the processing, use, or handling of products made from or containing EtO are exempted from other requirements of this section under paragraph (a)(2) [Scope] of this section, or where **objective data** have been relied on in lieu of initial monitoring under paragraph (d)(2)(ii) [Initial Monitoring] of this section, the employer shall establish and **maintain** an accurate **record of objective data** reasonably relied upon in support of the exemption.

**1910.1047(k)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1047(k)(2)(i)**—The employer shall keep an accurate **record** of all measurements taken to monitor employee exposure to EtO as prescribed in paragraph (d) [Exposure Monitoring] of this section.

**1910.1047(k)(2)(iii)**—The employer shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1047(k)(3)(i)**—The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance by paragraph (i)(1)(i) [Employees Covered] of this section, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1047(k)(3)(iii)**—The employer shall ensure that this **record** is **maintained** for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].

**1910.1047(k)(5)**—**Transfer of records**. The employer shall comply with the requirements concerning transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].



## Training and Communications

**1910.1047(d)(7)(i)**—The employer *must, within 15 working days after the receipt* of the **results** of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.*

**1910.1047(i)(3)**—**Information provided to the physician.** *The employer shall provide information to the examining physician as specified in the standard. [Reference paragraph (i)(3) for specific information.]*

**1910.1047(i)(4)(ii)**—The employer *shall instruct the physician* not to reveal in the **written opinion** given to the employer specific findings or diagnoses unrelated to occupational exposure to EtO.

**1910.1047(i)(4)(iii)**—The employer *shall provide a copy of the physician's written opinion to the affected employee within 15 days from its receipt.*

**1910.1047(j)(1)(iii)**—Employers *shall include EtO in the hazard communication program established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to labels on containers of EtO and to safety data sheets, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.*

**1910.1047(j)(3)(i)**—The employer *shall provide employees* who are potentially exposed to EtO at or above the action level or above the excursion limit *with information and training on EtO at the time of initial assignment and at least annually thereafter. [Reference paragraph (j)(3)(i) for specific information.]*

## Exposure Monitoring

**1910.1047(d)(1)(i)**—*Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.*

**1910.1047(d)(1)(iii)**—Where the *employer can document that exposure levels are equivalent* for similar operations in different work shifts, the employer need only determine representative employee exposure for that operation during one shift.

**1910.1047(d)(2)(i)**—Each employer who has a workplace or work operation covered by this standard, except as provided for in *paragraph (a)(2) [Scope] or (d)(2)(ii) [Initial Monitoring] of this section, shall perform initial monitoring* to determine accurately the airborne concentrations of EtO to which employees may be exposed.

**1910.1047(d)(3)(i)**—If the monitoring required by *paragraph (d)(2) [Initial Monitoring] of this section* reveals employee exposure at or above the action level but at or below the 8-hour TWA, the employer *shall repeat such monitoring for each such employee at least every 6 months.*

**1910.1047(d)(3)(ii)**—If the monitoring required by *paragraph (d)(2)(i) [Initial Monitoring] of this section* reveals employee exposure above the 8-hour TWA, the employer *shall repeat such monitoring for each such employee at least every 3 months.*

**1910.1047(d)(3)(iii)**—The employer *may alter the monitoring schedule from quarterly to semiannually* for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee's exposure has decreased to or below the 8-hour TWA.

**1910.1047(d)(3)(iv)**—If the monitoring required by *paragraph (d)(2)(i) [Initial Monitoring] of this section* reveals employee exposure above the 15 minute excursion limit, the employer *shall repeat such monitoring for each such employee at least every 3 months, and more often as necessary to evaluate exposure the employee's short-term exposures.*

**1910.1047(d)(5)**—**Additional monitoring.** Notwithstanding the provisions of *paragraph (d)(4) [Termination of Monitoring] of this section, the employer shall institute the exposure monitoring required under paragraphs (d)(2)(i) [Initial Monitoring] and (d)(3) [Monitoring Frequency] of this section* whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to EtO or when the employer *has any reason to suspect that a change may result in new or additional exposures.*

**1910.1047(d)(7)(i)**—The employer *must, within 15 working days after the receipt* of the **results** of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees.*



## Medical Surveillance

**1910.1047(i)(1)(i)(A)**—The employer *shall institute a **medical surveillance program*** for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least 30 days a year.

**1910.1047(i)(2)(i)**—*Frequency. The employer shall make available medical examinations and consultations to each employee covered under paragraph (i)(1)(i) [Medical Surveillance] of this section on the following schedules:*

**1910.1047(i)(2)(i)(A)**—*Prior to assignment of the employee to an area where exposure may be at or above the action level for at least 30 days a year.*

**1910.1047(i)(2)(i)(B)**—*At least annually each employee exposed at or above the action level for at least 30 days in the past year.*

**1910.1047(i)(2)(i)(C)**—*At termination of employment or reassignment to an area where exposure to EtO is not at or above the action level for at least 30 days a year.*

**1910.1047(i)(2)(i)(D)**—*As medically appropriate for any employee exposed during an emergency.*

**1910.1047(i)(2)(i)(E)**—*As soon as possible, upon notification by an employee either (1) that the employee has developed signs or symptoms indicating possible overexposure to EtO, or (2) that the employee desires medical advice concerning the effects of current or past exposure to EtO on the employee's ability to produce a healthy child.*

**1910.1047(i)(2)(i)(F)**—*If the examining **physician** determines that any of the examinations should be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies recommended by the **physician**.*

**1910.1047(i)(3)**—*Information provided to the **physician**. The employer shall **provide information** to the examining **physician** as specified in the standard. [Reference paragraph (i)(3) for specific information.]*

**1910.1047(i)(4)(i)**—*The employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination. [Reference paragraph (i)(4)(i) for specific information.]*

**1910.1047(i)(4)(iii)**—*The employer shall provide a **copy of the physician's written opinion** to the affected employee within 15 days from its **receipt**.*

## Qualified Person

**1910.1047(i)(2)(i)(F)**—*If the examining **physician** determines that any of the examinations should be provided more frequently than specified, the employer shall provide such examinations to affected employees at the frequencies recommended by the **physician**.*

**1910.1047(i)(3)**—*Information provided to the **physician**. The employer shall **provide information** to the examining **physician** as specified in the standard.*

**1910.1047(i)(4)(i)**—*The employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination.*

**1910.1047(i)(4)(iii)**—*The employer shall provide a **copy of the physician's written opinion** to the affected employee within 15 days from its **receipt**.*

**1910.1047(i)(4)(ii)**—*The employer shall instruct the **physician** not to reveal in the **written opinion** given to the employer specific findings or diagnoses unrelated to occupational exposure to EtO.*

## Signs, Markings and Tags

**1910.1047(e)(1)**—*The employer shall establish a **regulated area** wherever occupational exposures to airborne concentrations of EtO may exceed the TWA or wherever the EtO concentration exceeds or can reasonably be expected to exceed the excursion limit.*

**1910.1047(e)(3)**—Regulated areas shall be **demarcated** in any manner that minimizes the number of employees within the regulated area.

**1910.1047(j)(1)(iii)**—Employers shall include EtO in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of EtO and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (j)(3) [Information and Training] of this section.

**1910.1047(j)(2)(i)(A)**—The employer shall **post and maintain** legible **signs** demarcating regulated areas and entrances or access ways to regulated areas that bear a legend. [Reference paragraph (j)(2)(i)(A) for specific information.]

**1910.1047(j)(2)(ii)(A)**—The employer shall ensure that **labels** are **affixed** to all containers of EtO whose contents are capable of causing employee exposure at or above the action level or whose contents may reasonably be foreseen to cause employee exposure above the excursion limit, and that the **labels remain affixed** when the containers of EtO leave the workplace. For the purposes of this paragraph (j)(2)(ii) [Labels], reaction vessels, storage tanks, and pipes or piping systems are not considered to be containers.

## **1926.1148—FORMALDEHYDE**

**Scope/Application:** The requirements applicable to construction work under this section are identical to those set forth at § 1910.1048 [Formaldehyde] of this chapter.

## **1910.1048—FORMALDEHYDE**

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

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—work controls, respirator program, housekeeping program, medical surveillance program, hazard communication program, training program, preventive maintenance
- Inspections and Tests—pulmonary function tests
- Recordkeeping—retention requirements
- Training and Communications—training program, initial and annual training
- Exposure Monitoring—periodic monitoring, posted results
- Medical Surveillance—questionnaires, initial and annual examinations
- Qualified Person—physician
- Signs, Markings and Tags—regulated areas, posted signs, labels

### **Programs, Plans and Procedures**

**1910.1048(f)(1)**—Engineering controls and work practices. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

**1910.1048(g)(2)(i)**—The employer must implement a **respiratory protection program** in accordance with § 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m), which covers each employee required by this section to use a respirator.

**1910.1048(g)(2)(ii)(A)**—Replace the cartridge after three (3) hours of use or at the end of the workshift, whichever occurs first, unless the cartridge contains a **NIOSH-approved end-of-service-life indicator (ESLI)** to show when breakthrough occurs.

**1910.1048(g)(2)(ii)(B)**—Unless the canister contains a **NIOSH-approved ESLI** to show when breakthrough occurs, replace canisters used in atmospheres up to 7.5 ppm (10xPEL) every four (4) hours and industrial-sized canisters used in atmospheres up to 75 ppm (100xPEL) every two (2) hours, or at the end of the workshift, whichever occurs first.

**1910.1048(l)(4)(ii)**—Laboratory examinations for respirator wearers *consisting of baseline and annual pulmonary function tests*. As a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in one second (FEV<sub>1</sub>), and forced expiratory flow (FEF).

**1910.1048(j)**—Housekeeping. For operations involving formaldehyde liquids or gas, the employer *shall conduct a **program** to detect leaks and spills, including regular visual inspections*.

**1910.1048(j)(1)**—Preventative maintenance of equipment, *including surveys for leaks, shall be undertaken at regular intervals*.

**1910.1048(k)**—Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer *shall assure appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency*.

**1910.1048(l)(1)(i)**—The employer *shall institute **medical surveillance programs** for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. [Reference paragraph (l) for specific information.]*

**1910.1048(m)(1)(i)**—Chemical manufacturers, importers, distributors and employers *shall comply with all requirements of the Hazard Communication Standard (HCS) (Sec. 1910.1200) for formaldehyde*.

**1910.1048(m)(1)(iii)**—Employers *shall include formaldehyde in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of formaldehyde and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (a) [Employee Information and Training] of this section*.

**1910.1048(m)(4)(i)**—Any employer who uses formaldehyde-containing materials listed in *paragraph (m)(1)(i) [Hazard Communication]* shall comply with the requirements of 29 CFR 1910.1200(g) *[Safety Data Sheets]* with regard to the development and updating of **safety data sheets**.

**1910.1048(m)(4)(ii)**—Manufacturers, importers, and distributors of formaldehyde-containing materials listed in *paragraph (m)(1)(i) [Hazard Communication]* shall assure that **safety data sheets** and updated information are provided to all employers purchasing such materials at the time of the initial shipment and at the time of the first shipment after a **safety data sheet** is updated.

**1910.1048(m)(5)**—**Written hazard communication program**. The employer shall develop, implement, and **maintain** at the workplace, a **written hazard communication program** for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for **labels** and **other forms of warning** and **safety data sheets**, and paragraph (n) *[Employee Information and Training]* for employee **information and training**, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2) *[Hazard Communication]*.

**1910.1048(n)(1)**—Participation. The employer *shall assure that all employees who are assigned to workplaces where there is exposure to formaldehyde participate in a **training program**, except that where the employer can show, using **objective data**, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training. [Reference paragraph (n)(3) for specific information.]*

## **Inspections and Tests**

**1910.1048(j)**—Housekeeping. For operations involving formaldehyde liquids or gas, the employer *shall conduct a **program** to detect leaks and spills, including regular visual inspections*.

**1910.1048(j)(1)**—Preventative maintenance of equipment, *including surveys for leaks, shall be undertaken at regular intervals*.

## **Recordkeeping**

**1910.1048(d)(1)(iv)**—Representative samples for each job classification in each work area *shall be taken for each shift unless the employer can **document with objective data** that exposure levels for a given job classification are equivalent for different work shifts*.

**1910.1048(d)(6)**—*Employee notification of **monitoring results**. The employer must, within 15 working days after the **receipt** of the **results** of any monitoring performed under this section, notify each affected employee of these **results** either individually in **writing** or by **posting** the **results** in an appropriate location that is accessible to employees. If employee exposure is above the PEL, affected employees shall be provided with a **description** of the **corrective actions** being taken by the employer to decrease exposure.*

**1910.1048(l)(6)**—***Information provided to the physician**. The employer shall **provide information** to the examining **physician** (specifically listed in standard). [Reference paragraph (l)(6) for specific information.]*

**1910.1048(l)(9)(ii)**—*The employer shall promptly notify an employee of the right to seek a **second medical opinion** after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.*

**1910.1048(m)(1)(iii)**—*Employers shall include formaldehyde in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of formaldehyde and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training] of this section.*

**1910.1048(m)(5)**—***Written hazard communication program**. The employer shall develop, implement, and **maintain** at the workplace, a **written hazard communication program** for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for **labels** and **other forms of warning** and **safety data sheets**, and paragraph (n) [Employee Information and Training] for employee **information** and training, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2) [Hazard Communication].*

**1910.1048(o)(1)**—***Exposure measurements**. The employer shall establish and **maintain** an accurate **record** of all **measurements** taken to monitor employee exposure to formaldehyde.*

**1910.1048(o)(2)**—***Exposure determinations**. Where the employer has determined that no monitoring is required under this standard, the employer shall **maintain a record** of the **objective data** relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.*

**1910.1048(o)(3)**—***Medical surveillance**. The employer shall establish and **maintain** an accurate **record** for each employee subject to medical surveillance under this standard.*

**1910.1048(o)(4)(i)**—*The employer shall establish and **maintain** accurate **records** for employees subject to negative pressure respirator fit testing required by this standard.*

**1910.1048(o)(5)**—***Record retention**. The employer shall **retain records** required by this standard for at least the following periods:*

**1910.1048(o)(5)(i)**—***Exposure records** and determinations shall be kept for at least 30 years.*

**1910.1048(o)(5)(ii)**—***Medical records** shall be kept for the duration of employment plus 30 years.*

**1910.1048(o)(5)(iii)**—***Respirator fit testing records** shall be kept until replaced by a more recent **record**.*

## **Training and Communications**

**1910.1048(e)(3)**—*An employer at a multiemployer worksite who establishes a regulated area shall **communicate the access restrictions** and locations of these areas to other employers with work operations at that worksite.*

**1910.1048(h)(2)(iii)**—*The employer shall assure that only persons trained to recognize the hazards of formaldehyde remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.*

**1910.1048(h)(2)(vi)**—*The employer shall inform any person who launders, cleans, or repairs such clothing or equipment of formaldehyde's potentially harmful effects and of **procedures** to safely handle the clothing and equipment.*



**1910.1048(j)(4)**—Formaldehyde-contaminated waste and debris resulting from leaks or spills shall be placed for disposal in sealed containers *bearing a **label** warning of formaldehyde's presence and of the hazards associated with formaldehyde. The employer shall ensure that the **labels** are in accordance with paragraph (m) [Hazard Communication] of this section.*

**1910.1048(l)(6)**—***Information provided to the physician.** The employer shall **provide information** to the examining **physician** (specifically listed in standard). [Reference paragraph (l)(6) for specific information.]*

**1910.1048(l)(9)(ii)**—The employer shall promptly notify an employee of the right to seek a second **medical opinion** after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(m)(1)(iii)**—Employers shall include formaldehyde in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of formaldehyde and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training] of this section.

**1910.1048(n)(1)**—Participation. The employer shall assure that all employees who are assigned to workplaces where there is exposure to formaldehyde participate in a **training program**, except that where the employer can show, using **objective data**, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training. [Reference paragraph (n)(3) for specific information.]

**1910.1048(n)(2)**—Frequency. Employers shall provide such **information** and training to employees at the time of initial assignment, and whenever a new exposure to formaldehyde is introduced into the work area. The training shall be repeated at least annually.

## **Exposure Monitoring**

**1910.1048(d)(1)(i)**—Each employer who has a workplace covered by this standard shall monitor employees to determine their exposure to formaldehyde.

**1910.1048(d)(1)(iv)**—Representative samples for each job classification in each work area shall be taken for each shift unless the employer can document with **objective data** that exposure levels for a given job classification are equivalent for different work shifts.

**1910.1048(d)(2)(i)**—Unless the employer chooses to measure the exposure of each employee potentially exposed to formaldehyde, the employer shall develop a representative sampling strategy and measure sufficient exposures within each job classification for each workshift to correctly characterize and not underestimate the exposure of any employee within each exposure group.

**1910.1048(d)(2)(ii)**—The initial monitoring process shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in new or additional exposure to formaldehyde.

**1910.1048(d)(2)(iii)**—If the employer receives reports of signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure, the employer shall promptly monitor the affected employee's exposure.

**1910.1048(d)(3)(i)**—The employer shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring to be exposed at or above the action level or at or above the STEL.

**1910.1048(d)(3)(ii)**—If the last **monitoring results** reveal employee exposure at or above the action level, the employer shall repeat monitoring of the employees at least every 6 months.

**1910.1048(d)(3)(iii)**—If the last **monitoring results** reveal employee exposure at or above the STEL, the employer shall repeat monitoring of the employees at least once a year under worst conditions.

**1910.1048(d)(6)**—Employee notification of **monitoring results**. The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in writing or by posting the results in an appropriate location that is accessible to employees. If employee exposure is above the PEL, affected employees shall be provided with a **description** of the corrective actions being taken by the employer to decrease exposure.



## Medical Surveillance

**1910.1048(l)(1)(i)**—The employer *shall institute **medical surveillance programs*** for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. *[Reference paragraph (l) for specific information.]*

**1910.1048(l)(3)**—**Medical disease questionnaire.** The employer shall make the following medical surveillance available to employees *prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter*. The employer shall also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

**1910.1048(l)(3)(i)**—*Administration of a **medical disease questionnaire**, such as in appendix D*, which is designed to elicit information on work history, smoking history, any evidence of eye, nose, or throat irritation; chronic airway problems or hyperreactive airway disease; allergic skin conditions or dermatitis; and upper or lower respiratory problems.

**1910.1048(l)(4)**—*Medical examinations.* Medical examinations shall be given to any employee who the **physician** feels, based on information in the **medical disease questionnaire**, may be at increased risk from exposure to formaldehyde and *at the time of initial assignment and at least annually thereafter* to all employees required to wear a respirator to reduce exposure to formaldehyde.

**1910.1048(l)(5)**—*Examinations for employees exposed in an emergency.* The employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.

**1910.1048(l)(3)(ii)**—*A determination by the **physician**, based on evaluation of the **medical disease questionnaire**, of whether a medical examination is necessary* for employees not required to wear respirators to reduce exposure to formaldehyde.

**1910.1048(l)(6)**—**Information provided to the physician.** The employer shall **provide information** to the examining **physician** (specifically listed in standard). *[Reference paragraph (l)(6) for specific information.]*

**1910.1048(l)(7)(i)**—For each examination required under this standard, the employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the **medical examination** except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

**1910.1048(l)(9)(ii)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(l)(9)(iii)**—The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the notification* of the right to seek a second **medical opinion**, or *receipt of the initial physician's written opinion*, whichever is later.

## Qualified Person

**1910.1048(l)(3)(ii)**—*A determination by the **physician**, based on evaluation of the **medical disease questionnaire**, of whether a medical examination is necessary* for employees not required to wear respirators to reduce exposure to formaldehyde.

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

**1910.1048(l)(7)(i)**—For each examination required under this standard, the employer shall obtain a **written opinion** from the examining **physician**. This **written opinion** shall contain the **results** of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.

**1910.1048(l)(9)(ii)**—The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial **physician** conducts a medical examination or consultation for the purpose of medical removal or restriction.

**1910.1048(l)(9)(iii)**—The employer may condition its participation in, and payment for, the multiple **physician** review mechanism upon the employee doing the following *within fifteen (15) days after receipt of the notification* of the right to seek a second medical opinion, or *receipt of the initial physician's written opinion*, whichever is later.

## Signs, Markings and Tags

**1910.1048(e)(1)(i)**—The employer *shall establish regulated areas* where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and **post** all entrances and accessways with **signs**. [Reference paragraph (e)(1)(i) for specific information.]

**1910.1048(h)(2)(ii)(A)**—**Signs**. Storage areas for contaminated clothing and equipment shall have **signs** bearing a legend. [Reference paragraph (h)(2)(ii)(A) for specific information.]

**1910.1048(h)(2)(ii)(B)**—**Labels**. The employer *shall ensure containers for contaminated clothing and equipment are labeled* consistent with the Hazard Communication Standard, Sec. 1910.1200. [Reference paragraph (h)(2)(ii)(B) for specific information.]

**1910.1048(m)(1)(iii)**—Employers *shall include formaldehyde in the hazard communication program established to comply with the HCS (Sec. 1910.1200)*. Employers shall ensure that each employee has access to **labels** on containers of formaldehyde and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (n) [Employee Information and Training] of this section.

**1910.1048(m)(3)(i)**—The employer *shall assure that hazard warning labels* complying with the requirements of 29 CFR 1910.1200(f) [Labels and Other Forms of Warning] are **affixed** to all containers of materials listed in paragraph (m)(1)(i) [Hazard Communication], except to the extent that 29 CFR 1910.1200(f) [Labels and Other Forms of Warning] is inconsistent with this paragraph.

## 1926.1152—METHYLENE CHLORIDE

**Scope/Application:** *The requirements applicable to construction work under this section are identical to those set forth at 29 CFR 1910.1052 [Methylene Chloride] of this chapter.*

## 1910.1052—METHYLENE CHLORIDE

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

### STANDARD HIGHLIGHTS

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

### Programs, Plans 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)(iii)**—Employers shall include MC in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of MC and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l) [Employee Information and Training] of this section.

### Recordkeeping

**1910.1052(d)(2)(i)**—Where **objective data** demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The **objective data** shall represent the highest MC exposures likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer shall **document the objective data exemption** as specified in paragraph (m) [Recordkeeping] of this section.

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

**1910.1052(j)(8)**—**Information provided to the physician or other licensed health care professional.** The employer shall **provide information** [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]

**1910.1052(j)(9)(ii)**—The employer shall instruct the **physician or other licensed health care professional** not to reveal to the employer, orally or in the **written opinion**, any specific **records**, findings, and diagnoses that have no bearing on occupational exposure to MC.

**1910.1052(k)(1)(iii)**—Employers shall include MC in the **hazard communication program** established to comply with the HCS (Sec. 1910.1200). Employers shall ensure that each employee has access to **labels** on containers of MC and to **safety data sheets**, and is trained in accordance with the requirements of HCS and paragraph (l) [Employee Information and Training] of this section.

**1910.1052(m)(1)(i)**—Where an employer seeks to demonstrate that *initial monitoring* is unnecessary through reasonable reliance on objective data showing that any materials in the workplace containing MC will not release MC at levels which exceed the action level or the STEL under foreseeable conditions of exposure, the employer shall **establish and maintain an accurate record of the objective data** relied upon in support of the exemption.

**1910.1052(m)(1)(iii)**—The employer shall **maintain this record** for the duration of the employer's reliance upon such **objective data**.

**1910.1052(m)(2)(i)**—The employer shall **establish and keep an accurate record** of all measurements taken to **monitor employee exposure** to MC as prescribed in paragraph (d) [Exposure Monitoring] of this section.

**1910.1052(m)(2)(iv)**—The employer shall **maintain this record** for at least thirty (30) years, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1052(m)(3)(i)**—The employer shall **establish and maintain an accurate record** for each employee subject to medical surveillance under paragraph (j) [Medical Surveillance] of this section.

**1910.1052(m)(3)(iii)**—The employer shall ensure that this **record** is **maintained** for the duration of employment plus thirty (30) years, in accordance with 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].

**1910.1052(m)(5)**—*Transfer of **records**. The employer shall comply with the requirements concerning transfer of **records** set forth in 29 CFR 1910.1020(h) [Access to Employee Exposure and Medical Records].*

## **Training and Communications**

**1910.1052(e)(7)**—An employer at a multi-employer worksite who establishes a regulated area *shall communicate the access restrictions and locations* of these areas to all other employers with work operations at that worksite.

**1910.1052(f)(3)(ii)**—The employer shall ensure that all incidental leaks are repaired and that incidental spills are cleaned promptly by employees who use the appropriate personal protective equipment and *are trained in proper methods of cleanup*.

**1910.1052(j)(8)**—*Information provided to the **physician** or other **licensed health care professional**. The employer shall provide information [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]*

**1910.1052(j)(9)(ii)**—The employer *shall instruct the **physician or other licensed health care professional*** not to reveal to the employer, orally or in the **written opinion**, any specific **records**, findings, and diagnoses that have no bearing on occupational exposure to MC.

**1910.1052(k)**—*Hazard communication. The employer shall communicate the following hazards associated with MC on **labels** and in **safety data sheets** in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, or 29 CFR 1926.59, as appropriate: cancer, cardiac effects (including elevation of carboxyhemoglobin), central nervous system effects, liver effects, and skin and eye irritation.*

**1910.1052(l)(1)**—The employer *shall provide **information** and training* for each affected employee prior to or at the time of initial assignment to a job involving potential exposure to MC.

**1910.1052(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.

## **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 I.*

**1910.1052(d)(4)(i)**—The employer *shall perform exposure monitoring when a change* in workplace conditions indicates that employee exposure may have increased. Examples of situations that may require additional monitoring include changes in production, process, control equipment, or work practices, or a leak, rupture, or other breakdown.



**1910.1052(d)(5)(i)**—The employer *shall, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results in writing, either individually or by posting of results* in an appropriate location that is accessible to affected employees.

## **Medical Surveillance**

**1910.1052(g)(4)**—*Medical evaluation.* Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer *must*:

**1910.1052(g)(4)(i)**—Have a **physician** or other **licensed health-care professional (PLHCP)** evaluate the employee's ability to use such respiratory protection.

**1910.1052(j)(1)**—Affected employees. The employer *shall make medical surveillance available* for employees who are or may be exposed to MC.

**1910.1052(j)(4)(i)**—*Initial surveillance.* The employer *shall provide initial medical surveillance under the schedule provided by paragraph (m)(2)(iii) [Medical Surveillance] of this section, or before the time of initial assignment of the employee, whichever is later.* The employer need not provide the initial surveillance if **medical records** show that an affected employee has been provided with medical surveillance that complies with this section *within 12 months before April 10, 1997.*

**1910.1052(j)(4)(ii)**—*Periodic medical surveillance.* The employer *shall update the medical and work history for each affected employee annually.* The employer *shall provide periodic physical examinations, including appropriate laboratory surveillance, as follows:*

**1910.1052(j)(4)(ii)(A)**—*For employees 45 years of age or older, within 12 months of the initial surveillance or any subsequent medical surveillance.*

**1910.1052(j)(4)(ii)(B)**—*For employees younger than 45 years of age, within 36 months of the initial surveillance or any subsequent medical surveillance.*

**1910.1052(j)(4)(iii)**—*Termination of employment or reassignment.* When an employee leaves the employer's workplace, or is reassigned to an area where exposure to MC is consistently at or below the action level and STEL, medical surveillance *shall be made available if six months or more have elapsed since the last medical surveillance.*

**1910.1052(j)(4)(iv)**—*Additional surveillance.* The employer *shall provide additional medical surveillance at frequencies other than those listed above when recommended in the written medical opinion.* (For example, the **physician** or other **licensed health care professional** may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the **results** of the *annual medical and work history.*)

**1910.1052(j)(8)**—*Information provided to the physician or other licensed health care professional.* The employer *shall provide information [specified in the standard] to a physician or other licensed health care professional who is involved in the diagnosis of MC-induced health effects. [Reference paragraph (j) for specific information.]*

**1910.1052(j)(9)(i)**—For each physical examination required by this section, the employer *shall ensure that the physician or other licensed health care professional provides to the employer and to the affected employee a written opinion regarding the results of that examination within 15 days of completion of the evaluation of medical and laboratory findings, but not more than 30 days after the examination. The written medical opinion shall be limited to specific information. [Reference Reference paragraph (j)(9) for specific information.]*

**1910.1052(j)(14)(ii)**—If the employee *does not agree with the opinion of the employer-selected PLHCP, notifies the employer of that fact, and takes steps to make an appointment with a second PLHCP within 15 days of receiving a copy of the written opinion of the initial PLHCP,* the employer *shall pay for the PLHCP chosen by the employee to perform specific tests. [Reference paragraph (j)(14) for specific information.]*

## **Qualified Person**

**1910.1052(g)(4)(i)**—Have a **physician** or other **licensed health-care professional (PLHCP)** evaluate the employee's ability to use such respiratory protection.



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

**1910.1052(j)(4)(iv)**—Additional surveillance. The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the **written medical opinion**. (For example, the **physician or other licensed health care professional** may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the **results** of the **annual medical and work history**.)

**1910.1052(j)(8)**—Information provided to the **physician or other licensed health care professional**. The employer shall provide information [specified in the standard] to a **physician or other licensed health care professional** who is involved in the diagnosis of MC-induced health effects.

**1910.1052(j)(9)(i)**—For each physical examination required by this section, the employer shall ensure that the **physician or other licensed health care professional** provides to the employer and to the affected employee a **written opinion** regarding the **results** of that examination within 15 days of completion of the evaluation of medical and laboratory findings, but not more than 30 days after the examination. The **written medical opinion** shall be limited to specific **information**.

**1910.1052(j)(14)(ii)**—If the employee does not agree with the **opinion** of the employer-selected **PLHCP**, notifies the employer of that fact, and takes steps to make an appointment with a second **PLHCP** within 15 days of receiving a **copy** of the **written opinion** of the initial **PLHCP**, the employer shall pay for the **PLHCP** chosen by the employee to perform specific tests.

### Signs, Markings and Tags

**1910.1052(e)(1)**—The employer shall establish a regulated area wherever an employee's exposure to airborne concentrations of MC exceeds or can reasonably be expected to exceed either the 8-hour TWA PEL or the STEL.

**1910.1052(e)(6)**—The employer shall **demarcate** regulated areas from the rest of the workplace in any manner that adequately establishes and alerts employees to the boundaries of the area and minimizes the number of authorized employees exposed to MC within the regulated area.

## 1926.1153—RESPIRABLE CRYSTALLINE SILICA

**Scope/Application:** This section applies to occupational exposure to respirable crystalline silica.

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—work controls, procedures, respirator program, hazard communication program, medical surveillance program
- Inspections and Tests—inspections by competent person
- Recordkeeping—retention requirements, records
- Training and Communications—initial and annual training, instruct **physician**
- Exposure Monitoring—initial and periodic monitoring, posted results
- Medical Surveillance—initial and periodic examinations, written opinion, program
- Competent Person—inspections
- Qualified Person—physician

### Programs, Plans and Procedures

**1926.1153(c)(1)**—For each employee engaged in a task identified on **Table 1**, the employer shall fully and properly implement the engineering controls, work practices, and respiratory protection specified for the task on **Table 1**, unless the employer assesses and limits the exposure of the employee to respirable crystalline silica in accordance with *paragraph (d)[Alternative Exposure Control Methods]* of this section.

**1926.1153(d)**—Alternative exposure control methods. For tasks not listed in **Table 1**, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in **Table 1**.

**1926.1153(d)(2)(iv)—Reassessment of exposures.** The employer shall reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

**1926.1153(d)(2)(v)—Methods of sample analysis.** The employer shall ensure that all samples taken to satisfy the monitoring requirements of paragraph (d)(2) [Exposure Assessment] of this section are evaluated by a laboratory that analyzes air samples for respirable crystalline silica in accordance with the procedures in *Appendix A* to this section.

**1926.1153(d)(3)(i)—Engineering and work practice controls.** The employer shall use engineering and work practice controls to reduce and maintain employee exposure to respirable crystalline silica to or below the PEL, unless the employer can demonstrate that such controls are not feasible. Wherever such feasible engineering and work practice controls are not sufficient to reduce employee exposure to or below the PEL, the employer shall nonetheless use them to reduce employee exposure to the lowest feasible level and shall supplement them with the use of respiratory protection that complies with the requirements of paragraph (e) [Respiratory Protection] of this section.

**1926.1153(e)(1)(ii)**—For tasks not listed in *Table 1*, or where the employer does not fully and properly implement the engineering controls, work practices, and respiratory protection described in *Table 1*:

**1926.1153(e)(1)(ii)(A)**—Where exposures exceed the PEL during periods necessary to install or implement feasible engineering and work practice controls.

**1926.1153(e)(1)(ii)(B)**—Where exposures exceed the PEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible; and

**1926.1153(e)(1)(ii)(C)**—During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL.

**1926.1153(e)(2)—Respiratory protection program.** Where respirator use is required by this section, the employer shall institute a *respiratory protection program* in accordance with 29 CFR 1910.134.

**1926.1153(e)(3)—Specified exposure control methods.** For the tasks listed in *Table 1* in paragraph (c) of this section, if the employer fully and properly implements the engineering controls, work practices, and respiratory protection described in *Table 1*, the employer shall be considered to be in compliance with paragraph (e)(1) [Respiratory Protection] of this section and the requirements for selection of respirators in 29 CFR 1910.134(d)(1)(iii) and (d)(3) [Alternative Exposure Control Methods] with regard to exposure to respirable crystalline silica.

**1926.1153(g)(1)**—The employer shall establish and implement a *written exposure control plan* that contains at least the following elements:

**1926.1153(g)(1)(i)**—A *description* of the tasks in the workplace that involve exposure to respirable crystalline silica;

**1926.1153(g)(1)(ii)**—A *description* of the engineering controls, work practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task;

**1926.1153(g)(1)(iii)**—A *description* of the housekeeping measures used to limit employee exposure to respirable crystalline silica; and

**1926.1153(g)(1)(iv)**—A *description* of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by other employers or sole proprietors.

**1926.1153(h)(3)—Periodic examinations.** The employer shall make available medical examinations *that include the procedures described in paragraph (h)(2) [Medical Surveillance] of this section (except paragraph (h)(2)(v))* at least every three years, or more frequently if recommended by the **PLHCP**.

**1926.1153(i)(1)—Hazard communication.** The employer shall include respirable crystalline silica in the **program** established to comply with the *hazard communication standard (HCS) (29 CFR 1910.1200)*. The employer shall ensure that each employee has access to **labels** on containers of crystalline silica and **safety data sheets**, and is trained in accordance with the provisions of HCS and *paragraph (i)(2) [Employee Information and Training] of this section*. The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

**1926.1153(i)(2)(i)(C)—**Specific measures the employer has implemented to protect employees from exposure to respirable crystalline silica, *including engineering controls, work practices, and respirators to be used;*

**1926.1153(i)(2)(i)(F)—**The purpose and a **description of the medical surveillance program** required by *paragraph (h) [Medical Surveillance] of this section*.

### Inspections and Tests

**1926.1153(g)(4)—**The employer shall *designate a competent person to make frequent and regular inspections* of job sites, materials, and equipment to **implement the written exposure control plan**.

**1926.1153(j)(2)(ii)(C)—**The *testing protocol* and **results of testing**.

### Recordkeeping

**1926.1153(g)(1)—**The employer shall *establish and implement a written exposure control plan* that contains at least the following elements. *[Reference paragraph (g)(1) for specific requirements.]*

**1926.1153(g)(4)—**The employer shall *designate a competent person to make frequent and regular inspections* of job sites, materials, and equipment to **implement the written exposure control plan**.

**1926.1153(h)(4)—Information provided to the PLHCP.** The employer shall ensure that the examining **PLHCP** has a **copy** of this **standard**, and shall provide the **PLHCP** with the following information. *[Reference paragraph (h)(4) for specific requirements.]*

**1926.1153(h)(5)—PLHCP's written medical report for the employee.** The employer shall ensure that the **PLHCP** *explains* to the employee the results of the medical examination and provides each employee with a **written medical report** within 30 days of each medical examination performed.

**1926.1153(h)(5)(iv)—**A **statement** that the employee should be examined by a *specialist (pursuant to paragraph (h)(7) of this section)* if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the **PLHCP**.

**1926.1153(h)(6)(i)—**The employer shall obtain a **written medical opinion** from the **PLHCP** within 30 days of the medical examination. The **written opinion** shall contain only the following. *[Reference paragraph (h)(6)(i) for specific requirements.]*

**1926.1153(h)(6)(ii)(B)—**A **statement** that the employee should be examined by a specialist (pursuant to paragraph (h)(7) of this section) if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if *referral to a specialist* is otherwise deemed appropriate by the **PLHCP**.

**1926.1153(h)(7)(i)—**If the **PLHCP's written medical opinion** indicates that an employee should be examined by a specialist, the employer shall make available a medical examination by a specialist within 30 days after receiving the **PLHCP's written opinion**.

**1926.1153(j)(3)(ii)(B)**—A *copy* of the ***PLHCPs’ and specialists’ written medical opinions***.

**1926.1153(j)(3)(ii)(C)**—A *copy* of the ***information*** provided to the ***PLHCPs and specialists***.

**1926.1153(i)(1)**—*Hazard communication*. The employer shall include respirable *crystalline silica in the program* established to comply with the *hazard communication standard (HCS) (29 CFR 1910.1200)*. The employer shall ensure that each employee has access to ***labels*** on containers of crystalline silica and ***safety data sheets***, and is trained in accordance with the provisions of HCS and *paragraph (i)(2) [Employee Information and Training]* of this section. The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

**1926.1153(j)(3)(ii)(B)**—A *copy* of the ***PLHCPs’ and specialists’ written medical opinions***.

**1926.1153(j)(3)(ii)(C)**—A *copy* of the ***information*** provided to the ***PLHCPs and specialists***.

## **Training and Communications**

**1926.1153(i)(1)**—*Hazard communication*. The employer shall include respirable *crystalline silica in the program* established to comply with the *hazard communication standard (HCS) (29 CFR 1910.1200)*. The employer shall ensure that each employee has access to ***labels*** on containers of crystalline silica and ***safety data sheets***, and is trained in accordance with the provisions of HCS and *paragraph (i)(2) [Employee Information and Training]* of this section. The employer shall ensure that at least the following hazards are addressed: Cancer, lung effects, immune system effects, and kidney effects.

**1926.1153(i)(2)(i)**—The employer shall ensure that each employee covered by this section can *demonstrate knowledge and understanding* of at least the following. *[Reference paragraph (i)(2) for specific requirements.]*

## **Exposure Monitoring**

**1926.1153(d)(2)(iii)(C)**—Where the most recent *exposure monitoring indicates that employee exposures are at or above the action level* but at or below the PEL, the employer *shall repeat such monitoring* within six months of the most recent monitoring.

**1926.1153(d)(2)(iii)(D)**—Where the *most recent exposure monitoring indicates that employee exposures are above the PEL*, the employer *shall repeat such monitoring* within three months of the most recent monitoring.

**1926.1153(d)(2)(iii)(E)**—Where the *most recent (noninitial) exposure monitoring indicates that employee exposures are below the action level*, the employer *shall repeat such monitoring* within six months of the most recent monitoring until two consecutive measurements, taken seven or more days apart, are below the action level, at which time the employer may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in *paragraph (d)(2)(iv) [Reassessment of Exposures]* of this section.

**1926.1153(d)(2)(iv)**—*Reassessment of exposures*. The employer *shall reassess exposures* whenever a change in the production, process, control equipment, personnel, or *work practices may reasonably be expected to result in new or additional exposures at or above the action level*, or when the employer has any reason to believe that new or additional exposures at or above the action level have occurred.

**1926.1153(g)(1)**—The employer shall *establish and implement a written exposure control plan* that contains at least the following elements:

**1926.1153(g)(1)(i)**—A *description of the tasks in the workplace* that involve exposure to respirable crystalline silica.



## Medical Surveillance

**1926.1153(h)(2)(vi)**—Any *other tests deemed* appropriate by the **PLHCP**.

**1926.1153(h)(3)**—*Periodic examinations.* The employer shall make available medical examinations that *include the procedures* described in *paragraph (h)(2) [Initial Examination]* of this section (except paragraph (h)(2)(v)) at least every three years, or more frequently if recommended by the **PLHCP**.

**1926.1153(h)(4)**—*Information provided to the PLHCP.* The employer shall ensure that the examining **PLHCP** has a *copy* of this **standard**, and shall provide the **PLHCP** with the following **information**. [*Reference paragraph (h)(4) for specific requirements.*]

**1926.1153(h)(5)**—**PLHCP's written medical report for the employee.** The employer shall ensure that the **PLHCP** *explains* to the employee the **results** of the medical examination and provides each employee with a **written medical report** within 30 days of each medical examination performed.

**1926.1153(h)(5)(iv)**—A **statement** that the employee should be examined by a *specialist (pursuant to paragraph (h)(7) of this section)* if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a specialist is otherwise deemed appropriate by the **PLHCP**.

**1926.1153(h)(6)(i)**—The employer shall obtain a **written medical opinion** from the **PLHCP** within 30 days of the medical examination. The **written opinion** shall contain only the following. [*Reference paragraph (h)(6)(i) for specific requirements.*]

**1926.1153(h)(6)(ii)(B)**—A **statement** that the employee should be examined by a specialist (pursuant to paragraph (h)(7) of this section) if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if *referral to a specialist* is otherwise deemed appropriate by the **PLHCP**.

**1926.1153(h)(7)(i)**—If the **PLHCP's written medical opinion** indicates that an employee should be examined by a specialist, the employer shall make available a medical examination by a specialist within 30 days after receiving the **PLHCP's written opinion**.

**1926.1153(i)(2)(i)(F)**—The purpose and a **description of the medical surveillance program** required by *paragraph (h) [Medical Surveillance]* of this section.

## Competent Person

**1926.1153(g)(4)**—The employer shall *designate a competent person to make frequent and regular inspections* of job sites, materials, and equipment to *implement the written exposure control plan*.

**1926.1153(i)(2)(i)(E)**—The identity of the *competent person designated by the employer* in accordance with *paragraph (g)(4) [Written Exposure Control Plan]* of this section.

## Qualified Person

**1926.1153(h)(2)(vi)**—Any *other tests deemed* appropriate by the **PLHCP**.

**1926.1153(h)(3)**—*Periodic examinations.* The employer shall make available medical examinations that *include the procedures* described in *paragraph (h)(2) [Initial Examination]* of this section (except paragraph (h)(2)(v)) at least every three years, or more frequently if recommended by the **PLHCP**.

**1926.1153(h)(4)**—*Information provided to the PLHCP.* The employer shall ensure that the examining **PLHCP** has a *copy* of this **standard**, and shall provide the **PLHCP** with the following information. [*Reference paragraph (h)(4) for specific requirements.*]



**1926.1153(h)(5)—*PLHCP's written medical report for the employee.*** The employer shall ensure that the ***PLHCP*** *explains* to the employee the results of the medical examination and provides each employee with a ***written medical report*** within 30 days of each medical examination performed.

**1926.1153(h)(5)(iv)—A *statement*** that the employee should be examined by a specialist (pursuant to paragraph (h)(7) of this section) if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if referral to a ***specialist*** is otherwise deemed appropriate by the ***PLHCP***.

**1926.1153(h)(6)(i)—**The employer shall obtain a ***written medical opinion*** from the ***PLHCP*** within 30 days of the medical examination. The ***written opinion*** shall contain only the following. [*Reference paragraph (h)(6)(i) for specific requirements.*]

**1926.1153(h)(6)(ii)(B)—A *statement*** that the employee should be examined by a specialist (pursuant to paragraph (h)(7) of this section) if the chest X-ray provided in accordance with this section is classified as 1/0 or higher by the B Reader, or if *referral to a specialist* is otherwise deemed appropriate by the ***PLHCP***.

**1926.1153(h)(7)(i)—**If the ***PLHCP's written medical opinion*** indicates that an employee should be examined by a ***specialist***, the employer shall make available a medical examination by a ***specialist*** within 30 days after receiving the ***PLHCP's written opinion***.

**1926.1153(h)(7)(ii)—**The employer shall ensure that the examining ***specialist*** is *provided with all of the information* that the employer is obligated to provide to the ***PLHCP*** in accordance with *paragraph (h)(4) [Information Provided to the PLHCP]* of this section.

**1926.1153(j)(3)(ii)(B)—**A *copy* of the ***PLHCPs' and specialists' written medical opinions***.

**1926.1153(j)(3)(ii)(C)—**A *copy* of the *information* provided to the ***PLHCPs and specialists***.

## Subpart AA—Confined Spaces in Construction

### 1926.1203—GENERAL REQUIREMENTS

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

#### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—written program, procedures
- Inspections and Tests—tests, inspecting space, inspection data
- Recordkeeping—certifications
- Certification—written certifications
- Training and Communications—posting signs, inform entrants
- Exposure Monitoring—monitoring space
- Competent Person—evaluate space
- Qualified Person—authorized persons
- Signs, Markings and Tags—danger signs

#### Programs, Plans and Procedures

**1926.1203(d)**—If any employer decides that employees it directs will enter a permit space, that employer must have a **written permit space program** that complies with 1926.1204—*Permit-Required Confined Space Program* implemented at the construction site. The **written program** must be made **available** prior to and during entry operations for inspection by employees and their authorized representatives.

**1926.1203(e)**—An employer may use the alternate procedures specified in paragraph (e)(2) of this section for entering a permit space only under the conditions set forth in paragraph (e)(1) of this section.

**1926.1203(f)**—When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the *initial evaluation of the space* may not have been adequate, each entry employer must have a competent person reevaluate that space and, if necessary, reclassify it as a permit-required confined space.

**1926.1203(g)(4)**—If hazards arise within a permit space that has been reclassified as a non-permit space under paragraph (g) of this section, each employee in the space must exit the space. The entry employer must then reevaluate the space and reclassify it as a permit space as appropriate in accordance with all other applicable provisions of this **standard**.

**1926.1203(h)(3)(ii)**—*Inform the controlling contractor of the permit space program* that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.

**1926.1203(h)(5)(i)**—The controlling contractor must debrief each entity that entered a permit space regarding the **permit space program** followed and any hazards confronted or created in the permit space(s) during entry operations.

**1926.1203(h)(5)(ii)**—The entry employer must inform the controlling contractor in a timely manner of the **permit space program** followed and of any hazards confronted or created in the permit space(s) during entry operations.

**1926.1203(h)(5)(iii)**—The controlling contractor must apprise the host employer of the **information** exchanged with the entry entities pursuant to this subparagraph.

#### Inspections and Tests

**1926.1203(e)(1)(iii)**—The employer develops **monitoring and inspection data** that supports the demonstrations required by paragraphs (e)(1)(i) and (ii) of this section.

**1926.1203(e)(2)(iii)**—*Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee’s authorized representative, must be provided an opportunity to observe the pre-entry testing required by this paragraph.*

**1926.1203(g)(2)**—*The entry employer must eliminate or isolate the hazards without entering the space, unless it can demonstrate that this is infeasible. If it is necessary to enter the permit space to eliminate or isolate hazards, such entry must be performed under 1926.1204—Permit-Required Confined Space Program through 1926.1211—Rescue and Emergency Services. If testing and inspection during that entry demonstrate that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated.*

## **Recordkeeping**

**1926.1203(d)**—*If any employer decides that employees it directs will enter a permit space, that employer must have a **written permit space program** that complies with 1926.1204—Permit-Required Confined Space Program implemented at the construction site. The **written program** must be made **available** prior to and during entry operations for inspection by employees and their authorized representatives.*

**1926.1203(e)(1)(iii)**—*The employer develops **monitoring and inspection data** that supports the demonstrations required by paragraphs (e)(1)(i) and (ii) of this section.*

**1926.1203(e)(1)(iv)**—*If an initial entry of the permit space is necessary to **obtain the data** required by paragraph (e)(1)(iii) of this section, the entry is performed in compliance with 1926.1204—Permit-Required Confined Space Program through 1926.1211—Rescue and Emergency Services.*

**1926.1203(e)(2)(ix)**—*The employer must verify that the space is safe for entry and that the preentry measures required by paragraph (e)(2) of this section have been taken, through a **written certification** that contains the date, the location of the space, and the **signature** of the person providing the **certification**. The **certification** must be made before entry and must be made **available** to each employee entering the space or to that employee’s authorized representative.*

**1926.1203(g)(3)**—*The entry employer must **document** the basis for determining that all hazards in a permit space have been eliminated or isolated, through a **certification** that contains the date, the location of the space, and the **signature of the person** making the determination. The **certification** must be made **available** to each employee entering the space or to that employee’s authorized representative.*

## **Certification**

**1926.1203(e)(2)(ix)**—*The employer must verify that the space is safe for entry and that the preentry measures required by paragraph (e)(2) of this section have been taken, through a **written certification** that contains the date, the location of the space, and the **signature** of the person providing the **certification**. The **certification** must be made before entry and must be made **available** to each employee entering the space or to that employee’s authorized representative.*

**1926.1203(g)(3)**—*The entry employer must **document** the basis for determining that all hazards in a permit space have been eliminated or isolated, through a **certification** that contains the date, the location of the space, and the **signature** of the person making the determination. The **certification** must be made **available** to each employee entering the space or to that employee’s authorized representative.*

## **Training and Communications**

**1926.1203(b)(1)**—*Inform exposed employees by **posting danger signs** or by any other equally effective means, of the existence and location of, and the danger posed by, each permit space.*

**Note to paragraph (b)(1).** A **sign** reading “DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” or using other similar language would satisfy the *requirement for a sign*.

**1926.1203(b)(2)**—*Inform, in a timely manner and in a manner other than posting, its employees' authorized representatives and the controlling contractor of the existence and location of, and the danger posed by, each permit space.*

**1926.1203(h)(1)**—Before entry operations begin, the host employer *must provide the following **information***, if it has it, to the controlling contractor. (*Reference Paragraph (h)(1) for further requirements.*)

**1926.1203(h)(2)(i)**—*Obtain the host employer's **information** about the **permit space hazards and previous entry operations**.*

**1926.1203(h)(2)(ii)**—Provide the *following **information** to each entity* entering a permit space and any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space:

**1926.1203(h)(2)(ii)(A)**—The ***information** received* from the host employer.

**1926.1203(h)(2)(ii)(B)**—Any *additional **information*** the controlling contractor has about the subjects listed in *paragraph (h)(1)* of this section.

**1926.1203(h)(2)(ii)(C)**—The *precautions that the host employer, controlling contractor, or other entry employers implemented* for the protection of employees in the permit spaces.

**1926.1203(h)(3)**—*Before entry operations begin, each entry employer must:*

**1926.1203(h)(3)(i)**—***Obtain** all of the controlling contractor's **information** regarding permit space hazards and entry operations; and*

**1926.1203(h)(3)(ii)**—*Inform the controlling contractor of the **permit space program** that the entry employer will follow, including any hazards likely to be confronted or created in each permit space.*

**1926.1203(h)(5)(i)**—The *controlling contractor must debrief each entity* that entered a permit space regarding the ***permit space program followed and any hazards*** confronted or created in the permit space(s) during entry operations.

**1926.1203(h)(5)(ii)**—The entry employer *must inform the controlling contractor in a timely manner* of the ***permit space program*** followed and of any hazards confronted or created in the permit space(s) during entry operations.

**1926.1203(h)(5)(iii)**—The controlling contractor *must apprise the host employer of the **information** exchanged* with the entry entities pursuant to this subparagraph.

## **Exposure Monitoring**

**1926.1203(e)(1)(iii)**—The employer *develops **monitoring and inspection data*** that supports the demonstrations required by *paragraphs (e)(1)(i) and (ii)* of this section.

**1926.1203(e)(2)(iii)**—*Before an employee enters the space, the internal atmosphere must be tested, with a calibrated direct-reading instrument, for oxygen content, for flammable gases and vapors, and for potential toxic air contaminants, in that order. Any employee who enters the space, or that employee's authorized representative, must be provided an opportunity to observe the pre-entry testing required by this paragraph.*

**1926.1203(e)(2)(vi)**—The atmosphere within the space *must be continuously monitored* unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or *periodic monitoring is sufficient*. *If continuous monitoring is used*, the employer must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that *entrants have adequate time to escape*. If continuous monitoring is not used, periodic monitoring is required. *All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere. Any employee who enters the space, or that employee's authorized representative, must be provided with an opportunity to observe the testing required by this paragraph (e)(2)(vi).*

**1926.1203(g)(2)**—The entry employer *must eliminate or isolate the hazards without entering the space*, unless it can demonstrate that this is infeasible. If it is necessary to enter the permit space to eliminate or isolate hazards, such entry must be performed under *1926.1204—Permit-Required Confined Space Program through 1926.1211—Rescue and Emergency Services*. If *testing and inspection during that entry demonstrate* that the hazards within the permit space have been eliminated or isolated, the permit space may be reclassified as a non-permit confined space for as long as the hazards remain eliminated or isolated.

### Competent Person

**1926.1203(a)**—*Before it begins work at a worksite, each employer must ensure that a competent person identifies all confined spaces in which one or more of the employees it directs may work, and identifies each space that is a permit space, through consideration and evaluation of the elements of that space, including testing as necessary.*

**1926.1203(f)**—When there are changes in the use or configuration of a non-permit confined space that might increase the hazards to entrants, or some indication that the *initial evaluation of the space* may not have been adequate, each entry employer *must have a competent person reevaluate* that space and, if necessary, reclassify it as a permit-required confined space.

**1926.1203(g)**—A space classified by an employer as a permit-required confined space may only be reclassified as a non-permit confined space when a *competent person determines* that all of the applicable requirements in *paragraphs (g) (1) through (4)* of this section have been met.

### Qualified Person

**1926.1203(b)(2)**—*Inform, in a timely manner and in a manner other than posting, its employees' authorized representatives and the controlling contractor of the existence and location of, and the danger posed by, each permit space.*

**1926.1203(e)(2)(vi)**—The atmosphere within the space *must be continuously monitored* unless the entry employer can demonstrate that equipment for continuous monitoring is not commercially available or *periodic monitoring is sufficient*. *If continuous monitoring is used*, the employer must ensure that the monitoring equipment has an alarm that will notify all entrants if a specified atmospheric threshold is achieved, or that an employee will check the monitor with sufficient frequency to ensure that *entrants have adequate time to escape*. If continuous monitoring is not used, periodic monitoring is required. *All monitoring must ensure that the continuous forced air ventilation is preventing the accumulation of a hazardous atmosphere*. Any employee who enters the space, or that *employee's authorized representative*, must be provided with an opportunity to *observe the testing required by this paragraph (e)(2)(vi)*.

**1926.1203(e)(2)(ix)**—The employer *must verify that the space is safe for entry and that the preentry measures* required by *paragraph (e)(2)* of this section have been taken, through a **written certification** that contains the date, the location of the space, and the **signature** of the person providing the **certification**. The **certification** must be made before entry and must be made **available** to each employee entering the space or to that *employee's authorized representative*.

### Signs, Markings and Tags

**1926.1203(b)(1)**—*Inform exposed employees by posting **danger signs** or by any other equally effective means, of the existence and location of, and the danger posed by, each permit space.*

**Note to paragraph (b)(1).** A **sign** reading “DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” or using other similar language would satisfy the *requirement for a sign*.



## 1926.1204—PERMIT-REQUIRED CONFINED SPACE PROGRAM

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures, measures, engineering controls
- Inspections and Tests—tests
- Recordkeeping—entry permits
- Training and Communications—communications equipment
- Exposure Monitoring—monitoring
- Qualified Person—authorized entrants

### Programs, Plans and Procedures

**1926.1204**—Each entry employer must:

**1926.1204(a)**—*Implement the measures necessary to prevent unauthorized entry.*

**1926.1204(b)**—*Identify and evaluate the hazards of permit spaces before employees enter them.*

**1926.1204(c)**—*Develop and implement the means, procedures, and practices necessary for safe permit space entry operations, including, but not limited to, the following. (Reference Paragraph (c) for further information.)*

**1926.1204(c)(5)**—*Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space.*

**1926.1204(d)(4)**—*Personal protective equipment insofar as feasible engineering and work-practice controls do not adequately protect employees.*

**1926.1204(e)**—*Evaluate permit space conditions in accordance with the following paragraphs (e)(1) through (6) of this section when entry operations are conducted:*

**1926.1204(e)(5)**—*Reevaluate the permit space in the presence of any authorized entrant or that employee's authorized representative who requests that the employer conduct such reevaluation because there is some indication that the evaluation of that space may not have been adequate.*

**1926.1204(g)**—*If multiple spaces are to be assigned to a single attendant, include in the **permit program** the means and procedures to enable the attendant to respond to an emergency affecting one or more of those permit spaces without distraction from the attendant's responsibilities under 1926.1209—Duties of Attendants.*

**1926.1204(i)**—*Develop and implement procedures for summoning rescue and emergency services (including procedures for summoning emergency assistance in the event of a failed nonentry rescue), for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees, and for preventing unauthorized personnel from attempting a rescue.*

**1926.1204(j)**—*Develop and implement a system for the **preparation**, issuance, use, and cancellation of **entry permits** as required by this **standard**, including the safe termination of entry operations under both planned and emergency conditions.*

**1926.1204(k)**—*Develop and implement procedures to coordinate entry operations, in consultation with the controlling contractor, when employees of more than one employer are working simultaneously in a permit space or elsewhere on the worksite where their activities could, either alone or in conjunction with the activities within a permit space, foreseeably result in a hazard within the confined space, so that employees of one employer do not endanger the employees of any other employer.*

**1926.1204(l)**—*Develop and implement procedures* (such as closing off a permit space and canceling the **permit**) necessary for concluding the entry after entry operations have been completed.

**1926.1204(m)**—*Review entry operations when the measures taken under the **permit space program** may not protect employees and revise the **program** to correct deficiencies* found to exist before subsequent entries are authorized.

**1926.1204(n)**—*Review the **permit space program**, using the **canceled permits retained** under 1926.1205(f)—*Permitting Process, within 1 year after each entry and revise the **program** as necessary to ensure that employees participating in entry operations are protected from permit space hazards.**

## **Inspections and Tests**

**1926.1204(c)(2)**—*Providing each authorized entrant or that employee's authorized representative with the opportunity to observe any monitoring or testing of permit spaces.*

**1926.1204(e)(1)**—*Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), the employer must:*

**1926.1204(e)(1)(i)**—*Perform pre-entry testing to the extent feasible before entry is authorized.*

## **Training and Communications**

**1926.1204(d)(3)**—*Communications equipment necessary for compliance with 1926.1208(c)—Duties of Authorized Entrants and 1926.1209(e)—Duties of Attendants, including any necessary electronic communication equipment for attendants assessing entrants' status in multiple spaces.*

**1926.1204(h)**—*Designate each person who is to have an active role (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by 1926.1207—Training.*

## **Exposure Monitoring**

**1926.1204(c)(5)**—*Determining that, in the event the ventilation system stops working, the monitoring procedures will detect an increase in atmospheric hazard levels in sufficient time for the entrants to safely exit the permit space.*

**1926.1204(c)(7)**—*Verifying that conditions in the permit space are acceptable for entry throughout the duration of an authorized entry, and ensuring that employees are not allowed to enter into, or remain in, a permit space with a hazardous atmosphere unless the employer can demonstrate that personal protective equipment (PPE) will provide effective protection for each employee in the permit space and provides the appropriate PPE to each employee. (Reference Paragraph (c) for further requirements.)*

**1926.1204(d)(1)**—*Testing and monitoring equipment needed to comply with paragraph (e) of this section.*

**1926.1204(e)**—*Evaluate permit space conditions in accordance with the following paragraphs (e)(1) through (6) of this section when entry operations are conducted:*

**1926.1204(e)(1)**—*Test conditions in the permit space to determine if acceptable entry conditions exist before changes to the space's natural ventilation are made, and before entry is authorized to begin, except that, if an employer demonstrates that isolation of the space is infeasible because the space is large or is part of a continuous system (such as a sewer), the employer must:*

**1926.1204(e)(1)(i)**—*Perform pre-entry testing to the extent feasible before entry is authorized.*

**1926.1204(e)(1)(ii)**—*If entry is authorized, continuously monitor entry conditions in the areas where authorized entrants are working, except that employers may use periodic monitoring in accordance with paragraph (e)(2) of this section for monitoring an atmospheric hazard if they can demonstrate that equipment for continuously monitoring that hazard is not commercially available.*

**1926.1204(e)(1)(iii)**—*Provide an early-warning system that continuously monitors for nonisolated engulfment hazards. The system must alert authorized entrants and attendants in sufficient time for the authorized entrants to safely exit the space.*

**1926.1204(e)(2)**—*Continuously monitor atmospheric hazards unless the employer can demonstrate that the equipment for continuously monitoring a hazard is not commercially available or that periodic monitoring is of sufficient frequency to ensure that the atmospheric hazard is being controlled at safe levels. If continuous monitoring is not used, periodic monitoring is required with sufficient frequency to ensure that acceptable entry conditions are being maintained during the course of entry operations.*

**1926.1204(e)(3)**—*When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.*

**1926.1204(e)(6)**—*Immediately provide each authorized entrant or that employee's authorized representative with the results of any testing conducted in accordance with this section.*

### Qualified Person

**1926.1204(d)(7)**—*Equipment, such as ladders, needed for safe ingress and egress by authorized entrants.*

**1926.1204(e)(4)**—*Provide each authorized entrant or that employee's authorized representative an opportunity to observe the pre-entry and any subsequent testing or monitoring of permit spaces.*

**1926.1204(h)**—*Designate each person who is to have an active role (as, for example, authorized entrants, attendants, entry supervisors, or persons who test or monitor the atmosphere in a permit space) in entry operations, identify the duties of each such employee, and provide each such employee with the training required by 1926.1207—Training.*

## 1926.1205—PERMITTING PROCESS

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—measures, entry permit
- Recordkeeping—entry permit
- Qualified Person—entry supervisor

### Programs, Plans and Procedures

**1926.1205(a)**—*Before entry is authorized, each entry employer must **document** the completion of measures required by 1926.1204(c)—Permit-Required Confined Space Program by preparing an **entry permit**.*

**1926.1205(f)**—*The entry employer must **retain** each canceled **entry permit** for at least 1 year to facilitate the review of the **permit-required confined space program** required by 1926.1204(n)—Permit-Required Confined Space Program. Any problems encountered during an entry operation must be noted on the **pertinent permit** so that appropriate revisions to the **permit space program** can be made.*

### Recordkeeping

**1926.1205(a)**—Before entry is authorized, each entry employer *must document the completion of measures* required by 1926.1204(c)—*Permit-Required Confined Space Program* by preparing an **entry permit**.

**1926.1205(b)**—Before entry begins, the *entry supervisor* identified on the **permit** *must sign the entry permit* to authorize entry.

**1926.1205(c)**—The **completed permit** *must be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.*

**1926.1205(d)**—The *duration of the permit* may not exceed the time required to complete the assigned task or job identified on the **permit** in accordance with 1926.1206(b)—*Entry Permit*.

**1926.1205(f)**—The entry employer *must retain each canceled entry permit for at least 1 year* to facilitate the review of the **permit-required confined space program** required by 1926.1204(n)—*Permit-Required Confined Space Program*. Any problems encountered during an entry operation must be noted on the *pertinent permit* so that appropriate revisions to the **permit space program** can be made.

### Qualified Person

**1926.1205(b)**—Before entry begins, the *entry supervisor* identified on the **permit** *must sign the entry permit* to authorize entry.

**1926.1205(c)**—The **completed permit** *must be made available at the time of entry to all authorized entrants or their authorized representatives, by posting it at the entry portal or by any other equally effective means, so that the entrants can confirm that pre-entry preparations have been completed.*

**1926.1205(e)**—The *entry supervisor must terminate entry* and take the following action when any of the following apply:

**1926.1205(e)(1)**—*Cancel the entry permit* when the entry operations covered by the **entry permit** have been completed.

**1926.1205(e)(2)**—*Suspend or cancel the entry permit and fully reassess the space before allowing reentry when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is temporary in nature and does not change the configuration of the space or create any new hazards within it.*

**1926.1205(e)(3)**—*Cancel the entry permit when a condition that is not allowed under the entry permit arises in or near the permit space and that condition is not covered by paragraph (e)(2) of this section.*

**1926.1205(f)**—The entry employer *must retain each canceled entry permit for at least 1 year* to facilitate the review of the **permit-required confined space program** required by 1926.1204(n)—*Permit-Required Confined Space Program*. Any problems encountered during an entry operation must be noted on the *pertinent permit* so that appropriate revisions to the **permit space program** can be made.

## 1926.1206—ENTRY PERMIT

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—tracking system, measures, permits
- Inspections and Tests—tests
- Recordkeeping—entry permit
- Training and Communications—summoning rescue services, communication procedures
- Exposure Monitoring—monitoring levels
- Qualified Person—authorized entrants, signature

### Programs, Plans and Procedures

**1926.1206(d)**—The *authorized entrants within the permit space*, by name or by such other means (for example, through the use of *rosters or tracking systems*) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which *authorized entrants* are inside the permit space.

**1926.1206(i)**—The *measures used to isolate the permit space and to eliminate or control permit space hazards* before entry.

**1926.1206(l)**—The *rescue and emergency services that can be summoned* and the means (such as the equipment to use and the numbers to call) for summoning those services.

**1926.1206(m)**—The *communication procedures used by authorized entrants and attendants* to maintain contact during the entry.

**1926.1206(o)**—Any *additional permits, such as for hot work, that have been issued* to authorize work in the permit space.

### Inspections and Tests

**1926.1206(k)**—The *results of tests and monitoring performed* under 1926.1204(e)—Permit-Required Confined Space Program, accompanied by the *names or initials of the testers* and by an indication of *when the tests were performed*.

### Recordkeeping

**1926.1206**—The *entry permit that documents compliance* with this section and *authorizes entry to a permit space* must identify:

**1926.1206(a)**—The permit space to be entered.

**1926.1206(b)**—The purpose of the entry.

**1926.1206(b)**—The purpose of the entry.

**1926.1206(c)**—The date and the *authorized duration of the entry permit*.

**1926.1206(d)**—The *authorized entrants within the permit space*, by name or by such other means (for example, through the use of *rosters or tracking systems*) as will enable the attendant to determine quickly and accurately, for the *duration of the permit*, which *authorized entrants* are inside the permit space.

**1926.1206(g)**—The individual, by name, currently serving as entry supervisor, and the *signature or initials* of each *entry supervisor who authorizes entry*.

**1926.1206(o)**—Any *additional permits, such as for hot work, that have been issued* to authorize work in the permit space.



**1926.1206(k)**—*The results of tests and monitoring performed under 1926.1204(e)—Permit-Required Confined Space Program, accompanied by the names or initials of the testers and by an indication of when the tests were performed.*

### **Training and Communications**

**1926.1206(l)**—*The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services.*

**1926.1206(m)**—*The communication procedures used by authorized entrants and attendants to maintain contact during the entry.*

**1926.1206(n)**—*Equipment, such as personal protective equipment, testing equipment, communications equipment, alarm systems, and rescue equipment, to be provided for compliance with this standard.*

**1926.1206(o)**—*Any other information necessary, given the circumstances of the particular confined space, to ensure employee safety.*

### **Exposure Monitoring**

**1926.1206(e)**—*Means of detecting an increase in atmospheric hazard levels in the event the ventilation system stops working.*

**1926.1206(k)**—*The results of tests and monitoring performed under 1926.1204(e)—Permit-Required Confined Space Program, accompanied by the names or initials of the testers and by an indication of when the tests were performed.*

### **Qualified Person**

**1926.1206(d)**—*The authorized entrants within the permit space, by name or by such other means (for example, through the use of rosters or tracking systems) as will enable the attendant to determine quickly and accurately, for the duration of the permit, which authorized entrants are inside the permit space;*

**1926.1206(f)**—*Each person, by name, currently serving as an attendant.*

**1926.1206(g)**—*The individual, by name, currently serving as entry supervisor, and the signature or initials of each entry supervisor who authorizes entry.*

**1926.1206(k)**—*The results of tests and monitoring performed under 1926.1204(e)—Permit-Required Confined Space Program, accompanied by the names or initials of the testers and by an indication of when the tests were performed.*

**1926.1206(l)**—*The rescue and emergency services that can be summoned and the means (such as the equipment to use and the numbers to call) for summoning those services.*

**1926.1206(m)**—*The communication procedures used by authorized entrants and attendants to maintain contact during the entry.*

## **1926.1207—TRAINING**

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—procedures
- Recordkeeping—training records
- Training and Communications—initially, training records
- Qualified Person—authorized employee

## Programs, Plans and Procedures

**1926.1207(c)**—The *training must establish employee proficiency* in the duties required by this **standard** and must *introduce new or revised procedures*, as necessary, for compliance with this **standard**.

## Recordkeeping

**1926.1207(d)**—The employer *must maintain training records* to show that the training required by *paragraphs (a) through (c)* of this section has been accomplished. The *training records must contain* each employee's name, the name of the trainers, and the dates of training. The *documentation must be available for inspection* by employees and their *authorized representatives*, for the period of time the employee is employed by that employer.

## Training and Communications

**1926.1207(a)**—The employer *must provide training to each employee* whose work is regulated by this **standard**, at no cost to the employee, and ensure that the employee possesses the understanding, knowledge, and skills necessary for the safe performance of the duties assigned under this **standard**. This *training must result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues*, in the dangers of attempting such rescues.

**1926.1207(c)**—The *training must establish employee proficiency* in the duties required by this **standard** and must *introduce new or revised procedures*, as necessary, for compliance with this **standard**.

**1926.1207(d)**—The employer *must maintain training records* to show that the training required by *paragraphs (a) through (c)* of this section has been accomplished. The *training records must contain* each employee's name, the name of the trainers, and the dates of training. The *documentation must be available for inspection* by employees and their *authorized representatives*, for the period of time the employee is employed by that employer.

## Qualified Person

**1926.1207(a)**—The employer *must provide training to each employee* whose work is regulated by this **standard**, at no cost to the employee, and ensure that the *employee possesses the understanding, knowledge, and skills necessary* for the safe performance of the duties assigned under this **standard**. This *training must result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues*, in the dangers of attempting such rescues.

## 1926.1208—DUTIES OF AUTHORIZED ENTRANTS

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

## STANDARD HIGHLIGHTS

- Training and Communications—communication
- Qualified Person—authorized entrants

## Training and Communications

**1926.1208**—The entry employer must ensure that all *authorized entrants*:

**1926.1208(a)**—*Are familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.*

**1926.1208(c)**—*Communicate with the attendant* as necessary to enable the attendant to assess entrant status and to enable the attendant to alert entrants of the need to evacuate the space as required by **1926.1209(f)**—*Duties of Attendants*.

## **Qualified Person**

**1926.1208**—The entry employer must ensure that all *authorized entrants*:

**1926.1208(a)**—*Are familiar with and understand the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.*

## **1926.1209—DUTIES OF ATTENDANTS**

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—rescue procedures
- Training and Communications—communication
- Qualified Person—entry supervisor

### **Programs, Plans and Procedures**

**1926.1209(i)**—*Performs non-entry rescues as specified by the employer's rescue procedure.*

### **Training and Communications**

**1926.1209**—The entry employer must ensure that *each attendant*:

**1926.1209(a)**—*Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.*

**1926.1209(c)**—*Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under 1926.1206(d)—Entry Permit accurately identifies who is in the permit space.*

**1926.1209(e)**—*Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space under 1926.1208(e)—Duties of Authorized Entrants.*

**1926.1209(f)**—*Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions:*

**1926.1209(g)**—*Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.*

**1926.1209(h)**—*Takes the following actions when unauthorized persons approach or enter a permit space while entry is underway:*

**1926.1209(h)(1)**—*Warns the unauthorized persons that they must stay away from the permit space.*

**1926.1209(h)(2)**—*Advises the unauthorized persons that they must exit immediately if they have entered the permit space.*

**1926.1209(h)(3)**—*Informs the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.*

### Qualified Person

**1926.1209**—The *entry employer* must ensure that *each attendant*:

**1926.1209(a)**—*Is familiar with and understands the hazards that may be faced during entry, including information on the mode, signs or symptoms, and consequences of the exposure.*

**1926.1209(c)**—*Continuously maintains an accurate count of authorized entrants in the permit space and ensures that the means used to identify authorized entrants under 1926.1206(d)—Entry Permit accurately identifies who is in the permit space.*

**1926.1209(e)**—*Communicates with authorized entrants as necessary to assess entrant status and to alert entrants of the need to evacuate the space under 1926.1208(e)—Duties of Authorized Entrants.*

**1926.1209(f)**—*Assesses activities and conditions inside and outside the space to determine if it is safe for entrants to remain in the space and orders the authorized entrants to evacuate the permit space immediately under any of the following conditions. (Reference Paragraph (f) for specific requirements.)*

**1926.1209(g)**—*Summons rescue and other emergency services as soon as the attendant determines that authorized entrants may need assistance to escape from permit space hazards.*

**1926.1209(j)**—*Performs no duties that might interfere with the attendant's primary duty to assess and protect the authorized entrants.*

## 1926.1210—DUTIES OF ENTRY SUPERVISORS

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Inspections and Tests—tests
- Recordkeeping—permits
- Training and Communications—communication
- Qualified Person—entry supervisor

### Programs, Plans and Procedures

**1926.1210(b)**—Verifies, by *checking that the appropriate entries* have been made on the **permit**, *that all tests* specified by the **permit** have been conducted and that *all procedures and equipment* specified by the **permit** are in place before endorsing the **permit** and allowing entry to begin.

**1926.1210(f)**—Determines, whenever responsibility for a *permit space entry operation* is transferred, *and at intervals dictated by the hazards and operations performed within the space*, that entry operations remain consistent with terms of the **entry permit** and that acceptable entry conditions are maintained.

## Inspections and Tests

**1926.1210(b)**—Verifies, by *checking that the appropriate **entries** have been made on the **permit**, that all tests* specified by the **permit** have been conducted and that *all procedures and equipment* specified by the **permit** are in place before endorsing the **permit** and allowing entry to begin.

## Recordkeeping

**1926.1210(b)**—Verifies, by *checking that the appropriate **entries** have been made on the **permit**, that all tests* specified by the **permit** have been conducted and that *all procedures and equipment* specified by the **permit** are in place before endorsing the **permit** and allowing entry to begin.

## Training and Communications

**1926.1210**—The entry employer must ensure that each entry supervisor:

**1926.1210(a)**—*Is familiar with and understands the hazards that may be faced during entry, including **information** on the mode, signs or symptoms, and consequences of the exposure.*

**1926.1210(d)**—*Verifies that rescue services are available and that the means for summoning them are operable, and that the employer will be notified as soon as the services become unavailable.*

## Qualified Person

**1926.1210**—The entry employer must ensure that each entry supervisor:

**1926.1210(a)**—*Is familiar with and understands the hazards that may be faced during entry, including **information** on the mode, signs or symptoms, and consequences of the exposure.*

## 1926.1211—RESCUE AND EMERGENCY SERVICES

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures
- Recordkeeping—safety data sheet
- Certification—first aid and CPR
- Training and Communications—initially, training records
- Qualified Person—authorized employee

## Programs, Plans and Procedures

**1926.1211(a)**—An employer who *designates rescue and emergency services*, pursuant to 1926.1204(i)—*Permit-Required Confined Space Program*, must:

**1926.1211(a)(1)**—*Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.*



**1926.1211(a)(2)**—*Evaluate a prospective rescue service’s ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.*

**1926.1211(a)(5)**—*Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate **rescue plans** and practice rescue operations.*

## **Recordkeeping**

**1926.1211(d)**—If an *injured entrant* is exposed to a substance for which a **Safety Data Sheet (SDS)** or other similar **written information** is required to be kept at the worksite, that **SDS** or **written information must be made available** to the medical facility treating the exposed entrant.

**1926.1211(b)(3)**—*Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR).* The employer must ensure that at least one member of the rescue team or service holding a **current certification** in basic first aid and CPR is available.

## **Certification**

**1926.1211(b)(3)**—*Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR).* The employer must ensure that at least one member of the rescue team or service holding a **current certification** in basic first aid and CPR is available.

## **Training and Communications**

**1926.1211(a)(3)(iii)**—*Agrees to notify the employer immediately* in the event that the rescue service becomes unavailable.

**1926.1211(a)(4)**—*Inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site.*

**1926.1211(a)(5)**—*Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate **rescue plans** and practice rescue operations.*

**1926.1211(b)**—An employer whose employees have been designated to provide permit space rescue and/or emergency services must take the *following measures and provide all equipment and training at no cost* to those employees:

**1926.1211(b)(1)**—Provide each affected employee with the personal protective equipment (PPE) needed to conduct permit space rescues safely and *train each affected employee so the employee is proficient* in the use of that PPE.

**1926.1211(b)(2)**—*Train each affected employee to perform assigned rescue duties.* The employer must ensure that such employees successfully *complete the training required and establish proficiency as authorized entrants*, as provided by 1926.1207—*Training* and 1926.1208—*Duties of Authorized Entrants*.

**1926.1211(b)(3)**—*Train each affected employee in basic first aid and cardiopulmonary resuscitation (CPR).* The employer must ensure that at least one member of the rescue team or service holding a **current certification** in basic first aid and CPR is available.

**1926.1211(b)(4)**—*Ensure that affected employees practice making permit space rescues before attempting an actual rescue, and at least once every 12 months, by means of simulated rescue operations in which they remove dummies, manikins, or actual persons from the actual permit spaces or from representative permit spaces, except practice rescue is not required where the affected employees properly performed a rescue operation during the last 12 months in the same permit space the authorized entrant will enter, or in a similar permit space. Representative permit spaces must, with respect to opening size, configuration, and accessibility, simulate the types of permit spaces from which rescue is to be performed.*

**1926.1211(c)**—Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The employer *must designate an entry rescue service* whenever non-entry rescue is not selected. Whenever non-entry rescue is selected, the entry employer must ensure that retrieval systems or methods are used whenever an *authorized entrant* enters a permit space, and *must confirm, prior to entry, that emergency assistance would be available in the event that non-entry rescue fails.*

### Qualified Person

**1926.1211(a)**—An employer who *designates rescue and emergency services*, pursuant to 1926.1204(i)—*Permit-Required Confined Space Program*, must:

**1926.1211(a)(1)**—*Evaluate a prospective rescuer's ability to respond to a rescue summons in a timely manner, considering the hazard(s) identified.*

**1926.1211(a)(2)**—*Evaluate a prospective rescue service's ability, in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified.*

**1926.1211(a)(5)**—*Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations.*

**1926.1211(c)**—Non-entry rescue is required unless the retrieval equipment would increase the overall risk of entry or would not contribute to the rescue of the entrant. The employer must designate an entry rescue service whenever non-entry rescue is not selected. Whenever non-entry rescue is selected, the entry employer must ensure that retrieval systems or methods are used whenever an *authorized entrant* enters a permit space, and *must confirm, prior to entry, that emergency assistance would be available in the event that non-entry rescue fails.*

**1926.1211(c)(1)**—Each *authorized entrant* must use a chest or full body harness, with a retrieval line attached at the center of the entrant's back near shoulder level, above the entrant's head, or at another point which the employer can establish presents a profile small enough for the successful removal of the entrant. Wristlets or anklets may be used in lieu of the chest or full body harness if the *employer can demonstrate that the use of a chest or full body harness is infeasible or creates a greater hazard and that the use of wristlets or anklets is the safest and most effective alternative.*

**1926.1211(c)(3)**—Equipment that is unsuitable for retrieval must not be used, including, but not limited to, retrieval lines that have a reasonable probability of becoming entangled with the retrieval lines *used by other authorized entrants*, or retrieval lines that will not work due to the internal configuration of the permit space.

## 1926.1212—EMPLOYEE PARTICIPATION

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—permit space program
- Recordkeeping—information
- Qualified Person—authorized representative

#### Programs, Plans and Procedures

**1926.1212(a)**—Employers *must consult with affected employees and their authorized representatives* on the development and implementation of all aspects of the **permit space program** required by 1926.1203—*General Requirements*.

#### Recordkeeping

**1926.1212(a)**—Employers *must consult with affected employees and their authorized representatives* on the development and implementation of all aspects of the **permit space program** required by 1926.1203—*General Requirements*.

**1926.1212(b)**—Employers *must make available to each affected employee and his/her authorized representatives all information* required to be developed by this **standard**.

#### Qualified Person

**1926.1212(a)**—Employers *must consult with affected employees and their authorized representatives* on the development and implementation of all aspects of the **permit space program** required by 1926.1203—*General Requirements*.

**1926.1212(b)**—Employers *must make available to each affected employee and his/her authorized representatives all information* required to be developed by this **standard**.

## 1926.1213—PROVISION OF DOCUMENTS TO SECRETARY

**Scope/Application:** *This standard sets forth requirements for practices and procedures to protect employees engaged in construction activities at a worksite with one or more confined spaces. It does not apply to excavations, underground construction, caissons, cofferdams, or commercial diving.*

### STANDARD HIGHLIGHTS

- Recordkeeping—documents

#### Recordkeeping

**1926.1213**—For each **document** required to be **retained** in this standard, the retaining employer must make the **document available** on request to the Secretary of Labor or the Secretary's designee.

## Subpart CC—Cranes and Derricks in Construction

### 1926.1402—GROUND CONDITIONS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting; pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

**Exception:** *This subpart does not cover: Machinery included in paragraph (a) [Scope] of this section while it has been converted or adapted for a non-hoisting/lifting use. Such conversions/adaptations include, but are not limited to, power shovels, excavators and concrete pumps. Power shovels, excavators, wheel loaders, backhoes, loader backhoes, track loaders. This machinery is also excluded when used with chains, slings or other rigging to lift suspended loads. Automotive wreckers and tow trucks when used to clear wrecks and haul vehicles. Digger derricks when used for augering holes for poles carrying electric and telecommunication lines, placing and removing the poles, and for handling associated materials to be installed on or removed from the poles. Digger derricks used in work subject to 29 CFR part 1926, subpart V [Power Transmission and Distribution], must comply with 29 CFR 1910.269 [Electric Power Generation, Transmission, and Distribution]. Digger derricks used in construction work for telecommunication service (as defined at 29 CFR 1910.268(s)(40) [Telecommunications]) must comply with 29 CFR 1910.268 [Telecommunications]. Machinery originally designed as vehicle-mounted aerial devices (for lifting personnel) and self-propelled elevating work platforms. Telescopic/hydraulic gantry systems. Stacker cranes. Powered industrial trucks (forklifts), except when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load. Mechanic’s truck with a hoisting device when used in activities related to equipment maintenance and repair. Machinery that hoists by using a come-a-long or chainfall. Dedicated drilling rigs. Gin poles when used for the erection of communication towers. Tree trimming and tree removal work. Anchor handling or dredge-related operations with a vessel or barge using an affixed A-frame. Roustabouts. Helicopter cranes. Material Delivery: Articulating/knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting. Articulating/knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a structure, using a fork/cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. Such sheet goods or packaged materials include, but are not limited to: Sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.*

*This exclusion does not apply when: The articulating/knuckle-boom crane is used to hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure; The material being handled by the articulating/knuckle-boom crane is a prefabricated component. Such prefabricated components include, but are not limited to: Precast concrete members or panels, roof trusses (wooden, cold-formed metal, steel, or other material), prefabricated building sections such as, but not limited to: Floor panels, wall panels, roof panels, roof structures, or similar items; The material being handled by the crane is a structural steel member (for example, steel joists, beams, columns, steel decking (bundled or unbundled) or a component of a systems-engineered metal building (as defined in 29 CFR 1926 subpart R [Special Industries])).*

#### STANDARD HIGHLIGHTS

- Training and Communications—inform user, discussions with controlling entity

#### Training and Communications

**1926.1402(c)(2)**—*Inform the user of the equipment and the operator of the location of hazards beneath the equipment set-up area (such as voids, tanks, utilities) if those hazards are identified in documents (such as site drawings, as-built drawings, and soil analyses) that are in the possession of the controlling entity (whether at the site or off-site) or the hazards are otherwise known to that controlling entity.*

**1926.1402(e)**—If the A/D [assembly/disassembly] director or the operator determines that ground conditions do not meet the requirements in *paragraph (b)* of this section, that person’s employer *must have a discussion* with the controlling entity regarding the ground preparations that are needed so that, with the use of suitable supporting materials/devices (if necessary), the requirements in *paragraph (b)* of this section can be met.

## **1926.1403—ASSEMBLY/DISASSEMBLY—SELECTION OF MANUFACTURER OR EMPLOYER PROCEDURES**

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### **STANDARD HIGHLIGHTS**

- Programs, Plans and Procedures—procedures for manufacturers and employers
- Recordkeeping—procedures for manufacturers

### **Programs, Plans and Procedures**

**1926.1403**—When assembling or disassembling equipment (or attachments), the employer *must comply with all applicable manufacturer prohibitions and must comply with either:*

**1926.1403(a)**—*Manufacturer procedures* applicable to assembly and disassembly, or

**1926.1403(b)**—*Employer procedures for assembly and disassembly. Employer procedures may be used only where the employer can demonstrate that the procedures used meet the requirements in Sec. 1926.1406 [Assembly/Disassembly—Employer Procedures—General Requirements].*

**Note:** The employer *must follow manufacturer procedures* when an employer uses synthetic slings during assembly or disassembly rigging. (See Sec. 1926.1404(r) [Rigging].)

### **Recordkeeping**

**1926.1403**—When assembling or disassembling equipment (or attachments), the employer *must comply with all applicable manufacturer prohibitions and must comply with either:*

**1926.1403(a)**—*Manufacturer procedures* applicable to assembly and disassembly, or

**1926.1403(b)**—*Employer procedures for assembly and disassembly. Employer procedures may be used only where the employer can demonstrate that the procedures used meet the requirements in Sec. 1926.1406 [Assembly/Disassembly—Employer Procedures—General Requirements].*



## 1926.1404—ASSEMBLY/DISASSEMBLY—GENERAL REQUIREMENTS (APPLIES TO ALL ASSEMBLY AND DISASSEMBLY OPERATIONS)

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures, review procedures
- Inspections and Tests—post assembly inspection
- Recordkeeping—documentation, written manufacturer approval
- Training and Communications—understand procedures, inform operator
- Competent Person—criteria
- Qualified Person—qualified rigger

### Programs, Plans and Procedures

**1926.1404(c)**—*Review of procedures. The A/D director must review the applicable assembly/disassembly procedures immediately prior to the commencement of assembly/disassembly unless the A/D director understands the procedures and has applied them to the same type and configuration of equipment (including accessories, if any).*

**1926.1404(f)(2)**—*Exception. Where the employer demonstrates that site constraints require one or more employees to be under the boom, jib, or other components when pins (or similar devices) are being removed, the A/D director must implement procedures that minimize the risk of unintended dangerous movement and minimize the duration and extent of exposure under the boom. (See Non-mandatory Appendix B [Assembly/Disassembly—Sample Procedures for Minimizing The Risk of Unintended Dangerous Boom Movement] of this subpart for an example.)*

### Inspections and Tests

**1926.1404(m)(2)**—*Post-assembly inspection. Upon completion of assembly, the equipment must be inspected to ensure compliance with paragraph (m)(1) [Components and Configuration] of this section (see Sec. 1926.1412(C) [Post-Assembly Inspection Requirements]).*

### Recordkeeping

**1926.1404(j)**—*Cantilevered boom sections. **Manufacturer limitations** on the maximum amount of boom supported only by cantilevering must not be exceeded. Where these are unavailable, a **registered professional engineer** familiar with the type of equipment involved must determine in **writing** this limitation, which must not be exceeded.*

**1926.1404(k)**—*Weight of components. The **weight** of each of the components must be readily **available**.*

**1926.1404(m)(1)**—The selection of components, and configuration of the equipment, that affect the capacity or safe operation of the equipment must be in accordance with:

**1926.1404(m)(1)(i)**—***Manufacturer instructions, prohibitions, limitations, and specifications.** Where these are unavailable, a **registered professional engineer** familiar with the type of equipment involved must approve, in **writing**, the selection and configuration of components; or*

**1926.1404(m)(1)(ii)**—***Approved modifications** that meet the requirements of Sec. 1926.1434 (Equipment modifications).*

**1926.1404(r)(3)**—When synthetic slings are used, *the synthetic sling manufacturer’s instructions, limitations, specifications and recommendations must be followed.*

### **Training and Communications**

**1926.1404(b)**—*Knowledge of procedures.* The A/D director *must understand the applicable assembly/disassembly procedures.*

**1926.1404(d)(1)**—*Before commencing assembly/disassembly operations, the A/D director must ensure that the crew members understand information.* [Reference paragraph (d)(1) for specific information.]

**1926.1404(e)(1)**—*Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment (or load) where the crew member could be injured by movement of the equipment (or load), the crew member must inform the operator that he/she is going to that location.*

**1926.1404(e)(2)**—Where the operator knows that a crew member went to a location *covered by paragraph (e)(1) [Protecting Assembly/Disassembly Crew Members out of Operator View]* of this section, the operator *must not move any part of the equipment (or load) until the operator is informed* in accordance with a pre-arranged system of communication that the crew member is in a safe position.

**1926.1404(j)**—*Cantilevered boom sections.* **Manufacturer limitations** on the maximum amount of boom supported only by cantilevering must not be exceeded. Where these are unavailable, *a registered professional engineer familiar with the type of equipment involved must determine in writing* this limitation, which must not be exceeded.

### **Competent Person**

**1926.1404(a)(1)**—*Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (“A/D director”).*

**1926.1404(a)(2)**—Where the assembly/disassembly is being performed by only one person, that person *must meet the criteria for both a competent person and a qualified person.* For purposes of this **standard**, that person is considered the A/D director.

### **Qualified Person**

**1926.1404(a)(1)**—*Assembly/disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (“A/D director”).*

**1926.1404(a)(2)**—Where the assembly/disassembly is being performed by only one person, that person *must meet the criteria for both a competent person and a qualified person.* For purposes of this **standard**, that person is considered the A/D director.

**1926.1404(r)(1)**—*The rigging work is done by a qualified rigger.*

## 1926.1406—ASSEMBLY/DISASSEMBLY—EMPLOYER PROCEDURES—GENERAL REQUIREMENTS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—develop procedures
- Qualified Person—develop procedures

#### Programs, Plans and Procedures

**1926.1406(b)**—*Qualified person. Employer procedures must be developed by a qualified person.*

#### Qualified Person

**1926.1406(b)**—*Qualified person. Employer procedures must be developed by a qualified person.*

## 1926.1407—POWER LINE SAFETY (UP TO 350 KV)—ASSEMBLY AND DISASSEMBLY

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction, that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—determination
- Training and Communications—planning meeting, confirmation with utilities
- Qualified Person—dedicated spotter
- Signs, Markings and Tags—posted warnings

#### Programs, Plans and Procedures

**1926.1407(a)**—*Before assembling or disassembling equipment, the employer must determine if any part of the equipment, load line, or load (including rigging and lifting accessories) could get, in the direction or area of assembly/disassembly, closer than 20 feet to a power line during the assembly/disassembly process. If so, the employer must meet the requirements in Option (1), Option (2), or Option (3) of this section. [Reference paragraph (a) for specific options.]*

**1926.1407(b)(3)**—*At least one of the following additional measures must be in place. The measure selected from this list must be effective in preventing encroachment.*

## Training and Communications

**1926.1407(b)(1)**—*Conduct a planning meeting* with the Assembly/Disassembly director (A/D director), operator, assembly/disassembly crew and the other workers who will be in the assembly/disassembly area to review the location of the power line(s) and the steps that will be implemented to prevent encroachment/electrocution.

**1926.1407(c)**—Assembly/disassembly below power lines prohibited. No part of a crane/derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed below a power line unless the employer *has confirmed that the utility owner/operator* has deenergized and (at the worksite) visibly grounded the power line.

**1926.1407(d)**—Assembly/disassembly inside Table A clearance prohibited. No part of a crane/derrick, load line, or load (including rigging and lifting accessories), whether partially or fully assembled, is allowed closer than the minimum approach distance under Table A (*see* Sec. 1926.1408) to a power line unless the employer *has confirmed that the utility owner/operator* has deenergized and (at the worksite) visibly grounded the power line.

**1926.1407(e)**—Voltage information. Where Option (3) of this section is used, the utility owner/operator of the power lines *must provide the requested voltage information within two working days of the employer's request.*

**1926.1407(f)**—Power lines presumed energized. The employer *must assume that all power lines are energized unless the utility owner/operator confirms* that the power line has been and continues to be deenergized and visibly grounded at the worksite.

## Qualified Person

**1926.1407(b)(3)**—*At least one of the following additional measures must be in place.* The measure selected from this list must be effective in preventing encroachment.

**1926.1407(b)(3)(i)**—*Use a dedicated spotter who is in continuous contact with the equipment operator.*  
*[Reference paragraph (b)(3) for all measures.]*

## Signs, Markings and Tags

**1926.1407(g)**—***Posting*** of electrocution warnings. There *must be at least one electrocution hazard warning conspicuously posted* in the cab so that it is in view of the operator and (except for overhead gantry and tower cranes) at least two on the outside of the equipment.

## 1926.1408—POWER LINE SAFETY (UP TO 350 KV)—EQUIPMENT OPERATIONS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—measures
- Training and Communications—planning meeting, utilities confirmation, training
- Qualified Person—dedicated spotter
- Signs, Markings and Tags—warning signs and lines, barricades

## Programs, Plans and Procedures

**1926.1408(b)**—Preventing encroachment/electrocution. Where encroachment precautions are required *under Option (2) [20 Foot Clearance] or Option (3) [Table A Clearance]* of this section *[Reference paragraph (a)(2) for each option.]*, all of the following requirements must be met:

**1926.1408(b)(1)**—*Conduct a planning meeting* with the operator and the other workers who will be in the area of the equipment or load to review the location of the power line(s), and *the steps that will be implemented* to prevent encroachment/electrocution.

**1926.1408(b)(4)**—*Implement at least one of the following measures:*

**1926.1408(b)(4)(ii)**—*A dedicated spotter* who is in continuous contact with the operator. *[Reference paragraph (b) (4) for specific options.]*

## Training and Communications

**1926.1408(a)(2)**—Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. *If so, the employer must meet the requirements in Option (1) [Deenergize and Ground], Option (2) [20 Foot Clearance], or Option (3) [Table A Clearance] [Reference paragraph (a)(2) for each option.] of this section, as follows:*

**1926.1408(a)(2)(i)**—*Option (1)—Deenergize and ground. Confirm from the utility owner/operator that the power line has been deenergized and visibly grounded at the worksite.*

**1926.1408(b)**—Preventing encroachment/electrocution. Where encroachment precautions are required *under Option (2) [20 Foot Clearance] or Option (3) [Table A Clearance]* of this section *[Reference paragraph (a)(2) for each option.]*, all of the following requirements must be met:

**1926.1408(b)(1)**—*Conduct a planning meeting* with the operator and the other workers who will be in the area of the equipment or load to review the location of the power line(s), and *the steps that will be implemented* to prevent encroachment/electrocution.

**1926.1408(c)**—Voltage information. Where *Option (3) [Table A Clearance]* of this section is used, the utility owner/operator of the power lines *must provide the requested voltage information within two working days* of the employer's request. *[Reference paragraph (a)(2) for each option.]*

**1926.1408(g)(1)**—The employer *must train each operator and crew member assigned to work* with the equipment. *[Reference paragraph (g)(1) for specific training requirements.]*

**1926.1408(g)(2)**—Employees working as *dedicated spotters must be trained* to enable them to effectively perform their task, *including training* on the applicable requirements of this section.

**1926.1408(g)(3)**—*Training* under this section *must be administered in accordance with Sec. 1926.1430(g) [Training].*

## Qualified Person

**1926.1408(b)(3)**—*Erect and maintain an elevated warning line, barricade, or line of signs*, in view of the operator, equipped with *flags* or similar high-visibility **markings**, at 20 feet from the power line (if using *Option (2) [20 Foot Clearance]* of this section) or at the minimum approach distance under *Table A [Minimum Clearance Distances]* (see *Sec. 1926.1408*) (if using *Option (3) [Table A Clearance]* of this section). If the operator is unable to see the elevated warning line, a *dedicated spotter* must be used as described in *Sec. 1926.1408(b)(4)(ii)* in addition to implementing one of the measures described in §§ 1926.1408(b)(4)(i), (iii), (iv) and (v).



**1926.1408(b)(4)**—Implement at least one of the following measures:

**1926.1408(b)(4)(ii)**—A dedicated spotter who is in continuous contact with the operator. [Reference paragraph (b) (4) for specific options.]

## Signs, Markings and Tags

**1926.1408(b)(3)**—Erect and maintain an elevated warning line, barricade, or line of **signs**, in view of the operator, equipped with flags or similar high-visibility **markings**, at 20 feet from the power line (if using Option (2) [20 Foot Clearance] of this section) or at the minimum approach distance under Table A [Minimum Clearance Distances] (see Sec. 1926.1408) (if using Option (3) [Table A Clearance] of this section). If the operator is unable to see the elevated warning line, a *dedicated spotter* must be used as described in Sec. 1926.1408(b)(4)(ii) in addition to implementing one of the measures described in §§ 1926.1408(b)(4)(i), (iii), (iv) and (v).

## 1926.1409—POWER LINE SAFETY (OVER 350 KV)

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

**Exception:** The requirements of Sec. 1926.1407 [Power Line Safety (Up to 350 kV)—Assembly and Disassembly] and Sec. 1926.1408 [Power Line Safety (Up to 350 kV)—Equipment Operations] apply to power lines over 350 kV except for power lines at or below 1000 kV, wherever the distance “20 feet” is specified, the distance “50 feet” must be substituted; and for power lines over 1000 kV, the minimum clearance distance must be established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution.

## STANDARD HIGHLIGHTS

- Qualified Person—registered professional engineer

## Qualified Person

**1926.1409(b)**—For power lines over 1000 kV, the minimum clearance distance must be established by the utility owner/operator or **registered professional engineer** who is a qualified person with respect to electrical power transmission and distribution.

## 1926.1410—POWER LINE SAFETY (ALL VOLTAGES)—EQUIPMENT OPERATIONS CLOSER THAN THE TABLE A ZONE

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

*Additional Note: Equipment operations in which any part of the equipment, load line, or load (including rigging and lifting accessories) is closer than the minimum approach distance under Table A of Sec. 1926.1408 to an energized power line is prohibited, except where the employer demonstrates that all of the following requirements are met.*

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—documented, available, develop procedures
- Recordkeeping—procedures
- Training and Communications—planning meetings, consultation with utilities, training
- Qualified Person—planning meetings, dedicated spotter
- Signs, Markings and Tags—markings

### Programs, Plans and Procedures

**1926.1410(d)**—*A planning meeting with the employer and utility owner/operator (or **registered professional engineer** who is a qualified person with respect to electrical power transmission and distribution) is held to determine the procedures that will be followed to prevent electrical contact and electrocution. [Reference paragraph (d) for procedures.]*

**1926.1410(e)**—*The **procedures** developed to comply with paragraph (d) of this section are **documented** and immediately available on-site.*

**1926.1410(f)**—*The equipment user and utility owner/operator (or **registered professional engineer**) meet with the equipment operator and the other workers who will be in the area of the equipment or load to review the procedures that will be implemented to prevent breaching the minimum approach distance established in paragraph (c) [Minimum Clearance Distance] of this section and prevent electrocution.*

**1926.1410(g)**—*The procedures developed to comply with paragraph (d) of this section are implemented.*

**1926.1410(h)**—*The utility owner/operator (or **registered professional engineer**) and all employers of employees involved in the work must identify one person who will direct the implementation of the procedures. The person identified in accordance with this paragraph must direct the implementation of the procedures and must have the authority to stop work at any time to ensure safety.*

**1926.1410(j)**—*If a problem occurs implementing the procedures being used to comply with paragraph (d) of this section, or indicating that those procedures are inadequate to prevent electrocution, the employer must safely stop operations and either develop new procedures to comply with paragraph (d) of this section or have the utility owner/operator deenergize and visibly ground or relocate the power line before resuming work.*

### Recordkeeping

**1926.1410(e)**—*The **procedures** developed to comply with paragraph (d) of this section are **documented** and immediately available on-site.*

### Training and Communications

**1926.1410(b)**—*The employer determines that, after consultation with the utility owner/operator, it is infeasible to deenergize and ground the power line or relocate the power line.*

**1926.1410(d)**—*A planning meeting with the employer and utility owner/operator (or **registered professional engineer** who is a qualified person with respect to electrical power transmission and distribution) is held to determine the procedures that will be followed to prevent electrical contact and electrocution. [Reference paragraph (d) for procedures.]*

**1926.1410(f)**—The equipment *user and utility owner/operator (or **registered professional engineer**)* meet with the equipment operator and the other workers who will be in the area of the equipment or load to review the procedures that will be implemented to prevent breaching the minimum approach distance established in paragraph (c) [Minimum Clearance Distance] of this section and prevent electrocution.

**1926.1410(m)**—The employer *must train* each operator and crew member assigned to work with the equipment in accordance with Sec. 1926.1408(g) [Training].

### **Qualified Person**

**1926.1410(c)(1)**—The power line owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution determines the minimum clearance distance that must be maintained to prevent electrical contact in light of the on-site conditions. The factors that must be considered in making this determination include, but are not limited to: Conditions affecting atmospheric conductivity; time necessary to bring the equipment, load line, and load (including rigging and lifting accessories) to a complete stop; wind conditions; degree of sway in the power line; lighting conditions, and other conditions affecting the ability to prevent electrical contact.

**1926.1410(d)**—A planning meeting with the employer and utility owner/operator (or **registered professional engineer** who is a qualified person with respect to electrical power transmission and distribution) is held to determine the procedures that will be followed to prevent electrical contact and electrocution. [Reference paragraph (d) for procedures.]

**1926.1410(d)(2)**—A dedicated spotter who is in continuous contact with the operator. [Reference paragraph (d) for procedures.]

**1926.1410(h)**—The utility owner/operator (or **registered professional engineer**) and all employers of employees involved in the work *must identify one person who will direct the implementation of the procedures. The person identified in accordance with this paragraph must direct the implementation of the procedures and must have the authority to stop work at any time to ensure safety.*

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

**1926.1410(d)(3)**—An elevated warning line, or barricade (not attached to the crane), in view of the operator (either directly or through video equipment), equipped with flags or *similar high-visibility markings*, to prevent electrical contact. However, this provision does not apply to work covered by subpart V [Power Transmission and Distribution] of this part.

## **1926.1411—POWER LINE SAFETY—WHILE TRAVELING UNDER OR NEAR POWER LINES WITH NO LOAD**

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”, luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

**Note:** *This section establishes procedures and criteria that must be met for equipment traveling under or near a power line on a construction site with no load. Equipment traveling on a construction site with a load is governed by §§ 1926.1408 [Power Line Safety (Up to 350 kV)—Equipment Operations Apply to Power Lines Over 350 kV], 1926.1409 [Power Line Safety (Over 350 kV)] or 1926.1411 [Power Line Safety—While Traveling Under or Near Power Lines With No Load], whichever is appropriate, and Sec. 1926.1417(u) [Traveling With a Load].*

## STANDARD HIGHLIGHTS

- Training and Communications—continuous contact with driver/operator
- Qualified Person—dedicated spotter

### Training and Communications

**1926.1411(b)(4)**—*Dedicated spotter.* If any part of the equipment while traveling will get closer than 20 feet to the power line, the employer *must ensure that a dedicated spotter who is in continuous contact* with the driver/operator is used. [Reference paragraph (b)(4) for specific duties.]

### Qualified Person

**1926.1411(b)(4)**—*Dedicated spotter.* If any part of the equipment while traveling will get closer than 20 feet to the power line, the employer *must ensure that a dedicated spotter who is in continuous contact* with the driver/operator is used. [Reference paragraph (b)(4) for specific duties.]

## 1926.1412—INSPECTIONS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—Inspections conducted prior to use, each shift and annually
- Recordkeeping—retention requirements
- Competent Person—inspections
- Qualified Person—inspections, modification/additions approval, registered professional engineer

### Inspections and Tests

**1926.1412(a)(1)**—Equipment that has had modifications or additions which affect the safe operation of the equipment (such as modifications or additions involving a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or capacity *must be inspected by a qualified person after such modifications/additions have been completed, prior to initial use. The inspection must meet all of the following requirements:*

**1926.1412(a)(1)(i)**—*The inspection must assure that the modifications or additions have been done in accordance with the **approval** obtained pursuant to Sec. 1926.1434 (Equipment modifications).*

**1926.1412(b)(1)**—Equipment that has had a repair or adjustment that relates to safe operation (such as: A repair or adjustment to a safety device or operator aid, or to a critical part of a control system, power plant, braking system, loadsustaining structural components, load hook, or in-use operating mechanism), *must be inspected by a qualified person after such a repair or adjustment has been completed, prior to initial use. [Reference paragraph (b)(1) for specific information.]*

**1926.1412(c)(1)**—Upon completion of assembly, the equipment *must be inspected by a qualified person* to assure that it is configured in accordance with **manufacturer equipment criteria**.



**1926.1412(d)(1)**—A competent person must begin a visual inspection prior to each shift the equipment will be used, which must be completed before or during that shift. The inspection must consist of observation for apparent deficiencies. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitating taking apart equipment components or booming down is needed. Determinations made in conducting the inspection must be reassessed in light of observations made during operation. [Reference paragraph (d)(1) for specific information.]

**1926.1412(e)(1)**—Each month the equipment is in service it must be inspected in accordance with paragraph (d) [Each Shift] of this section.

**1926.1412(f)(1)**—At least every 12 months the equipment must be inspected by a qualified person in accordance with paragraph (d) [Each Shift] of this section except that the corrective action set forth in paragraphs (f)(4), (f)(5), and (f)(6) [Annual/Comprehensive] of this section must apply in place of the corrective action required by paragraphs (d)(2) and (d)(3) [Each Shift] of this section.

**1926.1412(f)(2)**—In addition, at least every 12 months, the equipment must be inspected by a qualified person. Disassembly is required, as necessary, to complete the inspection. The equipment must be inspected. [Reference paragraph (f)(2) for specific information.]

**1926.1412(g)**—Severe service. Where the severity of use/conditions is such that there is a reasonable probability of damage or excessive wear (such as loading that may have exceeded rated capacity, shock loading that may have exceeded rated capacity, prolonged exposure to a corrosive atmosphere), the employer must stop using the equipment and a qualified person must:

**1926.1412(g)(1)**—Inspect the equipment for structural damage to determine if the equipment can continue to be used safely. [Reference paragraph (g) for specific information.]

**1926.1412(j)**—Any part of a **manufacturer's procedures** regarding inspections that relate to safe operation (such as to a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) that is more comprehensive or has a more frequent schedule of inspection than the requirements of this section must be followed.

## **Recordkeeping**

**1926.1412(a)(1)**—Equipment that has had modifications or additions which affect the safe operation of the equipment (such as modifications or additions involving a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or capacity must be inspected by a qualified person after such modifications/additions have been completed, prior to initial use. The inspection must meet all of the following requirements:

**1926.1412(a)(1)(i)**—The inspection must assure that the modifications or additions have been done in accordance with the **approval** obtained pursuant to Sec. 1926.1434 (Equipment modifications).

**1926.1412(c)(1)**—Upon completion of assembly, the equipment must be inspected by a qualified person to assure that it is configured in accordance with **manufacturer equipment criteria**.

**1926.1412(e)(3)(i)**—**Information** must be **documented** and **maintained** by the employer that conducts the inspection. [Reference paragraph (e)(3)(i) for specific information.]

**1926.1412(e)(3)(ii)**—This **document** must be **retained** for a minimum of three months.



**1926.1412(f)(7)—Documentation of annual/comprehensive inspection.** *Information must be documented, maintain, and retained for a minimum of 12 months, by the employer that conducts the inspection. [Reference paragraph (f)(7) for specific information.]*

**1926.1412(j)**—*Any part of a **manufacturer's procedures** regarding inspections that relate to safe operation (such as to a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) that is more comprehensive or has a more frequent schedule of inspection than the requirements of this section must be followed.*

**1926.1412(k)**—*All **documents** produced under this section must be **available**, during the applicable **document retention** period, to all persons who conduct inspections under this section.*

### **Competent Person**

**1926.1412(d)(1)**—*A competent person must begin a visual inspection prior to each shift the equipment will be used, which must be completed before or during that shift. The inspection must consist of observation for apparent deficiencies. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitating taking apart equipment components or booming down is needed. Determinations made in conducting the inspection must be reassessed in light of observations made during operation. [Reference paragraph (d)(1) for specific information.]*

**1926.1412(d)(2)**—*If any deficiency in paragraphs (d)(1)(i) through (xiii) [Each Shift] of this section (or in additional inspection items required to be checked for specific types of equipment in accordance with other sections of this **standard**) is identified, an immediate determination must be made by the competent person as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, the equipment must be taken out of service until it has been corrected. See Sec. 1926.1417 [Operation].*

**1926.1412(e)(1)**—*Each month the equipment is in service it must be inspected in accordance with paragraph (d) [Each Shift] of this section.*

### **Qualified Person**

**1926.1412(a)(1)**—*Equipment that has had modifications or additions which affect the safe operation of the equipment (such as modifications or additions involving a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism) or capacity must be inspected by a qualified person after such modifications/additions have been completed, prior to initial use. The inspection must meet all of the following requirements:*

**1926.1412(a)(1)(i)**—*The inspection must assure that the modifications or additions have been done in accordance with the approval obtained pursuant to Sec. 1926.1434 (Equipment modifications).*

**1926.1412(b)(1)**—*Equipment that has had a repair or adjustment that relates to safe operation (such as: A repair or adjustment to a safety device or operator aid, or to a critical part of a control system, power plant, braking system, loadsustaining structural components, load hook, or in-use operating mechanism), must be inspected by a qualified person after such a repair or adjustment has been completed, prior to initial use. [Reference paragraph (b)(1) for specific information.]*

**1926.1412(b)(1)(ii)**—*Where **manufacturer equipment criteria** are unavailable or inapplicable, the qualified person must:*

**1926.1412(b)(1)(ii)(A)**—*Determine if a **registered professional engineer (RPE)** is needed to develop criteria for the repair/adjustment. If an RPE is not needed, the employer must ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer must ensure that they are developed by an RPE.*

**1926.1412(c)(1)**—Upon completion of assembly, the equipment *must be inspected by a qualified person* to assure that it is configured in accordance *with manufacturer equipment criteria*.

**1926.1412(c)(2)**—Where *manufacturer equipment criteria* are unavailable, a *qualified person* must:

**1926.1412(c)(2)(i)**—Determine if a **registered professional engineer (RPE)** familiar with the type of equipment involved is needed to develop criteria for the equipment configuration. If an RPE is not needed, the employer must ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer must ensure that they are developed by an RPE.

**1926.1412(f)(1)**—At least every 12 months the equipment must be inspected by a qualified person in accordance with paragraph (d) [Each Shift] of this section except that the corrective action set forth in paragraphs (f)(4), (f)(5), and (f)(6) [Annual/Comprehensive] of this section must apply in place of the corrective action required by paragraphs (d)(2) and (d)(3) [Each Shift] of this section.

**1926.1412(f)(2)**—In addition, at least every 12 months, the equipment *must be inspected by a qualified person*. Disassembly is required, as necessary, to complete the inspection. The equipment *must be inspected*. [Reference paragraph (f)(2) for specific information.]

**1926.1412(f)(4)**—If any deficiency is identified, an immediate determination must be made by the qualified person as to whether the deficiency constitutes a safety hazard or, though not yet a safety hazard, *needs to be monitored in the monthly inspections*.

**1926.1412(g)**—Severe service. Where the severity of use/conditions is such that there is a reasonable probability of damage or excessive wear (such as loading that may have exceeded rated capacity, shock loading that may have exceeded rated capacity, prolonged exposure to a corrosive atmosphere), the employer must stop using the equipment and a *qualified person* must:

**1926.1412(g)(1)**—Inspect the equipment for structural damage to determine if the equipment can continue to be used safely. [Reference paragraph (g) for specific information.]

## **1926.1413—WIRE ROPE—INSPECTION**

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—visual, each shift, monthly, and annual inspections
- Recordkeeping—retention, documentation
- Competent Person—visual inspections prior to each shift, determinations
- Qualified Person—inspections

## Inspections and Tests

**1926.1413(a)(1)**—A *competent person* must begin a visual inspection prior to each shift the equipment is used, which must be completed before or during that shift. The inspection must consist of observation of wire ropes (running and standing) that are likely to be in use during the shift for apparent deficiencies, including those listed in *paragraph (a)(2) [Apparent Deficiencies]* of this section. Untwisting (opening) of wire rope or booming down is not required as part of this inspection.

**1926.1413(b)(1)**—Each month an inspection must be conducted in accordance with *paragraph (a) [Shift Inspection]* of this section.

**1926.1413(b)(2)**—The inspection must include any deficiencies that the qualified person who conducts the annual inspection determines under *paragraph (c)(3)(ii) [Annual/Comprehensive]* of this section must be monitored.

**1926.1413(b)(4)**—The inspection must be **documented** according to *Sec. 1926.1412(e)(3) (monthly inspection documentation)*.

**1926.1413(c)(1)**—At least every 12 months, wire ropes in use on equipment must be inspected by a qualified person in accordance with *paragraph (a) [Shift Inspection]* of this section.

**1926.1413(c)(2)**—In addition, at least every 12 months, the wire ropes in use on equipment must be inspected by a qualified person. *[Reference paragraph (c)(2) for specific information.]*

**1926.1413(c)(2)(iii)—Exception:** In the event an inspection under *paragraph (c)(2) [Annual/Comprehensive]* of this section is not feasible due to existing set-up and configuration of the equipment (such as where an assist crane is needed) or due to site conditions (such as a dense urban setting), *such inspections must be conducted as soon as it becomes feasible, but no longer than an additional 6 months* for running ropes and, for standing ropes, at the time of disassembly.

**1926.1413(c)(4)**—The inspection must be **documented** according to *Sec. 1926.1412(f)(7) (annual/comprehensive inspection documentation)*.

**1926.1413(e)**—All **documents** produced under this section must be **available**, during the applicable **document retention period**, to all persons who conduct inspections under this section.

## Recordkeeping

**1926.1413(a)(4)(ii)**—If a deficiency in Category II (*see paragraph (a)(2)(ii) [Apparent Deficiencies]* of this section) is identified, operations involving use of the wire rope in question must be prohibited until

:

**1926.1413(a)(4)(ii)(A)**—The employer complies with the wire rope **manufacturer's established criterion** for removal from service or a different criterion that the **wire rope manufacturer has approved in writing** for that specific wire rope (*see Sec. 1926.1417 [Operation]*).

**1926.1413(b)(4)**—The **inspection** must be **documented** according to *Sec. 1926.1412(e)(3) (monthly inspection documentation)*.

**1926.1413(c)(4)**—The **inspection** must be **documented** according to *Sec. 1926.1412(f)(7) (annual/comprehensive inspection documentation)*.

**1926.1413(e)**—All **documents** produced under this section must be **available**, during the applicable **document retention period**, to all persons who conduct inspections under this section.

## Competent Person

**1926.1413(a)(1)**—A *competent person must begin a visual inspection prior to each shift* the equipment is used, which must be completed before or during that shift. The inspection must consist of observation of wire ropes (running and standing) that are likely to be in use during the shift for apparent deficiencies, including those listed in *paragraph (a)(2) [Apparent Deficiencies]* of this section. Untwisting (opening) of wire rope or booming down is not required as part of this inspection.

**1926.1413(a)(4)(i)**—If a deficiency in Category I (*see paragraph (a)(2)(i) [Apparent Deficiencies]* of this section) is identified, *an immediate determination must be made by the competent person* as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, operations involving use of the wire rope in question must be prohibited. [*Reference paragraph (a)(4)(i) for specific information.*]

## Qualified Person

**1926.1413(b)(2)**—The *inspection must include any deficiencies that the qualified person who conducts the annual inspection* determines under *paragraph (c)(3)(ii) [Annual/Comprehensive]* of this section must be monitored.

**1926.1413(c)(1)**—*At least every 12 months, wire ropes in use on equipment must be inspected by a qualified person* in accordance with *paragraph (a) [Shift Inspection]* of this section.

**1926.1413(c)(2)**—In addition, *at least every 12 months, the wire ropes in use on equipment must be inspected by a qualified person.* [*Reference paragraph (c)(2) for specific information.*]

**1926.1413(c)(3)**—If a deficiency is identified, *an immediate determination must be made by the qualified person* as to whether the deficiency constitutes a safety hazard.

**1926.1413(c)(3)(ii)**—*If the qualified person determines that, though not presently a safety hazard, the deficiency needs to be monitored, the employer must ensure that the deficiency is checked in the monthly inspections.*

## 1926.1414—WIRE ROPE—SELECTION AND INSTALLATION CRITERIA

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—qualified person, records, monthly and annual inspections
- Recordkeeping—documentation
- Qualified Person—inspections

### Inspections and Tests

**1926.1414(e)(3)(i)**—*A qualified person must inspect the rope in accordance with Sec. 1926.1413(a) [Shift Inspection]. The rope must be used only if the qualified person determines that there are no deficiencies constituting a hazard. In making this determination, more than one broken wire in any one rope lay must be considered a hazard.*

**1926.1414(e)(3)(iii)**—Each lift made *under Sec. 1926.1414(e)(3) [Rotation Resistant Ropes]* must be **recorded** in the **monthly and annual inspection documents**. Such prior uses must be considered by the qualified person in determining whether to use the rope again.

### Recordkeeping

**1926.1414(a)**—Original equipment wire rope and replacement wire rope must be selected and installed in accordance with the requirements of this section. Selection of replacement wire rope *must be in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or a qualified person*.

**1926.1414(e)(3)(iii)**—Each lift made *under Sec. 1926.1414(e)(3) [Rotation Resistant Ropes]* must be **recorded** in the **monthly and annual inspection documents**. Such prior uses must be considered by the qualified person in determining whether to use the rope again.

### Qualified Person

**1926.1414(a)**—Original equipment wire rope and replacement wire rope must be selected and installed in accordance with the requirements of this section. Selection of replacement wire rope *must be in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or a qualified person*.

**1926.1414(e)(3)(i)**—*A qualified person must inspect the rope in accordance with Sec. 1926.1413(a) [Shift Inspection]. The rope must be used only if the qualified person determines that there are no deficiencies constituting a hazard. In making this determination, more than one broken wire in any one rope lay must be considered a hazard.*

**1926.1414(e)(3)(iii)**—Each lift made *under Sec. 1926.1414(e)(3) [Rotation Resistant Ropes]* must be **recorded** in the **monthly and annual inspection documents**. Such prior uses must be considered by the qualified person in determining whether to use the rope again.

## 1926.1416—OPERATIONAL AIDS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Signs, Markings and Tags—markings

### Signs, Markings and Tags

**1926.1416(d)(1)(i)(B)**—Clearly **mark** the **boom hoist cable** (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to keep the boom within the minimum allowable radius. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.

**1926.1416(d)(1)(i)(C)**—Clearly **mark** the **boom hoist cable** (so that it can easily be seen by a spotter) at a point that will give the spotter sufficient time to signal the operator and have the operator stop the hoist to keep the boom within the minimum allowable radius.



**1926.1416(d)(3)(i)**—Telescopic boom cranes manufactured after February 28, 1992, must be equipped with a device which automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip (or fixed upper block or similar component). The device(s) must prevent such damage at all points where two-blocking could occur. *Temporary alternative measures:* Clearly **mark** the **cable** (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter when extending the boom.

**1926.1416(d)(3)(ii)(D)**—*Temporary alternative measures.* Clearly **mark** the cable (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter.

**1926.1416(e)(3)(i)**—**Mark** the boom with measured marks to calculate boom length.

**1926.1416(e)(5)(ii)**—Hoist drum rotation indicator if the equipment has a hoist drum not visible from the operator's station. *Temporary alternative measures:* **Mark** the drum to indicate the rotation of the drum. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.

## 1926.1417—OPERATION

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., "hammerhead boom"), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures signed by registered professional engineer
- Recordkeeping—procedures
- Training and Communications—notify employees, written documentation
- Competent Person—supervise
- Qualified Person—procedures
- Signs, Markings and Tags—notices

### Programs, Plans and Procedures

**1926.1417(b)(1)**—Where the *manufacturer procedures* are unavailable, the employer *must develop and ensure compliance with all procedures* necessary for the safe operation of the equipment and attachments.

**1926.1417(b)(3)**—*Procedures related to the capacity of the equipment must be **developed** and **signed** by a **registered professional engineer** familiar with the equipment.*

**1926.1417(c)(1)**—The *procedures applicable to the operation of the equipment, including **rated capacities (load charts)**, **recommended operating speeds**, **special hazard warnings**, **instructions**, and **operator's manual**, must be readily available in the cab at all times* for use by the operator.

## Recordkeeping

**1926.1417(b)(3)**—*Procedures related to the capacity of the equipment must be developed and **signed** by a **registered professional engineer** familiar with the equipment.*

**1926.1417(c)(1)**—*The procedures applicable to the operation of the equipment, including **rated capacities (load charts)**, **recommended operating speeds**, **special hazard warnings**, instructions, and **operator's manual**, must be readily available in the cab at all times for use by the operator.*

**1926.1417(h)**—*Storm warning.* When a local storm warning has been issued, the *competent person* must determine whether it is necessary to implement **manufacturer recommendations** for securing the equipment.

**1926.1417(j)(1)**—*The operator must, in **writing**, promptly inform the person designated by the employer to receive such **information** and, where there are successive shifts, to the next operator.*

## Training and Communications

**1926.1417(j)**—If equipment adjustments or repairs are necessary:

**1926.1417(j)(1)**—*The operator must, in **writing**, promptly inform the person designated by the employer to receive such **information** and, where there are successive shifts, to the next operator; and*

**1926.1417(j)(2)**—*The employer must notify all affected employees, at the beginning of each shift, of the necessary adjustments or repairs and all **alternative measures**.*

## Competent Person

**1926.1417(e)(1)**—The operator must not leave the controls while the load is suspended, except where specific the following are met: *[Reference paragraph (e)(1)(iii) for all elements.]*

**1926.1417(e)(1)(iii)**—*The competent person determines that it is safe to do so and implements measures necessary to restrain the boom hoist and telescoping, load, swing, and outrigger or stabilizer functions.*

**1926.1417(h)**—*Storm warning.* When a local storm warning has been issued, the *competent person* must determine whether it is necessary to implement **manufacturer recommendations** for securing the equipment.

**1926.1417(m)**—*If the competent person determines that there is a slack rope condition requiring re-spooling of the rope, it must be verified (before starting to lift) that the rope is seated on the drum and in the sheaves as the slack is removed.*

**1926.1417(n)**—*The competent person must adjust the equipment and/or operations to address the effect of wind, ice, and snow on equipment stability and rated capacity.*

**1926.1417(o)(3)**—*Load weight.* The operator must verify that the load is within the rated capacity of the equipment by at least one of the following methods:

**1926.1417(o)(3)(i)**—*The weight of the load must be determined from a source recognized by the industry (such as the load's manufacturer), or by a **calculation method** recognized by the industry (such as calculating a steel beam from measured dimensions and a known per foot weight), or by other equally reliable means. In addition, when requested by the operator, this information must be provided to the operator prior to the lift.*

**1926.1417(u)(2)(i)**—*A competent person supervises the operation, determines if it is necessary to reduce rated capacity, and makes determinations regarding load position, boom location, ground support, travel route, overhead obstructions, and speed of movement necessary to ensure safety.*

**1926.1417(u)(2)(ii)**—The *determinations of the competent person required in paragraph (u)(2)(i) [Traveling With a Load]* of this section are implemented.

### Qualified Person

**1926.1417(b)(2)**—*Procedures* for the operational controls must be **developed** by a qualified person.

**1926.1417(b)(3)**—*Procedures related to the capacity of the equipment must be developed and signed by a registered professional engineer* familiar with the equipment.

**1926.1417(f)(2)(i)**—If there is a **warning (tag-out or maintenance/do not operate) sign** on the equipment or starting control, the operator must not activate the switch or start the equipment until the **sign** has been removed by a *person authorized* to remove it, or until the operator has it verified. *[Reference paragraph (f)(2)(i) for all elements.]*

**1926.1417(f)(2)(ii)**—If there is a **warning (tag-out or maintenance/do not operate) sign** on any other switch or control, the operator must not activate that switch or control until the **sign** has been removed by a *person authorized* to remove it, or until the operator has verified that the requirements in paragraphs (f)(2)(i)(A) and (B) *[Response to “Do Not Operate”/Tag-Out Signs]* of this section have been met.

**1926.1417(j)**—If equipment adjustments or repairs are necessary:

**1926.1417(j)(1)**—The operator must, in **writing**, promptly inform the person designated by the employer to receive such information and, where there are successive shifts, to the next operator; and

**1926.1417(j)(2)**—The employer must notify all affected employees, at the beginning of each shift, of the necessary adjustments or repairs and all alternative measures.

### Signs, Markings and Tags

**1926.1417(e)(1)(iv)**—Barricades or caution lines, and **notices**, are erected to prevent all employees from entering the fall zone. No employees, including those listed in §§ 1926.1425(b)(1) through (3), Sec. 1926.1425(d) or Sec. 1926.1425(e) *[Keeping Clear of the Load]*, are permitted in the fall zone.

**1926.1417(f)(1)**—**Tagging out of service equipment/functions**. Where the employer has taken the equipment out of service, a **tag** must be placed in the cab stating that the equipment is out of service and is not to be used. Where the employer has taken a function(s) out of service, a **tag** must be placed in a conspicuous position stating that the function is out of service and is not to be used.

**1926.1417(f)(2)(i)**—If there is a **warning (tag-out or maintenance/do not operate) sign** on the equipment or starting control, the operator must not activate the switch or start the equipment until the **sign** has been removed by a *person authorized* to remove it, or until the operator has it verified. *[Reference paragraph (f)(2)(i) for all elements.]*

**1926.1417(f)(2)(ii)**—If there is a **warning (tag-out or maintenance/do not operate) sign** on any other switch or control, the operator must not activate that switch or control until the **sign** has been removed by a *person authorized* to remove it, or until the operator has verified that the requirements in paragraphs (f)(2)(i)(A) and (B) *[Response to “Do Not Operate”/Tag-Out Signs]* of this section have been met.

**1926.1417(w)**—A **tag** or restraint line must be used if necessary to prevent rotation of the load that would be hazardous.

## 1926.1418—AUTHORITY TO STOP OPERATION

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Qualified Person—authority

#### Qualified Person

**1926.1418**—Whenever there is a concern as to safety, the operator *must have the authority to stop and refuse to handle loads until a qualified person has determined that safety has been assured.*

## 1926.1419—SIGNALS—GENERAL REQUIREMENTS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Training and Communications—hand signals
- Qualified Person—signal person

#### Training and Communications

**1926.1419(c)(2)**—*Non-standard hand signals.* When using non-standard hand signals, *the signal person, operator, and lift director (where there is one) must contact each other prior to the operation and agree on the non-standard hand signals that will be used.*

#### Qualified Person

**1926.1419(a)**—*A signal person must be provided in specific situations. [Reference paragraph (a) for specific information.]*

## 1926.1420—SIGNALS—RADIO, TELEPHONE OR OTHER ELECTRONIC TRANSMISSION OF SIGNALS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—tests before beginning operations

#### Inspections and Tests

**1926.1420(a)**—The device(s) used to transmit signals *must be tested on site before beginning operations* to ensure that the signal transmission is effective, clear, and reliable.

## 1926.1421—SIGNALS—VOICE SIGNALS—ADDITIONAL REQUIREMENTS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Training and Communications—prior to beginning operations

#### Training and Communications

**1926.1421(a)**—*Prior to beginning operations, the operator, signal person and lift director (if there is one), must contact each other and agree on the voice signals that will be used. Once the voice signals are agreed upon, these workers need not meet again to discuss voice signals unless another worker is added or substituted, there is confusion about the voice signals, or a voice signal is to be changed.*

## 1926.1422—SIGNALS—HAND SIGNAL CHART

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*



## STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posted hand signal charts

### Signs, Markings and Tags

**1926.1422—*Hand signal charts must be either **posted** on the equipment or conspicuously **posted** in the vicinity of the hoisting operations.***

## 1926.1423—FALL PROTECTION

***Scope/Application:*** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

## STANDARD HIGHLIGHTS

- Inspections and Tests—visual inspections, competent person
- Training and Communications—employee training
- Competent Person—visual inspections
- Qualified Person—determinations

### Inspections and Tests

**1926.1423(g)(2)(i)**—Personal fall arrest systems must be anchored to any apparently substantial part of the equipment unless *a competent person, from a visual inspection*, without an engineering analysis, would conclude that the criteria in *Sec. 1926.502(d)(15) [Personal Fall Arrest Systems]* would not be met.

**1926.1423(g)(2)(ii)**—Positioning device systems must be anchored to any apparently substantial part of the equipment unless *a competent person, from a visual inspection*, without an engineering analysis, would conclude that the criteria in *Sec. 1926.502(e)(2) [Positioning Device Systems]* would not be met.

### Training and Communications

**1926.1423(k)**—*Training. The employer must train each employee who may be exposed to fall hazards while on, or hoisted by, equipment covered by this subpart. [Reference paragraph (k) for specific information.]*

### Competent Person

**1926.1423(g)(2)(i)**—Personal fall arrest systems must be anchored to any apparently substantial part of the equipment unless *a competent person, from a visual inspection*, without an engineering analysis, would conclude that the criteria in *Sec. 1926.502(d)(15) [Personal Fall Arrest Systems]* would not be met.

**1926.1423(g)(2)(ii)**—Positioning device systems must be anchored to any apparently substantial part of the equipment unless *a competent person, from a visual inspection*, without an engineering analysis, would conclude that the criteria in *Sec. 1926.502(e)(2) [Positioning Device Systems]* would not be met.

## Qualified Person

**1926.1423(j)(1)**—A *qualified person* has determined that the set-up and rated capacity of the crane/derrick (including the hook, load line and rigging) meets or exceeds the requirements in *Sec. 1926.502(d)(15) [Personal Fall Arrest Systems]*.

## 1926.1424—WORK AREA CONTROL

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting; pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—system for coordinating operations
- Training and Communications—training, employee instruction
- Qualified Person—authorized employees
- Signs, Markings and Tags—warning signs

### Programs, Plans and Procedures

**1926.1424(b)**—Where any part of a crane/derrick is within the working radius of another crane/derrick, the *controlling entity must institute a system to coordinate operations*. If there is no controlling entity, the employer (if there is only one employer operating the multiple pieces of equipment), or employers, *must institute such a system*.

### Training and Communications

**1926.1424(a)(2)(i)**—*Train each employee assigned to work on or near the equipment (“authorized personnel”) in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.*

**1926.1424(a)(2)(ii)**—*Erect and maintain control lines, warning lines, railings or similar barriers to **mark** the boundaries of the hazard areas. **Exception:** When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly **marked by a combination of warning signs** (such as “Danger—Swing/Crush Zone”) and high visibility markings on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these **markings** signify.*

**1926.1424(a)(3)(i)**—Before an employee goes to a location in the hazard area that is out of view of the operator, the *employee (or someone instructed by the employee) must ensure that the operator is informed that he/she is going to that location.*

**1926.1424(a)(3)(ii)**—Where the operator knows that an employee went to a location covered by *paragraph (a)(1) [Swing Radius Hazards]* of this section, the operator must not rotate the superstructure *until the operator is informed in accordance with a pre-arranged system of communication that the employee is in a safe position.*

## Qualified Person

**1926.1424(a)(2)(i)**—*Train each employee assigned to work on or near the equipment (“authorized personnel”) in how to recognize struck-by and pinch/crush hazard areas posed by the rotating superstructure.*

## Signs, Markings and Tags

**1926.1424(a)(2)(ii)**—*Erect and maintain control lines, warning lines, railings or similar barriers to **mark** the boundaries of the hazard areas. **Exception:** When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly **marked** by a combination of **warning signs** (such as “Danger—Swing/Crush Zone”) and high visibility **markings** on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these **markings** signify.*

## 1926.1425—KEEPING CLEAR OF THE LOAD

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Training and Communications—instructions
- Qualified Person—qualified rigger

### Training and Communications

**1926.1425(e)(2)**—*Only employees essential to the operation are permitted in the fall zone (but not directly under the load). An employee is essential to the operation if the employee is conducting one of the following operations and the employer can demonstrate it is infeasible for the employee to perform that operation from outside the fall zone: (1) Physically guide the load; (2) *closely monitor and give instructions regarding the load’s movement*; or (3) either detach it from or initially attach it to another component or structure (such as, but not limited to, making an initial connection or installing bracing).*

### Qualified Person

**1926.1425(c)(3)**—*The materials must be rigged by a qualified rigger.*

## 1926.1427—OPERATOR QUALIFICATION AND CERTIFICATION

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—monitoring
- Inspections and Tests—written and practical tests, audits
- Recordkeeping—retention requirements
- Certification—valid 5 years, qualifications, licensing
- Training and Communications—verbally, initial training
- Qualified Person—accreditations, auditors, literacy requirements

### Programs, Plans and Procedures

**1926.1427(c)—Option (2):** *Qualification by an audited **employer program**. The employer’s qualification of its employee must meet specific requirements. [Reference paragraph (c)(1) for specific information.]*

**1926.1427(c)(2)(i)**—The **written** and **practical tests** must be administered under circumstances **approved** by the auditor as meeting **nationally recognized test administration standards**.

**1926.1427(c)(6)(ii)**—*Valid for 5 years.*

**1926.1427(c)(3)**—The **employer program** must be **audited** within 3 months of the beginning of the **program** and at least every 3 years thereafter.

**1926.1427(c)(4)**—The **employer program** must have testing procedures for re-qualification designed to ensure that the operator continues to meet the *technical knowledge and skills* requirements in paragraphs (j)(1) and (2) [Certification Criteria] of this section. The re-qualification procedures must be audited in accordance with paragraphs (c)(1) and (2) [Option (2): Qualification by an Audited Employer Program] of this section.

**1926.1427(f)(3)**—**Trainer.** While operating the equipment, the operator-in-training must be continuously monitored by an individual (“operator’s trainer”) who meets specific requirements. [Reference paragraph (f)(3) for specific information.]

**1926.1427(f)(4)**—**Continuous monitoring.** The operator-in-training must be monitored by the operator’s trainer at all times, except for short breaks where specific requirements are met. [Reference paragraph (f)(4) for specific information.]

**1926.1427(h)(1)(ii)**—Demonstrates the ability to use the type of **written manufacturer procedures** applicable to the class/type of equipment for which the candidate is seeking **certification**.

### Inspections and Tests

**1926.1427(c)(2)(iv)**—The **audit** must be conducted in accordance with nationally recognized **auditing standards**.

**1926.1427(c)(3)**—The **employer program** must be **audited** within 3 months of the beginning of the **program** and at least every 3 years thereafter.

**1926.1427(c)(4)**—The **employer program** must have testing procedures for re-qualification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in paragraphs (j)(1) and (2) [Certification Criteria] of this section. The re-qualification procedures must be **audited** in accordance with paragraphs (c)(1) and (2) [Option (2): Qualification by an Audited Employer Program] of this section.

**1926.1427(c)(5)(ii)**—The **program** is **audited** again within 180 days of the confirmation that the deficiency was corrected.

**1926.1427(k)(2)(ii)**—Where an employee assigned to operate machinery does not have the required knowledge or ability to operate the equipment safely, the employer must train that employee prior to operating the equipment. The employer must ensure that each operator is evaluated to confirm that he/she understands the information provided in the training.

## Recordkeeping

**1926.1427(b)**—Option (1): **Certification by an accredited crane operator testing organization.** [Reference paragraph (b) (1) for specific information.]

**1926.1427(b)(2)**—An operator will be deemed qualified to operate a particular piece of equipment if the operator is **certified** under paragraph (b) [Option (1): Certification by an Accredited Crane Operator Testing Organization] of this section for that type and capacity of equipment or for higher-capacity equipment of that type. If no **accredited** testing agency offers **certification examinations** for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been **certified** for the type/capacity that is most similar to that equipment and for which a **certification examination** is available. The operator's **certificate** must state the type/capacity of equipment for which the operator is **certified**.

**1926.1427(c)(2)(i)**—The **written** and practical **tests** must be administered under circumstances **approved** by the auditor as meeting **nationally recognized test administration standards**.

**1926.1427(c)(2)(iv)**—The **audit** must be conducted in accordance with nationally recognized **auditing standards**.

**1926.1427(c)(5)(iii)**—The auditor files a **documented report** of the deficiency to the appropriate Regional Office of the Occupational Safety and Health Administration within 15 days of the auditor's determination that there is a deficiency.

**1926.1427(c)(5)(iv)**—**Records** of the audits of the **employer's program** are **maintained** by the auditor for three years and are made available by the auditor to the Secretary of Labor or the Secretary's designated representative upon request.

**1926.1427(h)(1)(i)**—Passes a **written demonstration** of literacy relevant to the work.

**1926.1427(h)(1)(ii)**—Demonstrates the ability to use the type of **written manufacturer procedures** applicable to the class/type of equipment for which the candidate is seeking **certification**.

**1926.1427(j)**—**Certification criteria.** **Qualifications and certifications** must be based, at a minimum, on the following:

**1926.1427(j)(1)**—A determination through a **written test**. [Reference paragraph (j)(1) for specific **information**.]

## Certification

**1926.1427(a)**—The employer must ensure that, prior to operating any equipment covered under subpart CC, the person is operating the equipment during a training period in accordance with paragraph (f) [Pre-Qualification/Certification Training Period] of this section, or the operator is qualified or **certified** to operate the equipment in accordance with specific information. [Reference paragraph (a) for specific information.]



**1926.1427(a)(1)**—When a non-military government entity issues **operator licenses** for equipment covered under subpart CC, and that **government licensing program** meets the requirements of paragraphs (e)(2) [Licensing Criteria] and (j) [Certification Criteria] of this section, the *equipment operator must either be:*

**1926.1427(a)(1)(i)**—**Licensed** by that government entity for operation of equipment within that entity’s jurisdiction; or

**1926.1427(a)(1)(ii)**—*Qualified in compliance with paragraph (d) [Option (3): Qualification by the U.S. Military] of this section.*

**1926.1427(b)**—*Option (1): **Certification** by an **accredited** crane operator testing organization. [Reference paragraph (b) (1) for specific information.]*

**1926.1427(b)(2)**—*An operator will be deemed qualified to operate a particular piece of equipment if the operator is **certified** under paragraph (b) [Option (1): **Certification** by an Accredited Crane Operator Testing Organization] of this section for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers **certification examinations** for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been **certified** for the type/capacity that is most similar to that equipment and for which a **certification examination** is available. The **operator’s certificate** must state the type/capacity of equipment for which the operator is certified.*

**1926.1427(b)(4)**—A **certification** issued under this paragraph is valid for 5 years.

**1926.1427(c)**—*Option (2): Qualification by an audited **employer program**. The employer’s qualification of its employee must meet specific requirements. [Reference paragraph (c)(1) for specific information.]*

**1926.1427(c)(2)(i)**—The **written** and practical **tests** must be administered under circumstances approved by the auditor as meeting **nationally recognized test administration standards**.

**1926.1427(c)(6)(ii)**—Valid for 5 years.

**1926.1427(d)**—*Option (3): Qualification by the U.S. military. [Reference paragraph (d) for specific information.]*

**1926.1427(e)**—*Option (4): **Licensing** by a government entity. [Reference paragraph (e) for specific information.]*

**1926.1427(e)(2)(i)**—The requirements for obtaining the license include an assessment, by **written** and practical **tests**, of the operator applicant regarding, at a minimum, the knowledge and skills listed in paragraphs (j)(1) and (2) [Certification Criteria] of this section.

**1926.1427(e)(3)(ii)**—Is valid for the period of time stipulated by the **licensing department/office**, but no longer than 5 years.

**1926.1427(j)**—**Certification criteria**. *Qualifications and **certifications** must be based, at a minimum, on the following:*

**1926.1427(j)(1)**—*A determination through a **written test**. [Reference paragraph (j)(1) for specific information.]*

## **Training and Communications**

**1926.1427(a)**—The employer must ensure that, *prior to operating any equipment covered under subpart CC, the person is operating the equipment during a training period in accordance with paragraph (f) [Pre-Qualification/Certification Training Period] of this section, or the operator is qualified or **certified** to operate the equipment in accordance with the following: [Reference paragraph (a) for specific information.]*

**1926.1427(f)(1)**—The employer *must provide each operator-in-training with sufficient training prior to operating the equipment to enable the operator-in-training to operate the equipment safely under limitations established by this section (including continuous monitoring) and any additional limitations established by the employer.*

**1926.1427(f)(3)(iv)**—For equipment other than tower cranes: The *operator's trainer and the operator-in-training* must be in direct line of sight of each other. In addition, *they must communicate verbally or by hand signals*. For tower cranes: The *operator's trainer and the operator-in-training must be in direct communication with each other*.

**1926.1427(f)(4)(ii)**—*Immediately prior to the break the operator's trainer informs the operator-in-training of the specific tasks that the operator-in-training is to perform and limitations to which he/she must adhere during the operator trainer's break.*

**1926.1427(k)(2)(ii)**—Where an employee assigned to operate machinery does not have the required knowledge or ability to operate the equipment safely, the employer *must train that employee prior to operating the equipment. The employer must ensure that each operator is evaluated to confirm that he/she understands the information provided in the training.*

## **Qualified Person**

**1926.1427(a)(1)**—When a non-military government entity issues **operator licenses** for equipment covered under subpart CC, and that **government licensing program** meets the requirements of paragraphs (e)(2) [Licensing Criteria] and (j) [Certification Criteria] of this section, the equipment operator must either be:

**1926.1427(a)(1)(i)**—**Licensed** by that government entity for operation of equipment within that entity's jurisdiction; or

**1926.1427(a)(1)(ii)**—*Qualified in compliance with paragraph (d) [Option (3): Qualification by the U.S. Military] of this section.*

**1926.1427(b)**—*Option (1): **Certification** by an accredited crane operator testing organization. [Reference paragraph (b) (1) for specific information.]*

**1926.1427(b)(2)**—*An operator will be deemed qualified to operate a particular piece of equipment if the operator is **certified** under paragraph (b) [Option (1): **Certification** by an Accredited Crane Operator Testing Organization] of this section for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers **certification examinations** for a particular type and/or capacity of equipment, an operator will be deemed qualified to operate that equipment if the operator has been **certified** for the type/capacity that is most similar to that equipment and for which a **certification examination** is available. The operator's **certificate** must state the type/capacity of equipment for which the operator is **certified**.*

**1926.1427(b)(4)**—A **certification** issued under this paragraph is valid for 5 years.

**1926.1427(c)**—*Option (2): Qualification by an **audited employer program**. The employer's qualification of its employee must meet specific requirements. [Reference paragraph (c)(1) for specific information.]*

**1926.1427(c)(2)(i)**—The **written** and practical **tests** must be administered under circumstances approved by the auditor as meeting **nationally recognized test administration standards**.

**1926.1427(c)(2)(ii)**—The auditor must be **certified** to evaluate the administration of the **written** and practical **tests** by an **accredited crane operator testing organization** (see paragraph (b) [Option (1): Certification by an Accredited Crane Operator Testing Organization] of this section).

**1926.1427(c)(4)**—The **employer program** must have testing procedures for re-qualification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in paragraphs (j)(1) and (2) [Certification Criteria] of this section. The re-qualification procedures must be **audited** in accordance with paragraphs (c)(1) and (2) [Option (2): Qualification by an Audited Employer Program] of this section.

**1926.1427(c)(6)(ii)**—Valid for 5 years.

**1926.1427(d)**—Option (3): *Qualification by the U.S. military. [Reference paragraph (d) for specific information.]*

**1926.1427(e)**—Option (4): **Licensing** by a government entity. *[Reference paragraph (e) for specific information.]*

**1926.1427(e)(2)(i)**—The requirements for obtaining the **license** include an assessment, by **written** and practical **tests**, of the operator applicant regarding, at a minimum, the knowledge and skills listed in paragraphs (j)(1) and (2) *[Certification Criteria]* of this section.

**1926.1427(e)(3)(ii)**—Is valid for the period of time stipulated by the **licensing department/office**, but no longer than 5 years.

**1926.1427(f)(3)**—**Trainer**. While operating the equipment, the operator-in-training must be continuously monitored by an individual (“operator’s trainer”) who meets specific requirements. *[Reference paragraph (f)(3) for specific information.]*

**1926.1427(j)**—**Certification criteria**. Qualifications and **certifications** must be based, at a minimum, on the following:

**1926.1427(j)(1)**—A determination through a **written test**. *[Reference paragraph (j)(1) for specific information.]*

## **1926.1428—SIGNAL PERSON QUALIFICATIONS**

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### **STANDARD HIGHLIGHTS**

- Inspections and Tests—oral, written, practical tests
- Recordkeeping—qualifications documented
- Training and Communications—retrain
- Qualified Person—evaluation

### **Inspections and Tests**

**1926.1428(c)(5)**—Demonstrate that he/she meets the requirements in paragraphs (c)(1) through (4)—*[Qualification Requirements]* of this section through an oral or **written test**, and through a practical test.

### **Recordkeeping**

**1926.1428(a)**—The employer of the signal person must ensure that each signal person meets the *Qualification Requirements* (paragraph (c) of this section) prior to giving any signals. This requirement must be met by using either Option (1) or Option (2) of this section.

**1926.1428(a)(1)**—Option (1)—Third party qualified evaluator. The signal person has **documentation** from a third party qualified evaluator (see *Qualified Evaluator (third party)*, Sec. 1926.1401 *[Definition]*) showing that the signal person meets the *Qualification Requirements* (paragraph (c) of this section).

**1926.1428(a)(2)**—*Option (2)—Employer’s qualified evaluator.* The employer’s qualified (see *Qualified Evaluator (not a third party)*, Sec. 1926.1401 [Definition]) evaluator assesses the individual and determines that the individual meets the *Qualification Requirements* (see paragraph (c) of this section) and provides **documentation** of that determination. An assessment by an employer’s qualified evaluator under this option is not portable—other employers are not permitted to use it to meet the requirements of this section.

**1926.1428(a)(3)**—The employer must make the **documentation** for whichever option is used available at the site while the signal person is employed by the employer. The **documentation** must specify each type of signaling (e.g. hand signals, radio signals, etc.) for which the signal person meets the requirements of paragraph (c) [*Qualification Requirements*] of this section.

**1926.1428(c)(5)**—Demonstrate that he/she meets the requirements in paragraphs (c)(1) through (4)—[*Qualification Requirements*] of this section through an oral or **written test**, and through a practical test.

## Training and Communications

**1926.1428(b)**—If subsequent actions by the signal person indicate that the individual does not meet the *Qualification Requirements* (see paragraph (c) of this section), the employer must not allow the individual to continue working as a signal person until re-training is provided and a re-assessment is made in accordance with paragraph (a) [*Qualification Requirements*] of this section that confirms that the individual meets the *Qualification Requirements*.

## Qualified Person

**1926.1428(a)(1)**—*Option (1)—Third party qualified evaluator.* The signal person has **documentation** from a third party qualified evaluator (see *Qualified Evaluator (third party)*, Sec. 1926.1401 [Definition]) showing that the signal person meets the *Qualification Requirements* (paragraph (c) of this section).

**1926.1428(a)(2)**—*Option (2)—Employer’s qualified evaluator.* The employer’s qualified (see *Qualified Evaluator (not a third party)*, Sec. 1926.1401 [Definition]) evaluator assesses the individual and determines that the individual meets the *Qualification Requirements* (see paragraph (c) of this section) and provides **documentation** of that determination. An assessment by an employer’s qualified evaluator under this option is not portable—other employers are not permitted to use it to meet the requirements of this section.

**1926.1428(c)(5)**—Demonstrate that he/she meets the requirements in paragraphs (c)(1) through (4)—[*Qualification Requirements*] of this section through an oral or **written test**, and through a practical test.

## 1926.1429—QUALIFICATIONS OF MAINTENANCE & REPAIR EMPLOYEES

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

## STANDARD HIGHLIGHTS

- Qualified Person



## Qualified Person

**1926.1429(b)**—*Maintenance and repair personnel must meet the definition of a qualified person with respect to the equipment and maintenance/repair tasks performed.*

## 1926.1430—TRAINING

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—evaluations, practices, procedures
- Recordkeeping—certification
- Certification—qualifications
- Training and Communications—initial and retraining
- Competent Person—trained
- Qualified Person—trained
- Signs, Markings and Tags—tags

### Programs, Plans and Procedures

**1926.1430(c)(4)**—The employer *must train each operator of the equipment* covered by this subpart in the *specific practices*. [Reference paragraph (c)(4) for specific information.]

**1926.1430(f)**—**Tag-out.** The employer *must train each operator and each additional employee authorized to start/energize equipment or operate equipment controls* (such as maintenance and repair employees), in the **tag-out** and *start-up procedures* in §§ 1926.1417(f) and (g) [Operation].

### Recordkeeping

**1926.1430(c)(1)**—Operators-in-Training for equipment where **certification** or *qualification* is required by this subpart. The employer *must train each operator-in-training* in the areas addressed in Sec. 1926.1427(j) [Operator *Qualification and Certification*]. The employer *must provide re-training* if the *operator-in-training* does not pass a *qualification* or **certification test**.

**1926.1430(c)(2)**—Transitional Period. During the four-year phase-in period for **operator certification** or *qualification*, as provided in Sec. 1926.1427(k) [Operator *Qualification and Certification*], employers *must train each operator who has not yet been certified* or *qualified* in the areas addressed in Sec. 1926.1427(j) [Operator *Qualification and Certification*].

### Certification

**1926.1430(c)(1)**—Operators-in-Training for equipment where **certification** or *qualification* is required by this subpart. The employer *must train each operator-in-training* in the areas addressed in Sec. 1926.1427(j) [Operator *Qualification and Certification*]. The employer *must provide re-training* if the *operator-in-training* does not pass a *qualification* or **certification test**.



**1926.1430(c)(2)**—Transitional Period. During the four-year phase-in period for **operator certification** or qualification, as provided in *Sec. 1926.1427(k) [Operator Qualification and Certification]*, employers must train each operator who has not yet been **certified** or qualified in the areas addressed in *Sec. 1926.1427(j) [Operator Qualification and Certification]*.

## Training and Communications

**1926.1430(a)**—Overhead powerlines. The employer must train each employee specified in *Sec. 1926.1408(g) [Power Line Safety (Up to 350 kV)—Equipment Operations]* and *Sec. 1926.1410(m) [Power Line Safety (All Voltages)—Equipment Operations Closer Than the Table A Zone]* in the topics listed in *Sec. 1926.1408(g) [Training]*.

**1926.1430(b)**—Signal persons. The employer must train each employee who will be assigned to work as a signal persons who does not meet the requirements of *Sec. 1926.1428(c) [Signal Person Qualifications]* in the areas addressed in that paragraph.

**1926.1430(c)(1)**—Operators-in-Training for equipment where **certification** or qualification is required by this subpart. The employer must train each operator-in-training in the areas addressed in *Sec. 1926.1427(j) [Operator Qualification and Certification]*. The employer must provide re-training if the operator-in-training does not pass a qualification or **certification test**.

**1926.1430(c)(2)**—Transitional Period. During the four-year phase-in period for **operator certification** or qualification, as provided in *Sec. 1926.1427(k) [Operator Qualification and Certification]*, employers must train each operator who has not yet been **certified** or qualified in the areas addressed in *Sec. 1926.1427(j) [Operator Qualification and Certification]*.

**1926.1430(c)(4)**—The employer must train each operator of the equipment covered by this subpart in the specific practices. *[Reference paragraph (c)(4) for specific information.]*

**1926.1430(d)**—Competent persons and qualified persons. The employer must train each competent person and each qualified person regarding the requirements of this subpart applicable to their respective roles.

**1926.1430(e)**—Crush/pinch points. The employer must train each employee who works with the equipment to keep clear of holes, and crush/pinch points and the hazards addressed in *Sec. 1926.1424 (Work area control)*.

**1926.1430(f)**—Tag-out. The employer must train each operator and each additional employee authorized to start/energize equipment or operate equipment controls (such as maintenance and repair employees), in the **tag-out** and start-up procedures in §§ 1926.1417(f) and (g) *[Operation]*.

**1926.1430(g)(1)**—The employer must evaluate each employee required to be trained under this subpart to confirm that the employee understands the information provided in the training.

**1926.1430(g)(2)**—The employer must provide refresher training in relevant topics for each employee when, based on the conduct of the employee or an evaluation of the employee's knowledge, there is an indication that retraining is necessary.

## Competent Person

**1926.1430(d)**—Competent persons and qualified persons. The employer must train each competent person and each qualified person regarding the requirements of this subpart applicable to their respective roles.

## Qualified Person

**1926.1430(c)(1)**—Operators-in-Training for equipment where **certification** or qualification is required by this subpart. The employer must train each operator-in-training in the areas addressed in *Sec. 1926.1427(j) [Operator Qualification and Certification]*. The employer must provide re-training if the operator-in-training does not pass a qualification or **certification test**.

**1926.1430(c)(2)**—Transitional Period. During the four-year phase-in period for operator **certification** or qualification, as provided in *Sec. 1926.1427(k) Operator Qualification and Certification]*, employers must train each operator who has not yet been **certified** or qualified in the areas addressed in *Sec. 1926.1427(j) [Operator Qualification and Certification]*.

**1926.1430(d)**—*Competent persons and qualified persons.* The employer must train each competent person and each qualified person regarding the requirements of this subpart applicable to their respective roles.

**1926.1430(f)**—*Tag-out.* The employer must train each operator and each additional employee authorized to start/energize equipment or operate equipment controls (such as maintenance and repair employees), in the **tag-out** and start-up procedures in §§ 1926.1417(f) and (g) [Operation].

### Signs, Markings and Tags

**1926.1430(f)**—*Tag-out.* The employer must train each operator and each additional employee authorized to start/energize equipment or operate equipment controls (such as maintenance and repair employees), in the **tag-out** and start-up procedures in §§ 1926.1417(f) and (g) [Operation].

## 1926.1431—HOISTING PERSONNEL

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

### STANDARD HIGHLIGHTS

- Inspections and Tests—competent person, visual inspections, proof tests, trial lifts
- Training and Communications—pre-lift meetings, communications
- Competent Person—inspections, determinations
- Qualified Person—determinations, designing
- Signs, Markings and Tags—posting, markings

### Inspections and Tests

**1926.1431(h)(1)**—*A trial lift with the unoccupied personnel platform loaded at least to the anticipated liftweight must be made from ground level, or any other location where employees will enter the platform, to each location at which the platform is to be hoisted and positioned. Where there is more than one location to be reached from a single set-up position, either individual trial lifts for each location, or a single trial lift, in which the platform is moved sequentially to each location, must be performed; the method selected must be the same as the method that will be used to hoist the personnel.*

**1926.1431(h)(2)**—*The trial lift must be performed immediately prior to each shift in which personnel will be hoisted. In addition, the trial lift must be repeated prior to hoisting employees in certain circumstances. [Reference paragraph (h)(2) for specific information.]*

**1926.1431(h)(3)**—*The competent person must determine specific issues relating to trial lift and inspection. [Reference paragraph (h)(3) for specific information.]*

**1926.1431(h)(4)(i)**—*Conduct a visual inspection of the equipment, base support or ground, and personnel platform, to determine whether the trial lift has exposed any defect or problem or produced any adverse effect.*

**1926.1431(h)(5)(i)**—*The platform must be hoisted a few inches with the personnel and materials/tools on board and inspected by a competent person to ensure that it is secure and properly balanced.*

**1926.1431(h)(5)(ii)(D)**—If the load rope is slack, the hoisting system *must be inspected* to ensure that all ropes are properly seated on drums and in sheaves.

**1926.1431(j)(1)**—*At each jobsite, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging must be proof tested to 125 percent of the platform’s **rated capacity**. The proof test may be done concurrently with the trial lift.*

**1926.1431(j)(3)**—*After proof testing, a competent person must inspect the platform and rigging to determine if the test has been passed. If any deficiencies are found that pose a safety hazard, the platform and rigging must not be used to hoist personnel unless the deficiencies are corrected, the test is repeated, and a competent person determines that the test has been passed. (See Sec. 1926.1417 for tag-out and related requirements.)*

**1926.1431(j)(4)**—Personnel hoisting must not be conducted until the *competent person* determines that the platform and rigging have successfully passed the *proof test*.

**1926.1431(k)(12)(ii)(E)**—*A complete trial run must be performed to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift required by paragraph (h) [Trial Lift and Inspection] of this section which tests the lift route.*

## **Training and Communications**

**1926.1431(m)**—*Pre-lift meeting. A pre-lift meeting must be: [Reference paragraph (m) for more information.]*

**1926.1431(m)(3)**—*Held prior to the trial lift at each new work location, and must be repeated for any employees newly assigned to the operation.*

**1926.1431(p)(2)**—For lattice boom cranes: *Clearly **mark** the cable* (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter *who is in direct communication* with the operator to inform the operator when this point is reached. For telescopic boom cranes: *Clearly **mark** the cable* (so that it can be easily seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter *who is in direct communication* with the operator to *inform the operator* when this point is reached.

## **Competent Person**

**1926.1431(h)(2)(ii)**—The lift route is changed, unless the *competent person determines* that the new route presents no new factors affecting safety.

**1926.1431(h)(3)**—The *competent person must determine* specific issues relating to trial lift and *inspection*. [Reference paragraph (h)(3) for specific information.]

**1926.1431(h)(4)**—Immediately after the trial lift, the *competent person must determine* specific issues relating to trial lift and *inspection*. [Reference paragraph (h)(4) for specific information.]

**1926.1431(h)(5)(i)**—The platform must be hoisted a few inches with the personnel and materials/tools on board *and inspected by a competent person* to ensure that it is secure and properly balanced.

**1926.1431(h)(5)(ii)**—Conditions *must be determined by a competent person* to exist before the lift of personnel proceeds. [Reference paragraph (h)(5)(ii) for specific information.]

**1926.1431(j)(3)**—*After proof testing, a competent person must inspect the platform and rigging to determine if the test has been passed. If any deficiencies are found that pose a safety hazard, the platform and rigging must not be used to hoist personnel unless the deficiencies are corrected, the test is repeated, and a competent person determines that the test has been passed. (See Sec. 1926.1417 for tag-out and related requirements.)*

**1926.1431(j)(4)**—Personnel hoisting must not be conducted until the *competent person* determines that the platform and rigging have successfully passed the *proof test*.

### **Qualified Person**

**1926.1431(c)(1)**—The equipment must be uniformly level, within one percent of level grade, and located on footing *that a qualified person has determined* to be sufficiently firm and stable.

**1926.1431(e)(1)**—A *qualified person familiar with structural **design** must design* the personnel platform and attachment/suspension system used for hoisting personnel.

**1926.1431(k)(7)(i)**—The occupant using the controls in the platform *must be a qualified person* with respect to their use, including the safe limitations of the equipment and hazards associated with its operation.

**1926.1431(k)(8)(i)**—*Wind.* When wind speed (sustained or gusts) exceeds 20 mph at the personnel platform, a *qualified person must determine* if, in light of the wind conditions, it is not safe to lift personnel. If it is not, the lifting operation must not begin (or, if already in progress, must be terminated).

**1926.1431(k)(8)(ii)**—*Other weather and environmental conditions.* A *qualified person must determine* if, in light of indications of dangerous weather conditions, or other impending or existing danger, it is not safe to lift personnel. If it is not, the lifting operation must not begin (or, if already in progress, must be terminated).

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

**1926.1431(d)(5)(iv)**—Equipment with telescoping booms must be equipped with a device to indicate the boom's extended length clearly to the operator, or must have *measuring **marks*** on the boom.

**1926.1431(e)(12)**—The weight of the platform and its rated capacity *must be conspicuously **posted** on the platform with a **plate** or other permanent **marking***.

**1926.1431(p)(2)**—For lattice boom cranes: *Clearly **mark** the cable* (so that it can easily be seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter *who is in direct communication* with the operator to inform the operator when this point is reached. For telescopic boom cranes: *Clearly **mark** the cable* (so that it can be easily seen by the operator) at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter *who is in direct communication* with the operator to inform the operator when this point is reached.

## 1926.1432—MULTIPLE-CRANE/DERRICK LIFTS— SUPPLEMENTAL REQUIREMENTS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—qualified person, development of plan
- Training and Communications—meeting to review plan
- Competent Person—determination
- Qualified Person—plan development, determinations

### Programs, Plans and Procedures

**1926.1432(a)—Plan development.** Before beginning a crane/derrick operation in which more than one crane/derrick will be supporting the load, the operation must be planned. The planning must meet the specific requirements. [Reference paragraph (a) for more information.]

**1926.1432(a)(1)**—The *plan* must be developed by a qualified person.

**1926.1432(a)(2)**—The *plan* must be *designed* to ensure that the requirements of this subpart are met.

**1926.1432(b)(2)**—The lift director must review the *plan* in a meeting with all workers who will be involved with the operation

### Training and Communications

**1926.1432(b)(2)**—The lift director must review the *plan* in a meeting with all workers who will be involved with the operation.

### Competent Person

**1926.1432(b)(1)**—The multiple-crane/derrick lift must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (lift director).

### Qualified Person

**1926.1432(a)(1)**—The *plan* must be developed by a qualified person.

**1926.1432(a)(3)**—Where the *qualified person* determines that engineering expertise is needed for the planning, the employer must ensure that it is provided.

**1926.1432(b)(1)**—The multiple-crane/derrick lift must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons (lift director).



## 1926.1433—DESIGN, CONSTRUCTION AND TESTING

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Inspections and Tests—prototype testing, physical testing
- Recordkeeping—documentation
- Qualified Person—determinations
- Signs, Markings and Tags—markings

### Inspections and Tests

**1926.1433(c)**—*Prototype testing: mobile (including crawler and truck) and locomotive cranes manufactured on or after November 8, 2010 must meet the prototype testing requirements in Test Option A or Test Option B of this section. Tower cranes manufactured on or after November 8, 2010 must meet the prototype testing requirements in BS EN 14439:2006 (incorporated by reference, see Sec. 1926.6).*

**Note:** *Prototype testing of crawler, locomotive and truck cranes manufactured prior to November 8, 2010 must conform to paragraph (a) of this section.*

**1926.1433(c)(2)**—*Test Option B. The testing and verification requirements of BS EN 13000:2004 (incorporated by reference, see 1926.6) must be met. In applying BS EN 13000:2004, additional requirements must be met. [Reference paragraph (c)(2) for more information.]*

**1926.1433(c)(2)(iii)**—*Analysis verification. The physical testing requirements under SAE J1063 (Nov. 1993) (incorporated by reference, see 1926.6) and SAE J987 (Jun. 2003) (incorporated by reference, see 1926.6) must be met unless the reliability of the analysis methodology (computer modeling) has been demonstrated by a **documented history of verification** through strain gauge measuring or strain gauge measuring in combination with other physical testing.*

### Recordkeeping

**1926.1433(c)(2)(iii)**—*Analysis verification. The physical testing requirements under SAE J1063 (Nov. 1993) (incorporated by reference, see 1926.6) and SAE J987 (Jun. 2003) (incorporated by reference, see 1926.6) must be met unless the reliability of the analysis methodology (computer modeling) has been demonstrated by a **documented history of verification** through strain gauge measuring or strain gauge measuring in combination with other physical testing.*

**1926.1433(e)**—*The employer’s obligations under paragraphs (a) through (c) and (d)(7) through (13) [Design, Construction and Testing] of this section are met where the equipment has not changed (except in accordance with Sec. 1926.1434 [Equipment Modifications]) and it can refer to **documentation from the manufacturer** showing that the equipment has been **designed, constructed and tested** in accordance with those paragraphs.*

### Qualified Person

**1926.1433(d)(4)(ii)(A)**—*A qualified person has determined that it is safer to hoist and place the load without latches (or with the latches removed/tied-back).*

## Signs, Markings and Tags

**1926.1433(d)(3)**—Hook and ball assemblies and load blocks *must be **marked*** with their *rated capacity* and weight.

## 1926.1434—EQUIPMENT MODIFICATIONS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

### STANDARD HIGHLIGHTS

- Recordkeeping—written manufacturer approval, modification records
- Qualified Person—registered professional engineer
- Signs, Markings and Tags—tags

### Recordkeeping

**1926.1434(a)(1)(i)**—The manufacturer *approves the **modifications/additions** in writing.*

**1926.1434(a)(1)(ii)**—The ***load charts, procedures, instruction manuals and instruction plates/tags/decals** are modified as necessary* to accord with the ***modification/addition.***

**1926.1434(a)(2)**—*Manufacturer refusal to review request.* The manufacturer is provided a detailed **description** of the proposed **modification/addition** is asked to approve the **modification/addition**, but it declines to review the **technical merits** of the **proposal** or fails, *within 30 days, to acknowledge* the request or initiate the review, plus specific items are met. *[Reference paragraph (a)(2) for more information.]*

**1926.1434(a)(2)(i)**—A ***registered professional engineer** who is a qualified person* with respect to the equipment involved:

**1926.1434(a)(2)(i)(A)**—***Approves the modification/addition** and **specifies the equipment configurations** to which that approval applies, and*

**1926.1434(a)(2)(i)(B)**—***Modifies load charts, procedures, instruction manuals and instruction plates/tags/decals** as necessary* to accord with the ***modification/addition.***

**1926.1434(b)**—***Modifications or additions** which affect the capacity or safe operation of the equipment are prohibited where the manufacturer, after a review of the **technical safety merits** of the proposed **modification/addition**, **rejects the proposal** and **explains the reasons for the rejection in a written response.** If the manufacturer rejects the **proposal** but does not explain the reasons for the rejection in **writing**, the employer may treat this as a manufacturer refusal to review the request under paragraph (a)(2) [Manufacturer Refusal to Review Request] of this section.*

### Qualified Person

**1926.1434(a)(2)(i)**—A ***registered professional engineer** who is a qualified person* with respect to the equipment involved:

**1926.1434(a)(2)(i)(A)**—*Approves the **modification/addition** and specifies the equipment configurations to which that approval applies, and*

**1926.1434(a)(2)(i)(B)**—*Modifies **load charts, procedures, instruction manuals and instruction plates/tags/decals** as necessary to accord with the **modification/addition**.*

**1926.1434(b)**—***Modifications or additions** which affect the capacity or safe operation of the equipment are prohibited where the manufacturer, after a review of the **technical safety merits** of the proposed **modification/addition**, **rejects the proposal** and explains the reasons for the **rejection** in a **written response**. If the manufacturer rejects the **proposal** but does not explain the reasons for the rejection in **writing**, the employer may treat this as a manufacturer refusal to review the request under paragraph (a)(2) [Manufacturer Refusal to Review Request] of this section.*

## Signs, Markings and Tags

**1926.1434(a)(1)(ii)**—The **load charts, procedures, instruction manuals and instruction plates/tags/decals** are modified as necessary to accord with the **modification/addition**.

**1926.1434(a)(2)(i)(B)**—*Modifies **load charts, procedures, instruction manuals and instruction plates/tags/decals** as necessary to accord with the **modification/addition**.*

## 1926.1435—TOWER CRANES

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

**Additional Note:** *This section contains supplemental requirements for tower cranes; all sections of this subpart apply to tower cranes unless specified otherwise.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—manufacturer procedures and instructions, procedures
- Inspections and Tests—qualified person, annual, post erection, and pre-erection inspections
- Recordkeeping—documentation, inspections, load tester
- Certification—certified weights
- Competent Person—manufacturer’s instructions
- Qualified Person—inspections, registered professional engineer

### Programs, Plans and Procedures

**1926.1435(b)(2)**—Dangerous areas (self-erecting tower cranes). In addition to the requirements in *Sec. 1926.1404(E) [Protecting Assembly/Disassembly Crew Members Out of Operator View]*, for self-erecting tower cranes, the following applies: Employees must not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing and dismantling operations until the crane is secured in a locked position and the *competent person* in charge indicates it is safe to enter this area, *unless the **manufacturer’s instructions** direct otherwise and only the necessary personnel are permitted in this area.*

**1926.1435(b)(7)**—*Climbing procedures. Prior to, and during, all climbing procedures (including inside climbing and top climbing), the employer must do specific items. [Reference paragraph (b)(7) for more information.]*

**1926.1435(f)(3)(ii)**—The load test must be conducted in accordance with the **manufacturer’s instructions** when **available**. Where these instructions are unavailable, the test must be conducted in accordance with **written load test procedures** developed by a **registered professional engineer** familiar with the type of equipment involved.

## Inspections and Tests

**1926.1435(f)(2)**—*Pre-erection inspection.* Before each crane component is erected, it must be inspected by a qualified person for damage or excessive wear.

**1926.1435(f)(2)(i)**—The qualified person must pay particular attention to components that will be difficult to inspect thoroughly during shift inspections.

**1926.1435(f)(2)(ii)**—If the qualified person determines that a component is damaged or worn to the extent that it would create a safety hazard if used on the crane, that component must not be erected on the crane unless it is repaired and, upon reinspection by the qualified person, found to no longer create a safety hazard.

**1926.1435(f)(2)(iii)**—If the qualified person determines that, though not presently a safety hazard, the component needs to be monitored, the employer must ensure that the component is checked in the monthly inspections. Any such determination must be **documented**, and the **documentation** must be available to any individual who conducts a monthly inspection.

**1926.1435(f)(3)**—*Post-erection inspection.* In addition to the requirements in Sec. 1926.1412(c) [Inspections], specific requirements must be met. [Reference paragraph (f)(3) for more information.]

**1926.1435(f)(3)(i)**—A load test using **certified** weights, or scaled weights using a **certified** scale with a current **certificate of calibration**, must be conducted after each erection.

**1926.1435(f)(3)(ii)**—The load test must be conducted in accordance with the **manufacturer’s instructions** when **available**. Where these **instructions** are unavailable, the test must be conducted in accordance with **written load test procedures** developed by a **registered professional engineer** familiar with the type of equipment involved.

**1926.1435(f)(5)**—*Annual.* In addition to the items that must be inspected under Sec. 1926.1412(f) [Inspections], all turntable and tower bolts must be inspected for proper condition and torque.

## Recordkeeping

**1926.1435(b)(2)**—Dangerous areas (self-erecting tower cranes). In addition to the requirements in Sec. 1926.1404(E) [Protecting Assembly/Disassembly Crew Members Out of Operator View], for self-erecting tower cranes, the following applies: Employees must not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing and dismantling operations until the crane is secured in a locked position and the **competent person** in charge indicates it is safe to enter this area, *unless the manufacturer’s instructions* direct otherwise and only the necessary personnel are permitted in this area.

**1926.1435(b)(5)**—*Plumb tolerance.* Towers must be erected plumb to the **manufacturer’s tolerance** and verified by a qualified person. Where the manufacturer does not specify plumb tolerance, the crane tower must be plumb to a tolerance of at least 1:500 (approximately 1 inch in 40 feet).

**1926.1435(e)(5)**—Category I operational aids and alternative measures. Operational aids listed in this paragraph that are not working properly must be repaired no later than 7 calendar days after the deficiency occurs. **Exception:** *If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, the repair must be completed within 7 calendar days of receipt of the parts.*



**1926.1435(e)(6)**—Category II operational aids and alternative measures. Operational aids listed in this paragraph that are not working properly must be repaired no later than 30 calendar days after the deficiency occurs. **Exception:** If the employer **documents** that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, and the part is not received in time to complete the repair in 30 calendar days, the repair must be completed within 7 calendar days of **receipt** of the parts.

**1926.1435(f)(2)(iii)**—If the *qualified person determines* that, though not presently a safety hazard, the component needs to be monitored, the employer *must ensure that the component is checked in the monthly inspections. Any such determination must be documented, and the documentation must be available to any individual who conducts a monthly inspection.*

**1926.1435(f)(3)(i)**—A load test using **certified weights, or scaled weights** using a **certified scale** with a current **certificate of calibration**, must be conducted after each erection.

**1926.1435(f)(3)(ii)**—The load test must be conducted in accordance with the **manufacturer's instructions** when available. Where these instructions are unavailable, the test must be conducted in accordance with **written load test procedures** developed by a **registered professional engineer** familiar with the type of equipment involved.

### Certification

**1926.1435(f)(3)(i)**—A load test using **certified weights, or scaled weights** using a **certified scale** with a current **certificate of calibration**, must be conducted after each erection.

### Competent Person

**1926.1435(b)(2)**—Dangerous areas (self-erecting tower cranes). In addition to the requirements in *Sec. 1926.1404(E) [Protecting Assembly/Disassembly Crew Members Out of Operator View]*, for self-erecting tower cranes, the following applies: Employees must not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing and dismantling operations until the crane is secured in a locked position and the *competent person* in charge indicates it is safe to enter this area, *unless the manufacturer's instructions direct otherwise* and only the necessary personnel are permitted in this area.

### Qualified Person

**1926.1435(b)(4)(iii)**—*Wind speed.* Wind must not exceed the speed recommended by the manufacturer or, where manufacturer does not specify this information, the speed *determined by a qualified person.*

**1926.1435(b)(5)**—Plumb tolerance. Towers must be erected plumb to the **manufacturer's tolerance** and *verified by a qualified person.* Where the manufacturer does not specify plumb tolerance, the crane tower must be plumb to a tolerance of at least 1:500 (approximately 1 inch in 40 feet).

**1926.1435(e)(6)(v)**—Wind speed indicator. A device must be provided to display the wind speed and must be mounted above the upper rotating structure on tower cranes. On self erecting cranes, it must be mounted at or above the jib level. *Temporary alternative measures:* Use of wind speed information from a properly functioning indicating device on another tower crane on the same site, *or a qualified person estimates the wind speed.*

**1926.1435(f)(2)**—*Pre-erection inspection.* Before each crane component is erected, *it must be inspected by a qualified person for damage or excessive wear.*

**1926.1435(f)(2)(i)**—The *qualified person must pay particular attention to components that will be difficult to inspect thoroughly during shift inspections.*

**1926.1435(f)(2)(ii)**—If the *qualified person determines* that a component is damaged or worn to the extent that it would create a safety hazard if used on the crane, that component must not be erected on the crane unless it is repaired and, upon *reinspection by the qualified person*, found to no longer create a safety hazard.



**1926.1435(f)(2)(iii)**—If the *qualified person determines* that, though not presently a safety hazard, the component needs to be monitored, the *employer must ensure that the component is checked in the monthly inspections. Any such determination must be documented, and the documentation must be available to any individual who conducts a monthly inspection.*

**1926.1435(f)(3)(ii)**—The load test must be conducted in accordance with the **manufacturer’s instructions** when available. Where these instructions are unavailable, the test must be conducted in accordance with **written load test procedures** developed by a **registered professional engineer** familiar with the type of equipment involved.

## 1926.1436—DERRICKS

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and self-erecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

**Additional Note:** This section contains supplemental requirements for derricks, whether temporarily or permanently mounted; all sections of this subpart apply to derricks unless specified otherwise. A derrick is powered equipment consisting of a mast or equivalent member that is held at or near the end by guys or braces, with or without a boom, and its hoisting mechanism. The mast/equivalent member and/or the load is moved by the hoisting mechanism (typically base-mounted) and operating ropes. Derricks include: A-frame, basket, breast, Chicago boom, gin pole (except gin poles used for erection of communication towers), guy, shearleg, stiffleg, and variations of such equipment.

### STANDARD HIGHLIGHTS

- Inspections and Tests—load testing prior to use, daily and annual inspections
- Recordkeeping—documentation, manufacturer information
- Training and Communications—qualifications, operator training
- Competent Person—load testing
- Qualified Person—inspections
- Signs, Markings and Tags—load chart posted

### Inspections and Tests

**1926.1436(e)(2)(iii)**—Repaired or modified hoists. Hoists that have had repairs, modifications or additions affecting their capacity or safe operation *must be evaluated by a qualified person* to determine if a load test is necessary. If it is, *load testing must be conducted* in accordance with paragraphs (e)(2)(ii) and (iv) [Hoists] of this section.

**1926.1436(e)(2)(iv)(C)**—The hoist *must not be used unless a competent person determines that the test* has been passed.

**1926.1436(g)(1)(ii)**—If using a rock or hairpin anchorage, the *qualified person must determine if any special testing of the anchorage is needed. If so, it must be tested accordingly.*

**1926.1436(g)(2)**—*Functional test. Prior to initial use, new or reinstalled derricks must be tested by a competent person with no hook load to verify proper operation. [Reference paragraph (g)(2) for more information.]*

**1926.1436(g)(3)**—*Load test. Prior to initial use, new or reinstalled derricks must be load tested by a competent person. [Reference paragraph (g)(3) for more information.]*

**1926.1436(g)(3)(i)**—Test loads must be at least 100% and no more than 110% of the rated capacity, unless otherwise *recommended by the manufacturer or qualified person*, but in no event must the test load be less than the maximum anticipated load.

**1926.1436(g)(3)(iii)**—The derrick must not be used unless the competent person determines that the test has been passed.

**1926.1436(h)**—*Load testing repaired or modified derricks.* Derricks that have had repairs, modifications or additions affecting the derrick's capacity or safe operation *must be evaluated by a qualified person to determine if a load test is necessary. If it is, load testing must be conducted and documented* in accordance with paragraph (g) [Post-Assembly Approval and Testing—New or Reinstalled Derricks] of this section.

**1926.1436(p)**—*Inspections.* In addition to the requirements in Sec. 1926.1412, additional items must be included in the inspections.

**1926.1436(p)(1)**—*Daily:* Guys for proper tension.

**1926.1436(p)(2)**—*Annual.* [Reference paragraph (p)(2) for more information.]

## Recordkeeping

**1926.1436(b)(3)(ii)**—*Non-permanent installations.* For derricks that are not permanently installed, the **load chart** must be readily **available** at the job site to personnel responsible for the operation of the equipment.

**1926.1436(c)(2)(ii)**—Guy derricks must not be used unless the employer has the **guy information** from the **manufacturer or a qualified person**, when not available from the manufacturer. [Reference paragraph (c)(2)(ii) for more information.]

**1926.1436(c)(2)(iii)**—For guy derricks manufactured after December 18, 1970, in addition to the information required in paragraph (c)(2)(ii) [Guy Derricks] of this section, the employer *must have* **guy information** from the **manufacturer or a qualified person**, when not available **from the manufacturer**. [Reference paragraph (c)(2)(iii) for more information.]

**1926.1436(d)(1)**—**Load anchoring data** developed by the manufacturer or a qualified person must be used.

**1926.1436(f)(3)(ii)**—A load weight/capacity device that is not working properly must be repaired no later than 30 days after the deficiency occurs. **Exception:** If the employer **documents** that it has ordered the necessary parts within 7 days of the occurrence of the deficiency, and the part is not received in time to complete the repair in 30 days, the repair must be completed within 7 days of **receipt** of the parts.

**1926.1436(g)(4)**—**Documentation.** Tests conducted under this paragraph must be **documented**. The **document** must contain the date, test results and the name of the tester. The **document** must be **retained** until the derrick is re-tested or dismantled, whichever occurs first. All such **documents** must be **available**, during the applicable **document** retention period, to all persons who conduct inspections in accordance with Sec. 1926.1412 [Inspections].

**1926.1436(h)**—*Load testing repaired or modified derricks.* Derricks that have had repairs, modifications or additions affecting the derrick's capacity or safe operation *must be evaluated by a qualified person to determine if a load test is necessary. If it is, load testing must be conducted and documented* in accordance with paragraph (g) [Post-Assembly Approval and Testing—New or Reinstalled Derricks] of this section.

## Training and Communications

**1926.1436(q)**—*Qualification and Training.* The employer *must train each operator of a derrick* on the safe operation of equipment the individual will operate. Section 1926.1427 (Operator qualification and certification) of this subpart does not apply.

## Competent Person

**1926.1436(e)(2)(iv)(C)**—The hoist *must not be used unless a competent person determines that the test* has been passed.

**1926.1436(g)(2)**—*Functional test. Prior to initial use, new or reinstalled derricks must be tested by a competent person with no hook load to verify proper operation. [Reference paragraph (g)(2) for more information.]*

**1926.1436(g)(3)**—*Load test. Prior to initial use, new or reinstalled derricks must be load tested by a competent person. [Reference paragraph (g)(3) for more information.]*

**1926.1436(g)(3)(i)**—Test loads must be at least 100% and no more than 110% of the rated capacity, unless otherwise **recommended by the manufacturer or qualified person**, but in no event must the test load be less than the maximum anticipated load.

**1926.1436(g)(3)(iii)**—The derrick *must not be used unless the competent person determines that the test* has been passed.

**1926.1436(o)**—Derrick operations *must be supervised by a competent person.*

## Qualified Person

**1926.1436(c)(2)(i)**—The minimum number of guys must be 6, with equal spacing, except where a *qualified person or derrick manufacturer approves* variations from these requirements and revises the rated capacity to compensate for such variations.

**1926.1436(c)(2)(ii)**—Guy derricks must not be used unless the employer has the guy **information from the manufacturer or a qualified person**, when not available from the manufacturer. *[Reference paragraph (c)(2)(ii) for more information.]*

**1926.1436(c)(2)(iii)**—For guy derricks manufactured after December 18, 1970, in addition to the information required in paragraph (c)(2)(ii) *[Guy Derricks]* of this section, the employer *must have* guy **information from the manufacturer or a qualified person**, when not available from the manufacturer. *[Reference paragraph (c)(2)(iii) for more information.]*

**1926.1436(d)(1)**—**Load anchoring data** developed by the manufacturer or a qualified person must be used.

**1926.1436(e)(2)(iii)**—Repaired or modified hoists. Hoists that have had repairs, modifications or additions affecting their capacity or safe operation *must be evaluated by a qualified person* to determine if a load test is necessary. If it is, *load testing must be conducted* in accordance with paragraphs (e)(2)(ii) and (iv) *[Hoists]* of this section.

**1926.1436(g)(1)(i)**—Anchorages, including the structure to which the derrick is attached (if applicable), *must be approved by a qualified person.*

**1926.1436(g)(1)(ii)**—If using a rock or hairpin anchorage, *the qualified person must determine if any special testing of the anchorage is needed. If so, it must be tested accordingly.*

**1926.1436(g)(3)(i)**—Test loads must be at least 100% and no more than 110% of the rated capacity, unless otherwise **recommended by the manufacturer or qualified person**, but in no event must the test load be less than the maximum anticipated load.

**1926.1436(h)**—**Load testing** repaired or modified derricks. Derricks that have had repairs, modifications or additions affecting the derrick's capacity or safe operation *must be evaluated by a qualified person to determine if a load test is necessary. If it is, load testing must be conducted and documented* in accordance with paragraph (g) *[Post-Assembly Approval and Testing—New or Reinstalled Derricks]* of this section.

**1926.1436(q)—Qualification and Training.** The employer must train each operator of a derrick on the safe operation of equipment the individual will operate. Section 1926.1427 (*Operator qualification and certification*) of this subpart does not apply.

## Signs, Markings and Tags

**1926.1436(b)(3)(i)—Permanent installations.** For permanently installed derricks with fixed lengths of boom, guy, and mast, a **load chart** must be **posted** where it is visible to personnel responsible for the operation of the equipment.

## 1926.1437—FLOATING CRANES/DERRICKS AND LAND CRANES/DERRICKS ON BARGES

**Scope/Application:** This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.

**Additional Note:** This section contains supplemental requirements for floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation (i.e., vessel/flotation device). The sections of this subpart apply to floating cranes/derricks and land cranes/derricks on barges, pontoons, vessels or other means of flotation, unless specified otherwise. The requirements of this section do not apply when using jacked barges when the jacks are deployed to the river, lake, or sea bed and the barge is fully supported by the jacks.

## STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—procedures, written design plan
- Inspections and Tests—shifts, monthly, annual inspections, documented inspections, qualified person
- Recordkeeping—retention requirements
- Training and Communications—on markings
- Competent Person—inspections
- Qualified Person—inspections
- Signs, Markings and Tags—load charts posted, markings

## Programs, Plans and Procedures

**1926.1437(n)(6)(i)—A marine engineer or **registered professional engineer** familiar with **floating crane/derrick design** develops and **signs a written plan** for the use of the mobile auxiliary crane.**

## Inspections and Tests

**1926.1437(h)—Inspections.** In addition to meeting the requirements of § 1926.1412 [*Inspections*] for inspecting the crane/derrick, the employer must inspect the barge, pontoons, vessel or other means of flotation used to support a floating crane/derrick or land crane/derrick. [*Reference paragraph (h) for more information.*]

**1926.1437(h)(1)—Shift.** For each shift inspection, the means used to secure/attach the equipment to the vessel/flotation device is in proper condition, including wear, corrosion, loose or missing fasteners, defective welds, and (when applicable) insufficient tension.

**1926.1437(h)(2)—Monthly.** [*Reference paragraph (h)(2) for more information.*]

**1926.1437(h)(4)—Annual:** external vessel/flotation device inspection. For each annual inspection:



**1926.1437(h)(4)(i)**—The external portion of the barge, pontoons, vessel or other means of flotation used *is inspected annually by a qualified person* who has expertise with respect to vessels/flotation devices and that the inspection includes specific items. *[Reference paragraph (h)(4)(i) for more specific information.]*

**1926.1437(h)(4)(ii)**—Rescue skiffs, lifelines, work vests, life preservers and ring buoys *are inspected* for proper condition.

**1926.1437(h)(4)(iii)**—If any deficiency is identified, *an immediate determination is made by the qualified person whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly inspections.*

**1926.1437(h)(4)(iii)(B)**—If the *qualified person* determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency *is checked in the monthly inspections.*

**1926.1437(h)(5)**—*Four-year: internal vessel/flotation device inspection. For each four-year inspection:*

**1926.1437(h)(5)(i)**—*A marine engineer, marine architect, **licensed** surveyor, or other qualified person who has expertise* with respect to vessels/flotation devices surveys the internal portion of the barge, pontoons, vessel, or other means of flotation.

**1926.1437(h)(5)(ii)**—*If the surveyor identifies a deficiency, an immediate determination is made by the surveyor as to whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly or annual inspections, as appropriate.*

**1926.1437(h)(5)(ii)(B)**—*If the surveyor determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly or annual inspections, as appropriate.*

**1926.1437(h)(6)**—**Documentation.** The **monthly and annual inspections** required in paragraphs (h)(2)—*Monthly* and (h)(4)—*Annual* of this section are **documented** in accordance with 1926.1412 (e)(3)—*Documentation* and 1926.1412(f)(7)—*Annual/Comprehensive*, respectively, and that the *four-year inspection* required in paragraph (h)(5) of this section is **documented** in accordance with 1926.1412(f)(7)—*Annual/Comprehensive*, except that the **documentation** for that inspection must be **retained** for a minimum of 4 years. All such **documents** must be made **available**, during the applicable **document** retention period, to all persons who conduct inspections in accordance with 1926.1412—*Inspections*.

## Recordkeeping

**1926.1437(h)(6)**—**Documentation.** The **monthly and annual inspections** required in paragraphs (h)(2)—*Monthly* and (h)(4)—*Annual* of this section are **documented** in accordance with 1926.1412 (e)(3)—*Documentation* and 1926.1412(f)(7)—*Annual/Comprehensive*, respectively, and that the *four-year inspection* required in paragraph (h)(5) of this section is **documented** in accordance with 1926.1412(f)(7)—*Annual/Comprehensive*, except that the **documentation** for that inspection must be **retained** for a minimum of 4 years. All such **documents** must be made **available**, during the applicable **document** retention period, to all persons who conduct inspections in accordance with 1926.1412—*Inspections*.

**1926.1437(k)(3)**—When the **manufacturer's specifications and limitations** are unavailable, the employer *must ensure that the specifications and limitations* established by a qualified person with respect to environmental, operational and in-transit loads for the barge, pontoons, vessel, or other means of flotation are not exceeded or violated.

**1926.1437(m)(4)**—If the equipment is employer-made, it must not be used unless the employer *has documents demonstrating that the load charts and applicable parameters for use meet the requirements of paragraphs (m)(1) through (3) [Floating Cranes/Derricks]* of this section. Such **documents** must be **signed** by a **registered professional engineer** who is a qualified person with respect to the design of this type of equipment (including the means of flotation).



## Training and Communications

**1926.1437(c)(2)(ii)**—Clearly **mark** the hazard areas by a combination of **warning signs** (such as, “Danger— Swing/ Crush Zone”) and high visibility **markings** on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these **markings** signify.

## Competent Person

**1926.1437(h)(3)**—The shift and monthly inspections are conducted by a competent person, and:

**1926.1437(h)(3)(i)**—If any deficiency is identified, an immediate determination is made by a qualified person whether the deficiency constitutes a hazard.

**1926.1437(e)(3)**—Wind speed and direction indicator. A competent person must determine if wind is a factor that needs to be considered; if wind needs to be considered, a wind speed and direction indicator must be used.

## Qualified Person

**1926.1437(h)(3)**—The shift and monthly inspections are conducted by a competent person, and:

**1926.1437(h)(3)(i)**—If any deficiency is identified, an immediate determination is made by a qualified person whether the deficiency constitutes a hazard.

**1926.1437(h)(4)**—Annual: external vessel/flotation device inspection. For each annual inspection:

**1926.1437(h)(4)(i)**—The external portion of the barge, pontoons, vessel or other means of flotation used is inspected annually by a qualified person who has expertise with respect to vessels/flotation devices and that the inspection includes specific items. [Reference paragraph (h)(4)(i) for more specific information.]

**1926.1437(h)(4)(i)(C)**—External evidence of leaks and structural damage; evidence of leaks and damage below the waterline may be determined through internal inspection of the vessel/flotation device.

**1926.1437(h)(4)(ii)**—Rescue skiffs, lifelines, work vests, life preservers and ring buoys are inspected for proper condition.

**1926.1437(h)(4)(iii)**—If any deficiency is identified, an immediate determination is made by the qualified person whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly inspections.

**1926.1437(h)(4)(iii)(A)**—If the qualified person determines that the deficiency constitutes a hazard, the vessel/ flotation device is removed from service until it has been corrected. See requirements in § 1926.1417(f) [Tagout].

**1926.1437(h)(4)(iii)(B)**—If the qualified person determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly inspections.

**1926.1437(h)(5)**—Four-year: internal vessel/flotation device inspection. For each four-year inspection:

**1926.1437(h)(5)(i)**—A marine engineer, marine architect, **licensed surveyor**, or other qualified person who has expertise with respect to vessels/flotation devices surveys the internal portion of the barge, pontoons, vessel, or other means of flotation.

**1926.1437(h)(5)(ii)**—If the surveyor identifies a deficiency, an immediate determination is made by the surveyor as to whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be *monitored in the monthly or annual inspections*, as appropriate.

**1926.1437(h)(5)(ii)(B)**—If the surveyor determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly or annual inspections, as appropriate.

**1926.1437(k)(3)**—When the *manufacturer’s specifications and limitations* are unavailable, the employer *must ensure that the specifications and limitations established by a qualified person* with respect to environmental, operational and in-transit loads for the barge, pontoons, vessel, or other means of flotation are not exceeded or violated.

**1926.1437(m)(4)**—If the equipment is employer-made, it must not be used unless the employer *has documents demonstrating that the load charts and applicable parameters for use meet the requirements of paragraphs (m)(1) through (3) [Floating Cranes/Derricks] of this section. Such documents must be signed by a registered professional engineer who is a qualified person* with respect to the *design* of this type of equipment (including the means of flotation).

**1926.1437(n)(2)**—The rated capacity modification required in *paragraph (n)(1) [Land Cranes/Derricks]* of this section is *performed by the equipment manufacturer; or a qualified person* who has expertise with respect to both land crane/derrick capacity and the stability of vessels/flotation devices.

**1926.1437(n)(3)(i)**—The maximum allowable list and the maximum allowable trim for the barge, pontoon, vessel or other means of flotation must not exceed the amount necessary to ensure that the conditions in *paragraph (n)(4) [Land Cranes/Derricks]* of this section are met. In addition, the maximum allowable list and the maximum allowable trim does not exceed the least of the following: 5 degrees, the amount specified by the *crane/derrick manufacturer*; or, when, an amount is not so specified, the amount *specified by the qualified person*.

**1926.1437(n)(3)(ii)**—The maximum allowable list and the maximum allowable trim for the land crane/derrick does not exceed the amount specified by the *crane/derrick manufacturer*, or, when, an amount is not so specified, the amount *specified by the qualified person*.

**1926.1437(n)(5)(v)**—The systems/means used to comply with *Option (1) [Physical Attachment], Option (2) [Corralling], Option (3) [Rails], or Option (4) [Centerline Cable System]* of this section are **designed by a marine engineer, registered professional engineer familiar with floating crane/derrick design, or qualified person familiar with floating crane/derrick design**.

**1926.1437(n)(6)(i)**—A marine engineer or registered professional engineer familiar with floating crane/derrick design develops and **signs a written plan** for the use of the mobile auxiliary crane.

## Signs, Markings and Tags

**1926.1437(g)(1)**—***Rated capacities (load charts) are posted*** at the operator’s station. If the operator’s station is moveable (such as with pendant-controlled equipment), the ***load charts are posted*** on the equipment.

**1926.1437(c)(2)(ii)**—Clearly **mark** the hazard areas by a combination of **warning signs** (such as, “Danger— Swing/ Crush Zone”) and high visibility **markings** on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these **markings** signify.

**1926.1437(n)(6)(iv)**—The deck is **marked** to identify the permitted areas for positioning, travel, and operation.

## 1926.1441—EQUIPMENT WITH A RATED HOISTING/LIFTING CAPACITY OF 2,000 POUNDS OR LESS

**Scope/Application:** *This standard applies to power-operated equipment, when used in construction that can hoist, lower and horizontally move a suspended load. Such equipment includes, but is not limited to: Articulating cranes (such as knuckle-boom cranes); crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes (such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes); multi-purpose machines when configured to hoist and lower (by means of a winch or hook) and horizontally move a suspended load; industrial cranes (such as carry-deck cranes); dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes (such as a fixed jib, i.e., “hammerhead boom”), luffing boom and selferecting); pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; sideboom cranes; derricks; and variations of such equipment.*

**Additional Note:** *The following paragraphs of this section specify requirements for employers using equipment with a maximum rated hoisting/lifting capacity of 2,000 pounds or less.*

### STANDARD HIGHLIGHTS

- Programs, Plans and Procedures—registered professional engineer
- Inspections and Tests—post assembly inspections
- Recordkeeping—documentation, written, registered professional engineer, availability
- Training and Communications—employee training
- Qualified Person—qualifications, registered professional engineer
- Signs, Markings and Tags—load chart

### Programs, Plans and Procedures

**1926.1441(c)(2)(i)**—When the ***manufacturer’s procedures*** are unavailable, ***develop, and ensure compliance with, all procedures*** necessary for the safe operation of the equipment and attachments.

**1926.1441(c)(2)(iii)**—Ensure that *procedures related to the capacity of the equipment are developed and signed by a registered professional engineer* familiar with the equipment.

**1926.1441(c)(3)(ii)**—*Procedures applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions, and operator’s manual are readily available* for use by the operator.

**1926.1441(h)**—*Inspections.* The employer must ensure that equipment *is inspected* in accordance with ***manufacturer procedures***.

### Inspections and Tests

**1926.1441(b)(2)(ii)**—*Post-assembly inspection.* Upon completion of assembly, the equipment *is inspected* to ensure that it is in compliance with *paragraph (b)(2)(i) [Assembly/Disassembly] of this section (see Sec. 1926.1412(c) [Inspections] for post-assembly inspection requirements).*

**1926.1441(h)**—*Inspections.* The employer must ensure that equipment *is inspected* in accordance with ***manufacturer procedures***.

### Recordkeeping

**1926.1441(b)(2)(i)(A)**—***Manufacturer instructions, recommendations, limitations, and specifications.*** When these ***documents*** and information are unavailable, a registered professional engineer familiar with the type of equipment involved must approve, in ***writing***, the selection and configuration of components. *[Reference paragraph (b)(2)(i) for more specific information.]*

**1926.1441(c)(3)(i)**—The ***load chart*** *is available* to the operator at the control station.

**1926.1441(c)(3)(ii)**—*Procedures applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions, and operator’s manual are readily available* for use by the operator.

**1926.1441(h)**—*Inspections.* The employer must ensure that equipment *is inspected* in accordance with ***manufacturer procedures***.

### **Training and Communications**

**1926.1441(e)**—*Operator qualifications.* The employer must train each operator, prior to operating the equipment, on the safe operation of the type of equipment the operator will be using.

**1926.1441(f)**—*Signal person qualifications.* The employer must train each signal person in the proper use of signals applicable to the use of the equipment.

### **Qualified Person**

**1926.1441(b)(2)(i)(A)**—***Manufacturer instructions, recommendations, limitations, and specifications.*** When these ***documents and information*** are unavailable, a ***registered professional engineer*** familiar with the type of equipment involved must ***approve, in writing***, the selection and configuration of components. [Reference paragraph (b)(2)(i) for more specific information.]

**1926.1441(c)(2)(ii)**—Ensure that *procedures* for the operational controls *are developed by a qualified person*.

**1926.1441(c)(2)(iii)**—Ensure that ***procedures*** related to the capacity of the equipment are developed and ***signed*** by a ***registered professional engineer*** familiar with the equipment.

**1926.1441(k)**—***Design.*** The employer must ensure that the equipment is ***designed*** by a qualified engineer.

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

**1926.1441(c)(3)(i)**—The ***load chart*** *is available* to the operator at the control station.

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