



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



Occupational Safety and Health Division
N.C. Department of Labor
1101 Mail Service Center
Raleigh, NC 27699-1101

Cherie Berry
Commissioner of Labor

**N.C. Department of Labor
Occupational Safety and Health Program**

Cherie Berry
Commissioner of Labor
OSHA State Plan Designee

Allen McNeely
Deputy Commissioner for Safety and Health

Kevin Beauregard
Assistant Deputy Commissioner for Safety and Health

Wanda Lagoe
Author

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

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

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

Phone: 919-807-2875 or 1-800-625-2267

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

The projected cost of the NCDOL OSH program for federal fiscal year 2011–2012 is \$17,841,216. Federal funding provides approximately 31 percent (\$5,501,500) of this total.



Table of Contents

Foreword and Overview	viii
How to Use This Industry Guide	ix
SECTION 1	
Special Requirements Table	
13 North Carolina Administrative Code	1
Part 1904—Recordkeeping	1
Part 1926—Construction Industry	1
SECTION 2	
13 North Carolina Administrative Code (NCAC)	
13 NCAC 07A .0600—Safety and Health Programs and Committees	12
13 NCAC 07F .0200—Construction Standards	14
13 NCAC 07F .0600—Communication Tower Standards	14
13 NCAC 07F .0700—Blasting and Use of Explosives	21
SECTION 3	
Part 1904—Recordkeeping	27
SECTION 4	
Part 1926—Safety and Health Regulations for Construction	
29 CFR 1926 Subpart C—General Safety and Health Provisions	30
1926.20 General Safety and Health Provisions	30
1926.21 Safety Training and Education	31
1926.24 Fire Protection and Prevention	31
1926.25 Housekeeping	32
1926.33 Access to Employee Exposure and Medical Records	32
1926.34 Means of Egress	33
1926.35 Employee Emergency Action Plans	33
29 CFR 1926 Subpart D—Occupational Health and Environmental Controls	35
1926.50 Medical Services and First Aid	35
1926.51 Sanitation	35
1926.52 Occupational Noise Exposure	36
1926.53 Ionizing Radiation	38
1926.54 Nonionizing Radiation	41
1926.55 Gases, Vapors, Fumes, Dusts, and Mists	41
1926.57 Ventilation	42
1926.59 Hazard Communication	43
1926.60 Methyleneedianiline	44
1926.61 Retention of DOT Markings, Placards and Labels	57
1926.62 Lead	57
1926.64 Process Safety Management of Highly Hazardous Chemicals	64
1926.65 Hazardous Waste Operations and Emergency Response	68
1926.66 Criteria for Design and Construction of Spray Booths	80

29 CFR 1926 Subpart E—Personal Protective and Life Saving Equipment	81
1926.101 Hearing Protection	81
1926.103 Respiratory Protection	81
29 CFR 1926 Subpart F—Fire Protection and Prevention	82
1926.150 Fire Protection	82
1926.151 Fire Prevention	82
1926.152 Flammable and Combustible Liquids	83
1926.153 Liquefied Petroleum Gas (LP-Gas)	83
29 CFR 1926 Subpart G—Signs, Signals, and Barricades	84
1926.200 Accident Prevention Signs and Tags	84
29 CFR 1926 Subpart H—Materials Handling, Storage, Use, and Disposal	85
1926.250 General Requirements for Storage	85
1926.251 Rigging Equipment for Material Handling	85
1926.252 Disposal of Waste Materials	86
29 CFR 1926 Subpart I—Tools—Hand and Power	87
1926.302 Power-Operated Hand Tools	87
1926.303 Abrasive Wheels and Tools	87
1926.304 Woodworking Tools	87
1926.305 Jacks—Lever and Ratchet, Screw, and Hydraulic	87
1926.306 Air Receivers	88
1926.307 Mechanical Power-Transmission Apparatus	88
29 CFR 1926 Subpart J—Welding and Cutting	89
1926.351 Arc Welding and Cutting	89
1926.352 Fire Prevention	89
1926.353 Ventilation and Protection in Welding, Cutting, and Heating	89
1926.354 Welding, Cutting, and Heating in Way of Preservative Coatings	90
29 CFR 1926 Subpart K—Electrical	91
1926.403 General Requirements	91
1926.404 Wiring Design and Protection	91
1926.408 Special Systems	93
1926.416 General Requirements	94
1926.417 Lockout and Tagging of Circuits	94
1926.441 Batteries and Battery Charging	94
29 CFR 1926 Subpart L—Scaffolds	95
1926.451 General Requirements	95
1926.452 Additional Requirements Applicable to Specific Types of Scaffolds	97
1926.453 Aerial Lifts	98
1926.454 Training Requirements	98
29 CFR 1926 Subpart M—Fall Protection	100
1926.501 Duty to Have Fall Protection	100
1926.502 Fall Protection Systems Criteria and Practices	101
1926.503 Training Requirements	102
29 CFR 1926 Subpart N—Helicopters, Hoists, Elevators, and Conveyors	104
1926.551 Helicopters	104
1926.552 Material Hoists, Personnel Hoists, and Elevators	104
1926.554 Overhead Hoists	106
1926.555 Conveyors	106

29 CFR 1926 Subpart O—Motor Vehicles, Mechanized Equipment, and Marine Operations	107
1926.600 Equipment	107
1926.601 Motor Vehicles	107
1926.602 Material Handling Equipment	107
1926.603 Pile Driving Equipment	108
1926.604 Site Clearing	108
29 CFR 1926 Subpart P—Excavations	109
1926.651 Specific Excavation Requirements	109
1926.652 Requirements for Protective Systems	110
29 CFR 1926 Subpart Q—Concrete and Masonry Construction	111
1926.701 General Requirements	111
1926.702 Requirements for Equipment and Tools	111
1926.703 Requirements for Cast-in-Place Concrete	111
1926.705 Requirements for Lift-Slab Construction Operations	112
1926.706 Requirements of Masonry Construction	113
29 CFR 1926 Subpart R—Steel Erection	114
1926.752 Site Layout, Site-Specific Erection Plan and Construction Sequence	114
1926.753 Hoisting and Rigging	114
1926.754 Structural Steel Assembly	116
1926.755 Column Anchorage	116
1926.756 Beams and Columns	116
1926.757 Open Web Steel Joists	117
1926.758 Systems-Engineered Metal Buildings	117
1926.760 Fall Protection	118
1926.761 Training	118
29 CFR 1926 Subpart S—Tunnels and Shafts, Caissons, Cofferdams, and Compressed Air	120
1926.800 Underground Construction	120
1926.801 Caissons	123
1926.802 Cofferdams	124
1926.803 Compressed Air	124
29 CFR 1926 Subpart T—Demolition	127
1926.850 Preparatory Operations	127
1926.851 Stairs, Passageways, and Ladders	127
1926.859 Mechanical Demolition	128
29 CFR 1926 Subpart U—Blasting and Use of Explosives	129
1926.900 General Provisions	129
1926.901 Blaster Qualifications	129
1926.902 Surface Transportation of Explosives	130
1926.903 Underground Transportation of Explosives	130
1926.904 Storage of Explosives and Blasting Agents	131
1926.905 Loading of Explosives or Blasting Agents	131
1926.906 Initiation of Explosive Charges—Electric Blasting	131
1926.908 Use of Detonating Cord	132
1926.909 Firing the Blast	132
1926.910 Inspection After Blasting	132
1926.911 Misfires	132

29 CFR 1926 Subpart V—Power Transmission and Distribution	133
1926.950 General Requirements	133
1926.951 Tools and Protective Equipment	133
1926.952 Mechanical Equipment	134
1926.954 Grounding for Protection of Employees	134
1926.955 Overhead Lines	134
1926.956 Underground Lines	135
1926.957 Construction in Energized Substations	136
1926.959 Lineman’s Body Belts, Safety Straps, and Lanyards	136
29 CFR 1926 Subpart W—Rollover Protective Structures; Overhead Protection	137
1926.1000 Rollover Protective Structures (ROPS) for Material Handling Equipment	137
1926.1001 Minimum Performance Criteria for Rollover Protective Structures for Designated Scrapers, Loaders, Dozers, Graders, and Crawler Tractors	137
1926.1002 Protective Frames (Roll-Over Protective Structures, Known as ROPS) for Wheel-Type Agricultural and Industrial Tractors Used in Construction	137
1926.1003 Overhead Protection for Operators of Agricultural and Industrial Tractors	139
29 CFR 1926 Subpart X—Stairways and Ladders	140
1926.1053 Ladders	140
1926.1060 Training Requirements	140
29 CFR 1926 Subpart Y—Commercial Diving Operations	142
1926.1076 Qualifications of Dive Team	142
1926.1080 Safe Practices Manual	142
1926.1081 Pre-Dive Procedures	143
1926.1083 Post-Dive Procedures	144
1926.1090 Equipment	145
1926.1091 Recordkeeping Requirements	146
29 CFR 1926 Subpart Z—Toxic and Hazardous Substances	147
1926.1101 Asbestos	147
1926.1103 13 Carcinogens (4-Nitrobiphenyl, etc.)	156
1926.1104 alpha-Naphthylamine	158
1926.1106 Methyl Chloromethyl Ether	158
1926.1107 3,3'-Dichlorobenzidine (and its salts)	158
1926.1108 bis-Chloromethyl Ether	158
1926.1109 beta-Naphthylamine	158
1926.1110 Benzidine	158
1926.1111 4-Aminodiphenyl	158
1926.1112 Ethyleneimine	158
1926.1113 beta-Propiolactone	158
1926.1114 2-Acetylaminofluorene	158
1926.1115 4-Dimethylaminoazobenzene	158
1926.1116 N-Nitrosodimethylamine	159
1926.1117 Vinyl Chloride	159
1926.1118 Inorganic Arsenic	161
1926.1126 Chromium (VI)	164
1926.1127 Cadmium	167
1926.1128 Benzene	173
1926.1129 Coke Oven Emissions	176
1926.1144 1,2-dibromo-3-chloropropane	180
1926.1145 Acrylonitrile	183

1926.1147 Ethylene Oxide	186
1926.1148 Formaldehyde	189
1926.1152 Methylene Chloride	193
29 CFR 1926 Subpart CC—Cranes and Derricks in Construction	197
1926.1402 Ground Conditions	197
1926.1403 Assembly/Disassembly— Selection of Manufacturer or Employer Procedures	198
1926.1404 Assembly/Disassembly—General Requirements (Applies to all Assembly and Disassembly Operations)	198
1926.1406 Assembly/Disassembly—Employer Procedures—General Requirements	200
1926.1407 Power Line Safety (Up To 350 kV)—Assembly and Disassembly	200
1926.1408 Power Line Safety (Up To 350 kV)—Equipment Operations	201
1926.1409 Power Line Safety (Over 350 kV)	202
1926.1410 Power Line Safety (All Voltages)— Equipment Operations Closer Than the Table A Zone.	203
1926.1411 Power Line Safety— While Traveling Under or Near Power Lines with No Load	204
1926.1412 Inspections	205
1926.1413 Wire Rope—Inspection	207
1926.1414 Wire Rope—Selection and Installation Criteria	209
1926.1416 Operational Aids	209
1926.1417 Operation	210
1926.1418 Authority to Stop Operation	212
1926.1419 Signals—General Requirements	213
1926.1420 Signals—Radio, Telephone or Other Electronic Transmission of Signals	213
1926.1421 Signals—Voice Signals—Additional Requirements	214
1926.1422 Signals—Hand Signal Chart	214
1926.1423 Fall Protection	214
1926.1424 Work Area Control	215
1926.1425 Keeping Clear of the Load	216
1926.1427 Operator Qualification and Certification	216
1926.1428 Signal Person Qualifications	219
1926.1429 Qualifications of Maintenance & Repair Employees	220
1926.1430 Training	220
1926.1431 Hoisting Personnel	222
1926.1432 Multiple-Crane/Derrick Lifts—Supplemental Requirements	224
1926.1433 Design, Construction and Testing	224
1926.1434 Equipment Modifications	225
1926.1435 Tower Cranes	226
1926.1436 Derricks	228
1926.1437 Floating Cranes/Derricks and Land Cranes/Derricks on Barges	231
1926.1441 Equipment With a Rated Hoisting/Lifting Capacity of 2,000 Pounds or Less ..	234
29 CFR 1926 Subpart DD—Cranes and Derricks Used in Demolition and Underground Construction	236
1926.1501 Cranes and Derricks	236

Foreword

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

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

Cherie Berry
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 919-807-2899. You may also want to visit their website at <http://www.nclabor.com/osha/consult/consult.htm>.

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

How to Use This Industry Guide

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

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

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

P: Programs, policies and procedures-related requirement: Indicates required programs or policies, which can be written or unwritten, and/or be a mix of procedures, policies or plans required to meet a rule’s requirements.

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

RK: Recordkeeping requirement: Indicates rules that have recordkeeping requirements for activities such as injury reporting, equipment inspections, surveys, tests, medical monitoring, exposure monitoring, training, records and other documentation requirements.

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

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

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

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

CP: Competent person requirement: Indicates rules that have requirements for “competent persons.” 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.

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, posting and placarding.

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

Note: An asterisk (*) within a special requirement box marked with an X in the following tables located in Section 1 denotes a written and/or documented component. When a special requirement has a written and/or documented component, the recordkeeping box will also be marked with an X.

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 “**Note**” that explains the scope of the standard (who is covered). This will help the user identify whether the standard applies to them. If there is an “**Exception**” to the scope, that will also be provided following the “**Note**.”

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

SECTION 1

13 NORTH CAROLINA ADMINISTRATIVE CODE

CHAPTER 7—OFFICE OF OCCUPATIONAL SAFETY AND HEALTH

SUBCHAPTER 7A—GENERAL RULES AND OPERATIONAL PROCEDURES

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

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										
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 A—G—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	
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*								
1926.34—Means of Egress										X	
1926.35—Employee Emergency Action Plans	X*		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	X*	X*	X*	X*	X*	X*			X	X*
1926.53—Ionizing Radiation		X	X*		X			X		X	
1926.54—Nonionizing Radiation			X*		X				X	X	
1926.55—Gases, Vapors, Fumes, Dusts, and Mists	X							X			
1926.57—Ventilation	X	X	X*		X						X
1926.59—Hazard Communication	X*		X*		X*					X*	X*
1926.60—Methylenedianiline	X*	X	X*		X	X*	X*			X*	
1926.61—Retention of DOT Markings, Placards, and Labels										X	
1926.62—Lead	X*	X	X*		X*	X*	X*	X		X	
1926.64—Process Safety Management of Highly Hazardous Chemicals	X*	X*	X*	X*	X*						X
1926.65—Hazardous Waste Operations and Emergency Response	X*	X	X*	X*	X*	X	X*	X	X	X	X
1926.66—Criteria for Design and Construction of Spray Booths		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*	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						
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	
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	
1926.441—Batteries and Battery Charging										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
1926.454—Training requirements					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
1926.552—Material Hoists, Personnel Hoists, and Elevators		X	X*	X*				X	X	X*	
1926.554—Overhead Hoists		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			
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		
1926.754—Structural Steel Assembly								X			
1926.755—Column Anchorage		X	X*					X			
1926.756—Beams and Columns								X	X*		
1926.757—Open Web Steel Joists			X*						X*		
1926.758—Systems-Engineered Metal Buildings			X*								
1926.760—Fall Protection		X			X					X	
1926.761—Training					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	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
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 Requirements		X			X					X	
1926.951—Tools and Protective Equipment		X*	X*	X*						X	
1926.952—Mechanical Equipment		X	X*	X*							
1926.954—Grounding for Protection of Employees		X									
1926.955—Overhead Lines	X	X			X				X		X
1926.956—Underground Lines		X							X		
1926.957—Construction in Energized Substations										X	X
1926.959—Lineman’s Body Belts, Safety Straps, and Lanyards	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*							
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						X
1926.1080—Safe Practices Manual	X										
1926.1081—Pre-Dive Procedures	X*	X	X*		X						X
1926.1083—Post-Dive Procedures	X*		X*		X						
1926.1090—Equipment	X*	X	X*								X
1926.1091—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	X
1926.1103—13 Carcinogens	X*		X*		X		X*			X	
1926.1104—Alpha-Naphthylamine	X		X*		X*		X*			X	
1926.1106—Methyl Chloromethyl Ether	X		X*		X*		X*			X	
1926.1108—Bis-Chloromethyl Ether	X		X*		X*		X*			X	
1926.1109—Beta-Naphthylamine	X		X*		X*		X*			X	
1926.1110—Benzidene	X		X*		X*		X*			X	
1926.1111—4-Aminodiphenyl	X*		X*		X*		X*			X	
1926.1112—Ethyleneimine	X*		X*		X*		X*			X	
1926.1114—2-Acetylaminoazobenzene	X*		X*		X*		X*			X	
1926.1115—4-Dimethylaminoazobenzene	X*		X*		X*		X*			X	
1926.1116—N-Nitrosodimethylamine	X*		X*		X*		X*			X*	
1926.1117—Vinyl Chloride	X*		X*		X*	X*	X*			X	
1926.1118—Inorganic Arsenic	X*		X*		X*	X*	X*			X	
1926.1126—Chromium (VI)	X		X*		X*	X*	X*			X	
1926.1127—Cadmium	X	X	X*		X*	X*	X*	X		X	X
1926.1128—Benzene	X		X*		X*	X*	X*			X	
1926.1129—Coke Oven Emissions	X	X	X*		X*	X*	X*			X	
1926.1144—1,2-Dibromo-3-Chloropropane	X		X*		X*	X*	X*			X	
1926.1145—Acrylonitrile	X		X*		X*	X*	X*			X	
1926.1147—Ethylene Oxide	X		X*		X*	X*	X*			X	
1926.1148—Formaldehyde	X	X	X*		X*	X*	X*			X	
1926.1152—Methylene Chloride	X		X*		X*	X*	X*			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										
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		
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
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	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	
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						
1926.1429—Qualifications of Maintenance and Repair Employees									X		
1926.1430—Training	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		
1926.1433—Design, Construction and Testing		X*	X*						X	X	
1926.1434—Equipment Modifications			X*						X		
1926.1435—Tower Cranes	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	

29 CFR PART 1926—CONSTRUCTION

SUBPART DD—CRANES AND DERRICKS USED IN DEMOLITION AND UNDERGROUND CONSTRUCTION

SECTION	P	I	RK	C	T	EM	MS	CP	QP	SMT	O
1926.1501—Cranes and Derricks	X	X*	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

Note: This section sets forth rules of procedure for implementation of N.C. Gen.Stat. 95, Article 22, which is titled “Safety and Health Programs and Committees.”

STANDARD HIGHLIGHTS

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

Programs, Policies and Procedures

7A .0601(b)—Purpose and Scope—The purpose of this Section is to *establish programs* which will promote safety and health for all North Carolina employers *with a workers’ compensation experience rate modifier of 1.5 or above. Employee Safety and Health Committees will be established by all North Carolina employers having 11 or more employees and an experience rate modifier of 1.5 or above. [Note: Reference Section 07A .0603(b) for Minimum Elements of the Safety and Health Programs and N.C. Gen. Stat. § 95-251(b)(1)-(9) for specific requirements.]*

7A .0604—Selection of Safety Committees—(a) An employer *may elect to implement any one of the selection processes [found in 13 NCAC 07A .0604] as a means of meeting the requirements for selection of representatives to employee Safety and Health committees pursuant to G.S. 95-252(d).* The employer shall retain **written documentation** outlining any utilized selection process. An employer whose employees are represented by a collective bargaining representative must utilize either subsection 8, 9, or 10 for committee selection purposes. Any non-management employees who choose not to participate in the collective bargaining process are still considered to be represented by the collective bargaining representative for purposes of this Rule for committee selection purposes. *[Note: Reference Section 07A .0604—Selection of Safety Committees, Section 07A .0605—Safety and Health Committee Requirements, and N.C. Gen. Stat. § 95-252(d)—Safety and Health Committees for specific requirements.]*

7A .0605—Safety & Health Committee Requirements—(b) Multi-Employer Worksites:

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

Training and Communications

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

7A .0606—Training and Education—(c) The required safety and health training *shall be provided by someone trained to recognize, evaluate and control safety and health hazards. The training may be provided on-site or off-site.*

Recordkeeping

7A .0604—Selection of Safety Committees—(a) An employer may elect to implement any one of the selection processes [found in 13 NCAC 07A .0604] as a means of meeting the requirements for selection of representatives to employee Safety and Health committees pursuant to G.S. 95-252(d). The employer shall retain **written documentation** outlining any utilized selection process. An employer whose employees are represented by a collective bargaining representative must utilize either subsection 8, 9, or 10 for committee selection purposes. Any non-management employees who choose not to participate in the collective bargaining process are still considered to be represented by the collective bargaining representative for purposes of this Rule for committee selection purposes. [**Note:** Reference Section 07A .0604—Selection of Safety Committees, Section 07A .0605—Safety and Health Committee Requirements, and N.C. Gen. Stat. § 95-252(d)—Safety and Health Committees for specific requirements.]

7A .0607—Reports—The report **forms** required from employers within 60 days of notification by the Commissioner of Labor of inclusion in the program shall include [specific information.] [**Note:** Reference Section 07A .0605—Reports for specific requirements.]

7A .0607—Reports—(10) A timetable for delivery of training to employees and committee members. In no case shall the timetable for delivery of training exceed an additional 90 days beyond notification to the Commissioner of Labor of compliance with these Rules.

13 NCAC Chapter 7—Office of Occupational Safety and Health

Subchapter 07F—Standards

SECTION 7F .0200—CONSTRUCTION STANDARDS

Note: 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, Policies and Procedures—fall protection measures

Programs, Policies, 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.

SECTION 7F .0600—COMMUNICATION TOWER STANDARDS

Note: 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

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

Competent Person

7F .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.

7F .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.*

7F .0604—Hazard Identification and Assessment—(c) The hazard assessments required by this Rule shall:

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

7F .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.*

7F .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.*

7F .0607—Hoists and Gin Poles—(b) Gin Poles.

(4) **Inspections.**

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

Qualified Person

7F .0607—Hoists and Gin Poles—(b) Gin Poles.

(4) Inspections.

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

7F .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.*

7F .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—(e) 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]. [Note: Reference Section 07F .0609—Fall Protection Training for specific training requirements.]*

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]. [Note: Reference Section 07F .0609—RF Training for specific training requirements.]*

Inspections and Tests

7F .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.*

7F .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; and*
- (2) *When safety and health information or change in workplace conditions indicates that a new or increased hazard may be present.*

7F .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.

7F .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.

7F .0607—Hoists and Gin Poles—(b) Gin Poles.

(4) Inspections.

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

Training and Communications

7F .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**.*

7F .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.**

7F .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.*

7F .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.

7F .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.

7F .0609—Training—(c) Written Work Procedures.

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

7F .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.

7F .0609—Training—(e) Fall Protection Training.

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

7F .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].

7F .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].* [**Note:** 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.

7F .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.* [**Note:** Reference Section 07F .0609—*(h) Retraining for specific requirements.*]

Programs, Policies and Procedures

7F .0605—Fall Protection—(c) Fall Protection Systems. In order to comply with the requirements of *Subparagraph (a)(1)* of this Rule, the employer may permit employees to utilize the 100% fall protection systems described in *Paragraphs (d) through (g) [Fall Protection]* of this Rule. If the fall protection systems described therein are not present on the tower, the employer shall not permit employees to climb the tower at heights above six feet unless:

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

7F .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]. [**Note:** 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**.

7F .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.

7F .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.

7F .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]*.

7F .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.

7F .0609—Training—(c) Written Work Procedures.

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

7F .0609—Training—(e) Fall Protection Training.

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

Certification

7F .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.

7F .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.

7F .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.

7F .0609—Training—(i) Training Records.

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

Signs, Markings and Tags

7F .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.

7F .0607—Hoists and Gin Poles—(b) Gin Poles.

- (1) **Rigging Equipment.**

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

Recordkeeping

7F .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.

7F .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.

7F .0607—Hoists and Gin Poles—(b) Gin Poles.

(4) Inspections.

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

7F .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.

7F .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].

7F .0609—Training—(i) Training Records.

- (1) The employer *shall **certify** that each employee has been trained by preparing a **certification record**.* [Note: 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.*

SECTION 7F .0700—BLASTING AND USE OF EXPLOSIVES

Note: 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

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

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. [**Note:** 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.

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.*

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.*

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.

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.*

Programs, Policies 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.*

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.

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.

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. [Note: 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*.

SECTION 3

29 CFR 1904 Subpart B—Recordkeeping

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

STANDARD HIGHLIGHTS

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

Recordkeeping

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

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

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

1904.4(a)—Recording Criteria—Basic requirement. Each employer required by this Part to keep **records** of fatalities, injuries, and illnesses *must record each fatality, injury and illness.* [**Note:** 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. [**Note:** Reference 1904.7(b)(1) for specific requirements.]

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

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

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

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

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

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

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

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

Certification

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

1904.32(a)(3)—Certify the summary.

1904.32(b)(1)—Annual *Summary*—How extensively do I have to review the OSHA 300 Log entries at the end of the year? *You must review the entries as extensively as necessary* to make sure that they are complete and correct.

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

Signs, Markings and Tags

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

1904.32(a)(4)—*Post the annual summary*.

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

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

Training and Communications

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

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

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

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

1904.39(a)—Reporting Fatalities and Multiple Hospitalization Incidents to OSHA. Basic requirement. *Within eight (8) hours after the death of any employee from a work-related incident or the in-patient hospitalization of three or more employees as a result of a work-related incident, you must orally report the fatality/multiple hospitalization by telephone or in person* to the Area Office of the Occupational Safety and Health Administration (OSHA), U.S. Department of Labor, that is nearest to the site of the incident. You may also use the OSHA toll-free central telephone number, 1-800-321-OSHA (1-800-321-6742).

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

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

1904.40(a)—Reporting Fatalities and Multiple Hospitalization Incidents to OSHA. Basic requirement. When an authorized government representative *asks for the records you keep under Part 1904 [Recordkeeping], you must provide copies of the records within four (4) business hours.*

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

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

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

Programs, Policies, and Procedures

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

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

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

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

SECTION 4

29 CFR 1926 Subpart C—General Safety and Health Provisions

1926.20—GENERAL SAFETY AND HEALTH PROVISIONS

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

Programs, Policies 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.

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.

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.

Qualified Person

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

1926.21—SAFETY TRAINING AND EDUCATION

Note: 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, Policies and Procedures
- Training and Communications—instruct employees

Programs, Policies, and Procedures

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

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 Subparts D, F, and other applicable subparts of this part.

1926.21(b)(6)(i)—All employees required to enter into confined or enclosed spaces *shall be instructed* as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The employer shall comply with any specific regulations that apply to work in dangerous or potentially dangerous areas.

1926.24—FIRE PROTECTION AND PREVENTION

Note: 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, Policies and Procedures—fire protection and prevention program at job site

Programs, Policies, 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

Note: 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

- Other—housekeeping done at regular and frequent intervals

Other

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

Note: 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

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

STANDARD HIGHLIGHTS

- Recordkeeping*—retention requirements, SDS
- Training and Communications—inform employees

Recordkeeping

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

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

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

1910.1020(d)(1)(ii)(B)—**Safety data sheets** and paragraph (c)(5)(iv) [Employee Exposure **Record**] concerning the identity of a substance or agent need not be retained for any specified period as long as some **record** of the identity (chemical name if known) of the substance or agent, where it was used, and when it was used is retained for at least thirty (30) years.

[Please note: **Safety data sheets** must be kept for those chemicals currently in use that are effected by the Hazard Communication Standard in accordance with 29 CFR 1910.1200(g)—Hazard Communication.]

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

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

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

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

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

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

Training and Communications

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

Note: This section applies to every building or structure exits to be so arranged and maintained 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

Note: This section applies to all emergency action plans required by a particular OSHA standard.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—written emergency action plan
- Other—employee alarm system
- Training and Communications—review plan initially and after changes

Programs, Policies, 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. [Note: Reference paragraph (b) for program elements.]*

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**.*

Other

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

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

Note: 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

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

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.*

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.*

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.*

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.*

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.*

1926.51—SANITATION

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

STANDARD HIGHLIGHTS

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

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.

Programs, Policies and Procedures

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

1926.52—OCCUPATIONAL NOISE EXPOSURE

Note: *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, Policies and Procedures—administrative and engineering controls, hearing conservation program
- Other—hearing conservation program

Programs, Policies, 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*.

Other

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*.

1910.95—OCCUPATIONAL NOISE EXPOSURE

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

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

STANDARD HIGHLIGHTS

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

Programs, Policies and Procedures

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

1910.95(c)(1)—Hearing Conservation Program—The employer shall administer a continuing, effective hearing conservation program, as described in paragraphs (c) through (o) of this section [Implementing a Hearing Conservation Program including noise monitoring, training, audiometric testing, standard threshold shift, hearing protection, and recordkeeping], whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with appendix A [Noise Exposure Computation] and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment. [Note: Reference paragraph (c)(1) for specific information.]

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

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

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

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

Exposure Monitoring

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

Inspections and Tests

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

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

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

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

Certification

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

Medical Surveillance

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

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

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

Training and Communications

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

1910.95(k)(2)—*The training program shall be repeated annually for each employee included in the hearing conservation program. **Information** provided in the training program shall be updated to be consistent with changes in protective equipment and work processes.*

Signs, Markings and Tags

1910.95(l)(1)—*The employer shall make available to affected employees or their representatives **copies** of this standard and shall also post a **copy** in the workplace.*

Recordkeeping

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

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

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

- **1910.95(m)(3)(i)**—*Noise exposure measurement **records** shall be retained for two years.*
- **1910.95(m)(3)(ii)**—*Audiometric test **records** shall be retained for the duration of the affected employee's employment.*

1926.53—IONIZING RADIATION

Note: 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

- Competent Person
- Training and Communications—trained competent person

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.*

- **Note:** 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.

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*.

1910.1096—IONIZING RADIATION

Note: *This section applies to occupational exposure to ionizing radiation.*

STANDARD HIGHLIGHTS

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

Signs, Markings and Tags

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

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

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

Inspections and Tests

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

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

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

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

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

Training and Communications

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

1910.1096(i)(2)—All individuals working in or frequenting any portion of a radiation area *shall be informed* of the occurrence of radioactive materials or of radiation in such portions of the radiation area; *shall be instructed* in the safety problems associated with exposure to such materials or radiation and in precautions or devices to minimize exposure;

shall be instructed in the applicable provisions of this section for the protection of employees from exposure to radiation or radioactive materials; and *shall be advised* of reports of radiation exposure which employees may request pursuant to the regulations in this section.

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

- **1910.1096(l)(1)(i)**—*Exposure of the whole body* of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual to 150 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms of any individual to 375 rems or more of radiation.
- **1910.1096(l)(1)(ii)**—*The release of radioactive material in concentrations which*, if averaged over a period of 24 hours, would exceed 5,000 times the limit specified for such materials in Table II of appendix B to 10 CFR part 20.

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

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

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

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

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

Recordkeeping

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

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

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

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

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

1926.54—NONIONIZING RADIATION

Note: This section applies to occupational exposure to nonionizing radiation.

STANDARD HIGHLIGHTS

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

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.*

Recordkeeping

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

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

Note: 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, Policies and Procedures—administrative and engineering controls
- Competent Person—certified industrial hygienist

Programs, Policies, 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]*.

1926.57—VENTILATION

Note: *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

- Inspections and Tests*—regular inspections, records
- Programs, Policies and Procedures—respirator program
- Recordkeeping*—hood static pressure records
- Training and Communications—standby trained person

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.)

Programs, Policies, 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.

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.

1926.59—HAZARD COMMUNICATION

Note: 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

Note: This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—written hazard communication program on site
- Signs, Markings and Tags*—chemicals labeled, written materials, update in 3 months
- Recordkeeping*—SDS readily available, update in 3 months
- Training and Communications*—initial training
- Other*—trade secrets, written requests

Programs, Policies and Procedures

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

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

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

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

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

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

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

Signs, Markings and Tags

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

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

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

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

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

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

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

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

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

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

Recordkeeping

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

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

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

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

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

Training and Communications

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1910.1200(i)(3)(iii)(v)—The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a **written** confidentiality agreement that the health professional, employee, or designated representative, will

not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in *paragraph (i)(6) [Trade Secrets]* of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

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

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

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

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

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

Other

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

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

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

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

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

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

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

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

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

1926.60—METHYLENEDIANILINE

Note: *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

- Training and Communications—contractors, launderers, hazard communication
- Programs, Policies and Procedures*—emergency plan, fire prevention plan, compliance program, respirator program, housekeeping program, medical surveillance program, hazard communication program
- Exposure Monitoring*—documentation, initial, three months, and six months
- Signs, Markings and Tags*—regulated areas, posting, labels, warnings
- Inspections and Tests—visual examinations of clothing, regular inspections
- Medical Surveillance*—initial and annual, written opinions
- Recordkeeping*—retention requirements, records, safety data sheets

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 Methylene dianiline (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. [**Note:** 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.

Programs, Policies 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)(A)**—Local exhaust ventilation equipped with HEPA filter dust collection systems.
- **1926.60(h)(1)(i)(B)**—General ventilation systems.
- **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 Methylene dianiline (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. [**Note:** Reference paragraph (n)(1)(i) for specific circumstances.]

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. [**Note:** Reference paragraph (f)(7)(i) for corrective action requirements.]

Signs, Markings and Tags

1926.60(g)(1)(i)—Airborne exposures. The employer shall establish regulated areas where airborne concentrations of MDA exceed or can reasonably be expected to exceed, the permissible exposure limits.

1926.60(g)(1)(ii)—Dermal exposures. Where employees are subject to “dermal exposure to MDA” the employer shall establish those work areas as regulated areas.

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(l)(1)—*Hazard communication.* The employer shall include Methylene dianiline (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.

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. [**Note:** 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.

Medical Surveillance

1926.60(n)(1)(i)—The employer shall make available a medical surveillance program for employees exposed to MDA under certain circumstances. [**Note:** 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. [**Note:** 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. [**Note:** 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. [**Note:** 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. [**Note:** 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. [**Note:** Reference paragraph (n)(8)(i) for specific information.]

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

1926.60(l)(1)—**Hazard communication.** The employer shall include Methylene dianiline (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(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. [**Note:** 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 exemption. [**Note:** 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. [**Note:** 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**]. [**Note:** Reference paragraph (o)(5)(iii) for specific record information.]

1926.60(o)(5)(iii)—The employer shall ensure that this **record** is maintained 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*.

1910.38—EMERGENCY ACTION PLAN

Note: 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.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—written emergency action plan, plan review
- Training and Communications—initial and annual training

Programs, Policies, and Procedures

1910.38(b)—*Written and oral emergency action plans. An emergency action plan must be in writing, kept in the workplace, and available to employees for review. However, an employer with 10 or fewer employees may communicate the plan orally to employees. [Note: Reference Paragraph (c) for the Minimum Elements of an Emergency Action Plan.]*

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.*

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.

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.*

Note: The 1910.157(g)(1)-(4) standards apply when employees will be using fire extinguishers to extinguish fires as part of the employer's emergency action plan.

- **1910.157(g)(1)**—Where the employer has provided portable fire extinguishers for employee use in the workplace, the employer shall also provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting.
- **1910.157(g)(2)**—The employer shall provide the education required in paragraph (g)(1) [*Training and Education*] of this section upon initial employment and at least annually thereafter.

- **1910.157(g)(3)**—Portable Fire Extinguishers. The employer *shall provide employees who have been designated to use fire fighting equipment as part of an emergency action plan with training in the use of the appropriate equipment.*
- **1910.157(g)(4)**—The employer *shall provide the training required in paragraph 1910.157(g)(3) [Portable Fire Extinguishers], upon initial assignment to the designated group of employees and at least annually thereafter.*

1910.39—FIRE PREVENTION PLAN

Note: 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.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—written fire prevention plan
- Training and Communications—inform employees initially

Programs, Policies and Procedures

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

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.*

1910.134—RESPIRATORY PROTECTION

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

STANDARD HIGHLIGHTS

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

Programs, Policies and Procedures

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

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

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

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

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

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

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

Qualified Person

1910.134(c)(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.

Medical Surveillance

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

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

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

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

Inspections and Tests

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

- **1910.134(h)(3)(i)(A)**—All respirators used in routine situations *shall be inspected before each use and during cleaning;*
- **1910.134(h)(3)(i)(B)**—*All respirators maintained for use in emergency situations shall be inspected at least monthly* and in accordance with the manufacturer’s recommendations, and *shall be checked for proper function before and after each use;* and
- **1910.134(h)(3)(i)(C)**—*Emergency escape-only respirators shall be inspected before being carried into the workplace for use.*

1910.134(h)(3)(iii)—In addition to the requirements of *paragraphs (h)(3)(i) and (ii) [Inspection]* of this section, self-contained breathing apparatus *shall be inspected monthly*. Air and oxygen cylinders shall be maintained in a fully charged state and shall be recharged when the pressure falls to 90% of the manufacturer’s recommended pressure level. The employer shall determine that the regulator and warning devices function properly.

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

Certification

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

- **1910.134(h)(3)(iv)(A)**—*Certify the respirator by documenting the date the inspection* was performed, the name (or signature) of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator.
- **1910.134(h)(3)(iv)(B)**—*Provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information shall be maintained until replaced following a subsequent certification.*

Signs, Markings and Tags

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

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

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

Training and Communications

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

1910.134(k)—*Training and information.* This paragraph requires the employer to *provide effective training to employees* who are required to use respirators. The training must be comprehensive, understandable, and *recur annually, and more often if necessary*. This paragraph also requires the employer to *provide the basic information on respirators in Appendix D [Information for Employees Using Respirators When Not Required Under Standard] of this section* to employees who wear respirators when not required by this section or by the employer to do so. [*Note: Reference paragraph (k)(1) for specific training information.*]

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

- **1910.134(k)(5)(i)**—*Changes in the workplace or the type of respirator* render previous training obsolete.
- **1910.134(k)(5)(ii)**—*Inadequacies in the employee’s knowledge or use of the respirator* indicate that the employee has not retained the requisite understanding or skill.
- **1910.134(k)(5)(iii)**—*Any other situation arises in which retraining appears necessary* to ensure safe respirator use.

1910.134(k)(6)—The basic advisory information on respirators, as presented in *Appendix D—Information for Employees Using Respirators When Not Required Under Standard of this section*, shall be provided by the employer in any *written* or oral format, to employees who wear respirators when such use is not required by this section or by the employer.

Recordkeeping

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

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

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

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

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

1926.61—RETENTION OF DOT MARKINGS, PLACARDS AND LABELS

Note: 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

Note: 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

Note: 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

- Exposure Monitoring*—initially, quarterly, and semi-annually monitoring, exposure assessment
- Competent Person
- Programs, Policies 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
- Medical Surveillance*—program, biological monitoring, respirator use, written opinions
- Training and Communications*—written program, inform launderer in writing, instruct physician, hazard communication
- Signs, Markings and Tags—labels, warning signs
- Recordkeeping*—retention requirements, records, safety data sheets

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. [Note: 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 $\mu\text{g}/\text{m}^3$, the employer shall treat the employee as if the employee were exposed to lead in excess of 500 $\mu\text{g}/\text{m}^3$ 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 $\mu\text{g}/\text{m}^3$, 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. *[Note: 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 $\mu\text{g}/\text{m}^3$ (50xPEL), the employer shall treat the employee as if the employee were exposed to lead in excess of 2,500 $\mu\text{g}/\text{m}^3$ 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 $\mu\text{g}/\text{m}^3$, 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. *[Note: 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. [Note: 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.

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*.

Programs, Policies 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. [**Note:** *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*. [**Note:** *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. [**Note:** 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.

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

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. [Note: 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. [**Note:** 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. [**Note:** Reference paragraph (l)(2) for specific information.]

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

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/m³, the employer shall treat the employee as if the employee were exposed to lead in excess of 500 µg/m³ 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/m³, 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. [**Note:** 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/m³ (50xPEL), the employer shall treat the employee as if the employee were exposed to lead in excess of 2,500 µg/m³ 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/m³, 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. [**Note:** 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(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. [**Note:** 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. [**Note:** 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. [**Note:** 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. [**Note:** 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]*.

1926.64—PROCESS SAFETY MANAGEMENT OF HIGHLY HAZARDOUS CHEMICALS

Note: *This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards. This section applies to the following: A process which involves a chemical at or above the specified threshold quantities listed in Appendix A [List of Highly Hazardous Chemicals, Toxics and Reactives (Mandatory)] to this section; A process which involves a flammable liquid or gas (as defined in 1926.59(c) [Hazard Communication] 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 section does not apply to: retail facilities; oil or gas well drilling or servicing operations; or, normally unoccupied remote facilities.*

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—written action plan, initial hazard analysis and every five years, written operating procedures, audits, investigations, safe work practices
- Training and Communications*—initial and refresher training, training records
- Inspections and Tests*—frequent inspections, documented
- Recordkeeping*—hot work permits, management of change, training records, retention requirements
- Certification*—audits
- Other—incident investigation team

Programs, Policies and Procedures

1926.64(c)(1)—Employers *shall develop a written plan of action* regarding the implementation of the employee participation required by this paragraph.

1926.64(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. [Note: Reference paragraph (d)(1), (d)(2) and (d)(3) for specific information.]*

1926.64(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.*

1926.64(e)(2)—The employer *shall use one or more methodologies that are appropriate to determine and evaluate the hazards of the process being analyzed. [Note: Reference paragraph (e)(3) for specific information.]*

1926.64(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.*

1926.64(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.*

1926.64(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.*

1926.64(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 specific elements. [Note: Reference paragraph (f)(1) for specific information.]*

1926.64(f)(2)—*Operating procedures shall be readily **accessible** to employees who work in or maintain a process.*

1926.64(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.*

1926.64(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.*

1926.64(h)(2)(i)—*The employer, when selecting a contractor, shall obtain and evaluate **information** regarding the contract employer's safety performance and programs.*

1926.64(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.*

1926.64(h)(2)(v)—*The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) [Contractor Employer Responsibilities] of this section.*

1926.64(i)(1)—*The employer shall perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information. [Note: Reference paragraph (i)(2) for specific information.]*

1926.64(j)(2)—***Written** procedures. The employer shall establish and implement **written** procedures to maintain the on-going integrity of process equipment.*

1926.64(m)(1)—*The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.*

1926.64(m)(2)—*An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.*

1926.64(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**.*

1926.64(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.*

1926.64(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 1926.35(a) [Employee Emergency Action Plans]. 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 1926.65(a), (p) and (q) [Hazardous Waste Operations and Emergency Response].*

Training and Communications

1926.64(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.

1926.64(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.

1926.64(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.

1926.64(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.

1926.64(h)(2)(iii)—The employer *shall explain to contract employers* the applicable provisions of the emergency action plan required by *paragraph (n) [Incident Investigation]* of this section.

1926.64(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.

1926.64(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.

1926.64(h)(3)(v)—The contract employer *shall advise the employer of any unique hazards* presented by the contract employer's work, or of any hazards found by the contract employer's work.

1926.64(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.

1926.64(l)(3)—*Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up* of the process or affected part of the process.

Inspections and Tests

1926.64(j)(4)(i)—*Inspections and tests shall be performed* on process equipment.

1926.64(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.

1926.64(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.

1926.64(m)(1)—The employer *shall investigate each incident* which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.

1926.64(m)(2)—An incident investigation *shall be initiated as promptly as possible, but not later than 48 hours following the incident.*

Recordkeeping

1926.64(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.

1926.64(h)(2)(vi)—The employer *shall maintain a contract employee injury and illness log* related to the contractor's work in process areas.

1926.64(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.

1926.64(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.

1926.64(k)(1)—The employer *shall issue a hot work permit* for hot work operations conducted on or near a covered process.

1926.64(k)(2)—The permit *shall document that the fire prevention and protection requirements in 29 CFR 1926.352 [Fire Prevention]* have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The *permit shall be kept on file until completion of the hot work operations*.

1926.64(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. [*Note: Reference paragraph (l)(2) for specific information.*]

1926.64(l)(4)—*If a change covered by this paragraph results in a change in the process safety information* required by paragraph (d) [*Process Safety Information*] of this section, such *information shall be updated accordingly*.

1926.64(l)(5)—*If a change covered by this paragraph results in a change in the operating procedures or practices required by paragraph (f) [Operating Procedures]* of this section, such *procedures or practices shall be updated accordingly*.

1926.64(m)(4)—A *report shall be prepared at the conclusion of the investigation* which includes specific elements. [*Note: Reference paragraph (m)(4) for specific information.*]

1926.64(m)(7)—*Incident investigation reports shall be retained for five years*.

1926.64(o)(3)—*A report of the findings of the audit shall be developed*.

1926.64(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.

1926.64(o)(5)—Employers *shall retain the two (2) most recent compliance audit reports*.

Certification

1926.64(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.

1926.64(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.

1926.64(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. [*Note: Reference paragraph (o)(2) for specific information.*]

Other

1926.64(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*.

1926.65—HAZARDOUS WASTE OPERATIONS AND EMERGENCY RESPONSE

Note: 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, Policies and Procedures*—safety program, PPE program, spill containment program, site control program, emergency response plan, new technology programs
- Training and Communications*—contractors, certificates
- Inspections and Tests—evaluations, preliminary
- Qualified Person—site characterization and analysis
- Exposure Monitoring—prior to entry, initial, periodic
- Medical Surveillance*—examinations, written opinion
- Recordkeeping*—retention requirements
- Signs, Markings and Tags—labeling
- Certification*

Programs, Policies 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. [*Note: 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.* [*Note: Reference paragraph (b)(2)(i) for specific elements.*]
 - **1926.65(b)(1)(ii)(B)**—*A comprehensive workplan.* [*Note: 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.* [*Note: Reference paragraph (b)(4)(ii) and (d)(3) for specific information.*]
 - **1926.65(b)(1)(ii)(D)**—*The safety and health training program.* [*Note: Reference paragraph (e)(2) for specific elements.*]
 - **1926.65(b)(1)(ii)(E)**—*The medical surveillance program.* [*Note: Reference paragraph (f)(2) for specific information.*]
 - **1926.65(b)(1)(ii)(F)**—*The employer’s standard operating procedures for safety and health.* [*Note: 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.* [*Note: 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)(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. [*Note: 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. [*Note: 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. [*Note: Reference paragraph (b)(4)(ii) for specific elements.*]

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 site 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. [*Note: Reference paragraph (d)(3) for specific information.*]

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

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.

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:

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: *[Note: 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.

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. [**Note:** *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.

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. [**Note:** 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. [**Note:** 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: [**Note:** 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. [**Note:** Reference paragraph (f)(7)(i) for specific information.]

Recordkeeping

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(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*]. [**Note:** Reference paragraph (f)(8)(ii) for specific information.]

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.

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.

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

- Program, Policies and Procedures*—hazard communication program, safety and health program, new technology program, medical surveillance program, decontamination program, emergency response plan, material handling program
- Medical Surveillance
- Training and Communications—training program, initial and annual training
- Certification*—training, annual
- Competent Person

Programs, Policies 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 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 employer’s 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. [*Note: Reference paragraph (p)(8)(ii) for specific information.*]

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*.

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.

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. [**Note: 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.

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 maintained** by the employer. [**Note: Reference paragraph (p)(8)(iv)(A) for specific information.**]

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, Policies and Procedures*—emergency response plan
- Training and Communications—initially, annually, briefings
- Certification*
- Medical Surveillance—baseline, consultations
- Competent Person

Programs, Policies 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. [*Note: 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.

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

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

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

1926.66—CRITERIA FOR DESIGN AND CONSTRUCTION OF SPRAY BOOTHS

Note: This section applies to the design and construction of spray booths.

STANDARD HIGHLIGHTS

- Inspections and Tests

Inspections and Tests

1926.66(b)(5)(i)—The spraying operations except electrostatic spraying operations shall be so designed, installed and maintained that the average air velocity over the open face of the booth (or booth cross section during spraying operations) shall be not less than 100 linear feet per minute. Electrostatic spraying operations may be conducted with an air velocity over the open face of the booth of not less than 60 linear feet per minute, or more, depending on the volume of the finishing material being applied and its flammability and explosion characteristics. Visible gauges or audible alarm or pressure activated devices shall be installed to indicate or insure that the required air velocity is maintained. *Filter rolls shall be inspected* to insure proper replacement of filter media.

29 CFR 1926 Subpart E—Personal Protective and Life Saving Equipment

1926.101—HEARING PROTECTION

Note: This section applies to hearing protective devices.

STANDARD HIGHLIGHTS

- Competent Person

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

Note: 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. [See page 54.]

29 CFR Subpart F—Fire Protection and Prevention

1926.150—FIRE PROTECTION

Note: This section applies to fire protection.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—fire protection program
- Training and Communications*—fire brigade, instructions posted
- Inspections and Tests—periodic inspections
- Signs, Markings and Tags—standpipes marked

Programs, Policies 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.

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.

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.

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.

1926.151—FIRE PREVENTION

Note: This section applies to fire prevention.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posted signs
- Programs, Policies and Procedures—regular procedures for periodic cleanup

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.”

Programs, Policies 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.

1926.152—FLAMMABLE AND COMBUSTIBLE LIQUIDS

Note: This section applies to flammable and combustible liquids.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags*—signs posted, cabinets labeled
- Inspections and Tests—strength testing
- Training and Communications*—posted emergency instructions

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.*

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.

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.

1926.153—LIQUEFIED PETROLEUM GAS

Note: 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

Note: 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. [*Note: 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. [*Note: 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. [*Note: 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. [*Note: Reference paragraph (h)(2) for specific sign requirements.*]

29 CFR Subpart H—Materials Handling, Storage, Use and Disposal

1926.250—GENERAL REQUIREMENTS FOR STORAGE

Note: 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

Note: 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
- Competent Person—inspections
- Recordkeeping*—inspection records
- Signs, Markings and Tags—proof-tested, identification, markings
- Certification*—proof test

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.*

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.*

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.*

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.

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.*

1926.252—DISPOSAL OF WASTE MATERIALS

Note: 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

Note: This section applies to power-operated tools.

STANDARD HIGHLIGHTS

- Training and Communications—trained employees
- Inspections and Tests—daily tests

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.

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.

1926.303—ABRASIVE WHEELS AND TOOLS

Note: 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

Note: 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

Note: This section applies to all jack-lever and ratchet, screw, and hydraulic tools.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—tagging, markings
- Inspections and Tests—inspections

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.

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*.

1926.306—AIR RECEIVERS

Note: 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

Note: 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

Note: This section applies to arc welding and cutting.

STANDARD HIGHLIGHTS

- Training and Communications—employees instructed
- Inspections and Tests—inspections conducted beginning of work shift

Training and Communications

1926.350(d)—Use of fuel gas. The employer *shall thoroughly instruct employees* in the safe use of fuel gas. [*Note: Reference paragraph (d) for specific requirements.*]

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.

1926.352—FIRE PREVENTION

Note: This section applies to fire prevention.

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

Note: 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 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

Note: 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

Note: 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 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

- Signs, Markings and Tags—labeling, certification, markings
- Certification*—equipment

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.

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.

1926.404—WIRING DESIGN AND PROTECTION

Note: 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

- Programs, Policies and Procedures*—written assured grounding program
- Competent Person—designated competent person
- Inspections and Tests—tests, visual inspections, inspections daily, quarterly, and before use
- Recordkeeping*—test records
- Signs, Markings and Tags—posting, markings

Programs, Policies 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.

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.

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.

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

Note: 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
- 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

Note: 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.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posting warning signs
- Training and Communications—advise employees

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.

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.

1926.417—LOCKOUT AND TAGGING OF CIRCUITS

Note: 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.

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.

1926.441—BATTERIES AND BATTERY CHARGING

Note: 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.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—designated areas

Signs, Markings and Tags

1926.441(b)(1)—Battery charging installations *shall be located in areas designated* for that purpose.

29 CFR Subpart L—Scaffolds

1926.451—GENERAL REQUIREMENTS

Note: 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

- Competent Person—inspections, evaluations
- Training and Communications
- Inspections and Tests—evaluations, competent person, inspected every occurrence and workshift
- Qualified Person*—engineer designs

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.

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*.

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 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

Note: 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

- Qualified Person*—designs, registered professional engineer
- Inspections and Tests*—before erection
- Recordkeeping*—manufacturer approval

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.

Inspection 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(y)(4)—Stilts shall be properly maintained. Any alteration of the original equipment shall be **approved** by the manufacturer.

1926.453—AERIAL LIFTS

Note: The criteria for aerial lifts are set out exclusively in § 1926.453—Aerial Lifts.

STANDARD HIGHLIGHTS

- Certification*—written by manufacturer
- Inspections and Tests—tested each day and prior to use
- Other—authorized person

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.

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.

Other

1926.453(b)(2)(ii)—Only *authorized persons* shall operate an aerial lift.

1926.454—TRAINING REQUIREMENTS

Note: 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

- Training and Communications—initial and retraining, competent person
- Qualified Person—trained by
- Competent Person—trained by

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

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. [*Note: Reference paragraph (a) for specific training requirements.*]

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. [*Note: Reference paragraph (b) for specific training requirements.*]

29 CFR Subpart M—Fall Protection

1926.501—DUTY TO HAVE FALL PROTECTION

Note: 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, Policies and Procedures—fall protection plan

Programs, Policies 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

Note: 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

- Inspections and Tests—prior to use, weekly, and frequent inspections, competent person
- Certification*—records
- Recordkeeping*—certification record, kept at site, competent person
- Competent Person—certification record, inspections
- Programs, Policies and Procedures*—fall protection plan, monitoring system, incident investigations
- Qualified Person—fall protection plan

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)(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.

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.

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)(3)—A *copy of the fall protection plan with all approved changes shall be maintained* at the job site.

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. [**Note:** 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.

Programs, Policies, 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. [**Note:** Reference *paragraph (k) for specific provisions.*]

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.

Qualified Person

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

Note: 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

- Training and Communications—training program, initial, retraining
- Programs, Policies and Procedures—training program
- Competent Person—training
- Certification*
- Recordkeeping*—retention requirements, records

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: [**Note:** Reference paragraph (a)(2) for specific provisions.]

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: [**Note:** Reference paragraph (c) for specific information.]

Programs, policies, 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.

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: [**Note:** Reference paragraph (a)(2) for specific provisions.]

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.

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*.

29 CFR Subpart N—Helicopters, Hoists, Elevators, and Conveyors

1926.551—HELICOPTERS

Note: This section sets forth helicopter regulations. Helicopter cranes shall be expected to comply with any applicable regulations of the Federal Aviation Administration.

STANDARD HIGHLIGHTS

- Inspections and Tests—prior to each day’s operations
- Other—responsibilities for operator, designated employee
- Training and Communications—briefings conducted daily

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.

Other

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.

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.

1926.552—MATERIAL HOISTS, PERSONNEL HOISTS, AND ELEVATORS

Note: This section sets forth regulations pertaining to material hoists, personnel hoists, and elevators.

STANDARD HIGHLIGHTS

- Qualified Person—professional engineer
- Signs, Markings and Tags*—posting rules, instructions
- Inspections and Tests—weekly, prior to use, quarterly, records
- Certification*—records
- Recordkeeping*—maintain records
- Competent Person—supervision

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."

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.

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.*

Recordkeeping

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.*

1926.554—OVERHEAD HOISTS

Note: This section sets forth regulations pertaining to overhead hoists.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags*—markings
- Inspections and Tests—per 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.

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.*

1926.555—CONVEYORS

Note: This section sets forth regulations pertaining to conveyors.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—markings
- Inspections and Tests—ANSI

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.

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.

29 CFR Subpart O—Motor Vehicles, Mechanized Equipment, and Marine Operations

1926.600—GENERAL REQUIREMENTS

Note: This section sets forth regulations for motor vehicles, mechanized equipment and marine operations.

STANDARD HIGHLIGHTS

- Other—designated person
- Inspections and Tests—tests prior to work

Other

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.

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.

1926.601—MOTOR VEHICLES

Note: 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

Note: 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
- Signs, Markings and Tags*—rated capacity posted
- Recordkeeping*—written manufacturer approval
- Training and Communications—initial and refresher training
- 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.*

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.

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. [**Note:** *Reference paragraph (l)(3)i for training topics.*]

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. [**Note:** *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

Note: This section sets forth regulations for pile driving equipment

STANDARD HIGHLIGHTS

- Other—designated signalmen

Other

1926.603(c)(1)—Engineers and winchmen shall accept signals only from the *designated signalmen*.

1926.604—SITE CLEARING

Note: 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

Note: This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

STANDARD HIGHLIGHTS

- Competent Person—daily inspections, design, monitor
- Inspections and Tests—inspections before entry, after rain, and daily, atmospheric

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.

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.

1926.652—REQUIREMENTS FOR PROTECTIVE SYSTEMS

Note: This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

STANDARD HIGHLIGHTS

- Training and Communications*—explanatory information
- Qualified Person—registered professional engineer
- Recordkeeping*—designs at job site, written manufacturer Information

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.

Recordkeeping

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. [*Note: 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)(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.*

29 CFR Subpart Q—Concrete and Masonry Construction

1926.701—GENERAL REQUIREMENTS

Note: 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

- Qualified Person*
- Recordkeeping*—information
- Signs, Markings and Tags—barriers, signs

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.

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.

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

Note: 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

Note: 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

- Recordkeeping*—drawings and plans at jobsite
- Inspections and Tests—inspections prior to erection and immediate, ASTM
- Qualified Person—qualified engineer, inspections

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.*

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.

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

Note: 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

- Other*—designs
- Qualified Person*—registered professional engineer
- Signs, Markings and Tags—markings
- Competent Person
- Programs, Policies and Procedures—measures implemented by employer

Other

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.

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.

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.

Programs, Policies 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.

1926.706—REQUIREMENTS FOR MASONRY CONSTRUCTION

Note: 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.

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

Note: 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

- Recordkeeping*—written notification of approval
- Inspections and Tests*—ASTM
- Programs, Policies and Procedures—site-specific erection plan, preplanning
- Qualified Person—site-specific erection plan

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. [*Note:* 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.

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.

Programs, Policies and Procedures

1926.752(d)—Pre-planning of overhead hoisting operations. All hoisting operations in steel erection shall be pre-planned 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.

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

Note: 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

- Inspections and Tests—pre-shift and visual inspections
- Competent Person—inspections
- Qualified Person—qualified rigger, inspections
- Training and Communications
- Certification*—certified by manufacturers and qualified riggers
- Programs, Policies and Procedures—site-specific erection plan

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. [**Note:** *Reference paragraph (c)(1)(i) for specific provisions.*]

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. [**Note:** *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.

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]*.

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.

Programs, Policies and Procedures

1926.753(c)(5)(ii)—When equivalent protection *is provided in a site-specific erection plan.*

1926.754—STRUCTURAL STEEL ASSEMBLY

Note: 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

Note: 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

- Competent Person—evaluations
- Recordkeeping*—controlling contractor provides written notification
- Inspections and Tests—evaluations by competent person

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.

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.

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.

1926.756—BEAMS AND COLUMNS

Note: 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

- Competent Person—determinations
- Qualified Person*—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

Note: 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

- Qualified Person*—written approval, engineer of record, documented in plan
- Recordkeeping*—written approval

Qualified Person

1926.757(a)(2)(i)(B)—*Be designed by a qualified person. [Note: 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.

Recordkeeping

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

Note: 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

- Qualified Person*—written approval
- Recordkeeping*

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.

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.

1926.760—FALL PROTECTION

Note: *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

- Training and Communications—connector training, controlled access zone training
- Signs, Markings and Tags—controlled decking zone established, marked
- Inspections and Tests—inspections

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]*.

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. [Note: 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.

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.*

1926.761—TRAINING

Note: *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

- Training and Communications
- Qualified Person—provide training

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

Note: 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, area classifications
- Competent Person*—air monitoring, inspections, other
- Inspections and Tests—prior to use, each shift, and frequent inspections, competent person
- Programs, Policies and Procedures—checkin/checkout
- Qualified Person—qualifications, review
- Training and Communications—initial training
- Recordkeeping*—retention, qualification tests
- Exposure Monitoring—air monitoring conducted initially, frequently, and continuously
- Other—designated person
- Certificaton*—record

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. [**Note:** Reference paragraph (h)(1) for specific requirements.]

1926.800(h)(2)—Gassy operations. Underground construction operations *shall be classified* as gassy. [**Note:** 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.

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

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.*

Programs, Policies 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.

Qualified Person

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.

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. [**Note:** 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*.

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*.

Exposure Monitoring

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)(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. [Note: 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.*

Other

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.*

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.*

1926.801—CAISSONS

Note: 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

Note: *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

Note: *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

- Competent Person
- Training and Communications—instructions
- Qualified Person—licensed physician on-site, physically qualified
- Medical Surveillance—physically qualified
- Recordkeeping*—examination records, air monitoring records, identification badges
- Signs, Markings and Tags*—post rated capacity
- Programs, Policies and Procedures—procedures
- Exposure Monitoring*—once 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.*

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.

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.

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.

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)(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(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. [Note: 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)(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*

Programs, Policies 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.*

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.*

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.*

29 CFR Subpart T—Demolition

1926.850—PREPATORY OPERATIONS

Note: This section applies to preparatory operations for demolition.

STANDARD HIGHLIGHTS

- Recordkeeping*—written evidence of survey
- Other—notifications to utility company
- Inspections and Tests—testing before demolition
- Signs, Markings and Tags—warning signs posted
- Competent Person—engineering survey

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*.

Other

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.

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*.

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.

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*.

1926.851—STAIRS, PASSAGEWAYS, AND LADDERS

Note: 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 maintained in a clean safe condition.

1926.859—MECHANICAL DEMOLITION

Note: 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

Note: This section provides general provisions for blasting and use of explosives.

STANDARD HIGHLIGHTS

- Recordkeeping*—record of inventory use
- Signs, Markings and Tags—warning signs
- Competent Person—evaluate, alternatives in writing
- Certification*—competent person

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.

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.

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.

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.

1926.901—BLASTER QUALIFICATIONS

Note: This section provides blaster qualifications.

STANDARD HIGHLIGHTS

- Training and Communications*—understanding of written and oral orders
- Medical Surveillance—physicals for blaster
- Qualified Person—trained
- Recordkeeping*—evidence of competency
- Competent Person—blaster

Training and Communication

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.

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.

Recordkeeping

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.

Competent Person

1926.901(e)—The blaster *shall be knowledgeable and competent* in the use of each type of blasting method used.

1926.902—SURFACE TRANSPORTATION OF EXPLOSIVES

Note: This section provides requirements for surface transportation of explosives.

STANDARD HIGHLIGHTS

- Other*—driver qualifications, physically fit, knowledge of regulations
- Medical Surveillance—physically fit driver
- Signs, Markings and Tags—markings, placarding

Other

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.*

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.*

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

Note: 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

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

Note: 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

Note: This section provides requirements for loading of explosives and blasting agents.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures—procedures established
- Signs, Markings and Tags—warning signs
- Recordkeeping*—inventory

Programs, Policies and Procedures

1926.905(a)—*Procedures that permit safe and efficient loading shall be established before loading is started.*

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.*

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.

1926.906—INITIATION OF EXPLOSIVE CHARGES—ELECTRIC BLASTING

Note: 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

Note: 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

Note: This section provides requirements for firing the blast.

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—posting danger signs, code of blasting signals
- Other—blaster in charge, duties

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.

Other

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.

1926.910—INSPECTION AFTER BLASTING

Note: 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

Note: This section provides requirements for misfires.

STANDARD HIGHLIGHTS

- Other—authorized representative

Other

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 REQUIREMENTS

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment.

STANDARD HIGHLIGHTS

- Inspections and Tests—visual inspections or tests, before work, tagging
- Signs, Marking and Tags—tagging
- Training and Communications—emergency procedures and first aid training

Inspections and Tests

1926.950(b)(1)—Existing conditions shall be determined before starting work, *by an inspection or a test*. Such conditions shall include, but not be limited to, energized lines and equipment, conditions of poles, and the location of circuits and equipment, including power and communication lines, CATV and fire alarm circuits.

1926.950(b)(2)—Electric equipment and lines shall be considered energized until determined to be *deenergized by tests or other appropriate methods* or means.

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.

Signs, Markings and Tags

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.

1926.950(d)(1)(ii)(b)—All switches and disconnectors *are plainly tagged* indicating that men are at work;

Training and Communications

1926.950(e)(1)—*Emergency procedures and first aid. The employer shall provide training or require that his employees are knowledgeable and proficient. [Note: Reference paragraph (e)(1) for specific requirements.]*

1926.951—TOOLS AND PROTECTIVE EQUIPMENT

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to tools and protective equipment.

STANDARD HIGHLIGHTS

- Inspections and Tests*—inspections prior to use, visually, and each day, certification
- Certification*—manufacturer certifications
- Signs, Markings and Tags—markings

Inspections and Tests

1926.951(a)(1)(ii)—Rubber protective equipment *shall be visually inspected prior to use*.

1926.951(a)(1)(iii)—In addition, an “air” test *shall be performed for rubber gloves prior to use*.

1926.951(b)(3)—Body belts and straps *shall be inspected before use each day* to determine that they are in safe working condition.

1926.951(d)(1)—Only live-line tool poles having a *manufacturer’s certification to withstand the following minimum tests. [Note: Reference paragraph (d)(1) for specific tests.]*

1926.951(d)(2)—All live-line tools *shall be visually inspected before use each day*. Tools to be used shall be wiped clean and if any hazardous defects are indicated such tools shall be removed from service.

Certification

1926.951(d)(1)—Only live-line tool poles having a *manufacturer’s certification to withstand the following minimum tests. [Note: Reference paragraph (d)(1) for specific tests.]*

Signs, Markings and Tags

1926.951(c)(1)—Portable metal or conductive ladders shall not be used near energized lines or equipment except as may be necessary in specialized work such as in high voltage substations where nonconductive ladders might present a greater hazard than conductive ladders. Conductive or metal ladders *shall be prominently marked* as conductive and all necessary precautions shall be taken when used in specialized work.

1926.952—MECHANICAL EQUIPMENT

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to mechanical equipment.

STANDARD HIGHLIGHTS

- Inspections and Tests—visual inspections, tests beginning of each shift
- Certification*—equipment certified

Inspections and Tests

1926.952(a)(1)—*Visual inspections shall be made of the equipment to determine that it is in good condition each day the equipment is to be used.*

1926.952(a)(2)—*Tests shall be made at the beginning of each shift during which the equipment is to be used to determine that the brakes and operating systems are in proper working condition.*

Certification

1926.952(c)(3)—*With the exception of equipment **certified** for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Sec. 1926.950(c) unless, in addition to the requirements in Sec. 1926.1410. [Note: Reference paragraph (c)(3) for specific tests.]*

1926.954—GROUNDING FOR PROTECTION OF EMPLOYEES

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to grounding for employee protection.

STANDARD HIGHLIGHTS

- Inspections and Tests—tests

Inspections and Tests

1926.954(a)—General. All conductors and equipment *shall be treated as energized until tested* or otherwise determined to be deenergized or until grounded.

1926.954(d)—*Voltage testing. Deenergized conductors and equipment which are to be grounded shall be tested for voltage. Results of this voltage test shall determine the subsequent procedures as required in Sec. 1926.950(d) [Deenergizing Lines and Equipment].*

1926.955—OVERHEAD LINES

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to overhead lines.

STANDARD HIGHLIGHTS

- Training and Communications—training, qualified person, briefings
- Qualified Person—trained
- Inspections and Tests—tests before work each day and after changes in conditions
- Other—designated employee
- Programs, Policies and Procedures—determinations prior to operations

Training and Communications

1926.955(c)(2)—*Prior to stringing operations a briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and the clearance authorization required.*

1926.955(e)(1)—*Employees shall be instructed and trained in the live-line bare-hand technique and the safety requirements pertinent thereto before being permitted to use the technique on energized circuits.*

1926.955(e)(4)—*All work shall be personally supervised by a person trained and qualified to perform live-line bare-hand work.*

Qualified Person

1926.955(e)(4)—*All work shall be personally supervised by a person trained and qualified to perform live-line bare-hand work.*

Inspections and Tests

1926.955(e)(3)—*Only equipment designed, tested, and intended for live-line bare-hand work shall be used.*

1926.955(e)(10)—*Before moving the aerial lift into the work position, all controls (ground level and bucket) shall be checked and tested to determine that they are in proper working condition.*

1926.955(e)(11)—*Arm current tests shall be made before starting work each day, each time during the day when higher voltage is going to be worked and when changed conditions indicate a need for additional tests. Aerial buckets used for bare-hand live-line work shall be subjected to an arm current test. This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be worked upon for a minimum time of three (3) minutes. the leakage current shall not exceed 1 microampere per kilo-volt of nominal line-to-line voltage. Work operations shall be suspended immediately upon any indication of a malfunction in the equipment.*

Other

1926.955(b)(3)(i)—*A designated employee shall be used in directing mobile equipment adjacent to footing excavations.*

1926.955(b)(8)—*A designated employee shall be utilized to determine that required clearance is maintained in moving equipment under or near energized lines.*

Programs, Policies and Procedures

1926.955(d)(1)—*Prior to stringing parallel to an existing energized transmission line a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist the employer shall comply with the provisions of paragraphs (d)(2) through (9) [Stringing Adjacent to Energized Lines] of this section in addition to the provisions of paragraph (c) [Stringing or Removing Deenergized Conductors] of this Sec. 1926.955, unless the line is worked as energized.*

1926.956—UNDERGROUND LINES

Note: *The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to underground lines.*

STANDARD HIGHLIGHTS

- Inspections and Tests—testing of gases, fumes, and oxygen before entry
- Qualified Person

Inspections and Tests

1926.956(a)(3)(i)—*No entry shall be permitted unless forced ventilation is provided or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of explosive gases or fumes.*

1926.956(b)(3)—*Before using open flames in a manhole or excavation in an area where combustible gases or liquids may be present, such as near a gasoline service station, the atmosphere of the manhole or excavation shall be tested and found safe or cleared of the combustible gases or liquids.*

Qualified Person

1926.956(b)(1)—While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance, other than emergency. This requirement *does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely.*

1926.957—CONSTRUCTION IN ENERGIZED SUBSTATIONS

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to construction in energized substations.

STANDARD HIGHLIGHTS

- Other—designated and authorized person, before work is started
- Signs, Markings and Tags—signs posted

Other

1926.957(a)(1)—When construction work is performed in an energized substation, authorization *shall be obtained from the designated, authorized person* before work is started.

1926.957(d)(1)—Work on or adjacent to energized control panels *shall be performed by designated employees.*

1926.957(e)(1)—Use of vehicles, gin poles, cranes, and other equipment in restricted or hazardous areas shall at all times be *controlled by designated employees.*

Signs, Markings and Tags

1926.957(c)(2)—Where appropriate, *signs indicating the hazard shall be posted near the barricade or barrier.* These signs shall comply with 1926.200 [Accident Prevention Signs and Tags].

1926.959—LINEMAN’S BODY BELTS, SAFETY STRAPS, AND LANYARDS

Note: The occupational safety and health standards contained in this subpart V [Power Transmission and Distribution] shall apply to the construction of electric transmission and distribution lines and equipment. This section applies to lineman’s body belts, safety straps, and lanyards.

STANDARD HIGHLIGHTS

- Inspections and Tests—testing
- Programs, Policies and Procedures—procedures for testing equipment

Inspections and Tests

1926.959(b)(7)—*Testing of lineman’s safety straps, body belts and lanyards shall be in accordance with specific procedures. [Note: Reference paragraph (b)(7) for specific requirements.]*

Programs, Policies and Procedures

1926.959(b)(7)—*Testing of lineman’s safety straps, body belts and lanyards shall be in accordance with specific procedures. [Note: Reference paragraph (b)(7) for specific requirements.]*

29 CFR Subpart W—Rollover Protective Structures; Overhead Protection

1926.1000—ROLLOVER PROTECTIVE STRUCTURES (ROPS) FOR MATERIAL HANDLING EQUIPMENT

Note: 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. [*Note:* Reference paragraph (e) for specific requirements.]

1926.1001—MINIMUM PERFORMANCE CRITERIA FOR ROLLOVER PROTECTIVE STRUCTURES FOR DESIGNATED SCRAPERS, LOADERS, DOZERS, GRADERS, AND CRAWLER TRACTORS

Note: 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

- Inspections and Tests—static laboratory tests
- Programs, Policies and Procedures—test procedures
- Certification*—material certification

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. [*Note:* Reference paragraph (b) for specific requirements.]

Programs, Policies and Procedures

1926.1001(e)—Test procedure. The test procedure shall include requirements in a specific sequence. [*Note:* Reference paragraph (e) for specific requirements.]

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.

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

Note: 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

- Inspections and Tests*—tests, test procedure
- Recordkeeping*—tests
- Certification*—material certification

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.

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

Note: 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, Policies and Procedures—test procedures
- Inspections and Tests—procedures

Programs, Policies 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

Note: 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

Note: 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

- Training and Communications—initial and retraining, competent person
- Programs, Policies and Procedures—training program
- Competent Person—training

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. [**Note:** 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.

Programs, Policies 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.

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*. [**Note:** Reference paragraph (a)(1) for specific requirements.]

29 CFR Subpart Y—Commercial Diving Operations

1926.1076—QUALIFICATIONS OF DIVE TEAM

Note: 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

Note: 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 long-shoring.

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
- Other—designated person-in-charge

Training and Communications

1910.410(a)(1)—Each dive team member shall have the experience or training necessary to perform assigned tasks in a safe and healthful manner. [*Note:* Reference paragraph (a) for specific information.]

Other

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

Note: 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

Note: 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 long-shoring.

Exception: This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—safe practices manual

Programs, Policies and Procedures

1910.420(a)—**General.** The employer shall develop and maintain a safe practices **manual** which shall be made available at the dive location to each dive team member. [*Note:* Reference paragraph (a)(1) for specific information.]

1926.1081—PRE-DIVE PROCEDURES

Note: 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

Note: 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 long-shoring.

Exception: This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—emergency list on-site, first aid handbook on site, reporting procedures
- Other—first aid kit approved by physician
- Inspections and Tests—assessment, inspection before dive
- Training and Communications—briefing prior to dive
- Signs, Markings and Tags—flag displayed

Programs, Policies and Procedures

1910.421(b)—Emergency aid. A **list** shall be kept at the dive location of the telephone or call numbers.

1910.421(c)(1)—A first aid kit appropriate for the diving operation and **approved** by a physician shall be available at the dive location.

1910.421(c)(3)—In addition to any other first aid supplies, an American Red Cross standard *first aid handbook* or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.

1910.421(f)(2)—Prior to making individual dive team member assignments, the employer shall inquire into the dive team member's current state of physical fitness, and *indicate to the dive team member the procedure for reporting physical problems* or adverse physiological effects during and after the dive.

Other

1910.421(c)(3)—In addition to any other first aid supplies, an American Red Cross standard *first aid handbook* or equivalent, and a bag-type manual resuscitator with transparent mask and tubing shall be available at the dive location.

Inspections and Tests

1910.421(d)—*Planning and assessment.* Planning of a diving operation shall include an assessment of the safety and health aspects. [**Note:** 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. [**Note:** Reference paragraph (g) for specific information.]

Training and Communications

1910.421(f)(1)—Dive team members shall be briefed. [**Note:** Reference paragraph (f) for specific information.]

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

Note: 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

Note: 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 long-shoring.

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—employee instructions
- Recordkeeping*—records
- Programs, Policies and Procedures*—investigate each incident, written evaluations

Training and Communications

1910.423(b)(1)(ii)—*Instruct the diver to report any physical problems or adverse physiological effects including symptoms of decompression sickness.*

1910.423(b)(1)(iii)—*Advise the diver of the location of a decompression chamber which is ready for use.*

1910.423(b)(2)—*For any dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas as a breathing mixture, the employer shall instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).*

Recordkeeping

1910.423(d)(1)—*Information shall be **recorded** and maintained for each diving operation. [Note: Reference paragraph (d) for specific information.]*

1910.423(d)(2)—*For each dive outside the no-decompression limits, deeper than 100 fsw or using mixed gas, additional information shall be **recorded** and maintained. [Note: 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. [Note: Reference paragraph (d) 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. [Note: Reference paragraph (e) for specific information.]*

Programs, Policies and Procedures

1910.423(e)(1)—*Investigate and evaluate each incident of decompression sickness based on the recorded information, consideration of the past performance of decompression table used, and individual susceptibility. [Note: 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. [*Note: Reference paragraph (e) for specific information.*]

1926.1090—EQUIPMENT

Note: 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

Note: 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 long-shoring.

Exception: *This standard does not apply to any diving operation: performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; or governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects.*

STANDARD HIGHLIGHTS

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

Recordkeeping

1910.430(a)(2)—Each equipment modification, repair, test, calibration or maintenance service *shall be recorded* by means of a tagging or logging system, and include the date and nature of work performed, and the name or initials of the person performing the work.

Programs, Policies and Procedures

1910.430(a)(2)—Each equipment modification, repair, test, calibration or maintenance service *shall be recorded* by means of a tagging or logging system, and include the date and nature of work performed, and the name or initials of the person performing the work.

Inspections and Tests

1910.430(b)(4)—The output of air compressor systems *shall be tested for air purity every 6 months by means of samples* taken at the connection to the distribution system, except that non-oil lubricated compressors need not be tested for oil mist.

1910.430(c)(1)(iii)—*Be tested at least annually to 1.5 times their working pressure.*

1910.430(f)(3)(ii)—Mufflers on intake and exhaust lines, which *shall be regularly inspected* and maintained.

1910.430(g)(2)—Each depth gauge *shall be deadweight tested or calibrated against a master reference gauge every 6 months, and when there is a discrepancy greater than two percent (2 percent) of full scale between any two equivalent gauges.*

29 CFR 1926.1091—RECORDKEEPING REQUIREMENTS

Note: 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

Note: 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 long-shoring.

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** (1910.420), depth-time **profiles** (1910.422), **recordings** of dives (1910.423), decompression procedure assessment **evaluations** (1910.423), and **records** of hospitalizations (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 (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** (1910.420)—current document only.
- **1910.440(b)(3)(iii)**—Depth-time **profile** (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 (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** (1910.423)—5 years.
- **1910.440(b)(3)(vi)**—**Equipment inspections** and testing **records** (1910.430)—current **entry** or tag, or until equipment is withdrawn from service.
- **1910.440(b)(3)(vii)**—**Records** of hospitalizations (1910.440)—5 years.

29 CFR Subpart Z—Toxic and Hazardous Substances

1926.1101—ASBESTOS

Note: 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

- Training and Communications*—multi-employer worksites, awareness training, written opinions
- Signs, Markings and Tags—posted signs, regulated areas
- Other—authorized persons
- Competent Person—duties, exposure assessment, inspections
- Programs, Policies and Procedures—work controls, respirator program, medical surveillance program
- Inspections and Tests—inspections before work and beginning of each shift, tests
- Qualified Person—certified industrial hygienist, licensed professional engineer
- Certification*—written certifications
- Recordkeeping*—retention requirements, records
- Exposure Monitoring*—initial, periodic, and daily monitoring, posted results
- Medical Surveillance*—program, initial and annual inspections

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(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)(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)(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.

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. [**Note:** 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.

Other

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.

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: [Note: 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.*

Programs, Policies and Procedures

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)(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**. [**Note:** 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(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*. [**Note:** 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. [**Note:** Reference paragraph (g)(4) and (g)(5) for specific information.]

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.

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.*

Qualified Person

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.*

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(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)(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)(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. [Note: 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**. [Note: 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. [**Note:** 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*. [**Note:** 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*.

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.

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

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

1926.1103—13 CARCINOGENS (4-NITROBIPHENYL, ETC.)

Note: 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.)

Note: This section applies to any area in which the 13 carcinogens addressed by this section are manufactured, processed, repackaged, released, handled, or stored, but shall not apply to transshipment in sealed containers, except for the labeling requirements under paragraphs (e)(2), (3) and (4) of this section. The 13 carcinogens are the following: 4-Nitrobiphenyl, alpha-Naphthylamine, methyl chloromethyl ether, 3,3'-Dichlorobenzidine (and its salts), bis-Chloromethyl ether, beta-Naphthylamine, Benzidine, 4-Aminodiphenyl, Ethyleneimine, beta-Propiolactone, 2-Acetylaminofluorene, 4-Dimethylaminoazo-benzene, and N-Nitrosodimethylamine.

Exception: The standard does not apply to transshipment in sealed containers except the labeling. It does not apply to solid or liquid mixtures containing less than 0.1 percent by weight or volume of 4-Nitrobiphenyl; methyl chloromethyl ether; bis-chloromethyl ether; beta-Naphthylamine; benzidine or 4-Aminodiphenyl; and solid or liquid mixtures containing less than 1.0 percent by weight or volume of alpha-Naphthylamine; 3,3'-Dichlorobenzidine (and its salts); Ethyleneimine; beta-Propiolactone; 2-Acetylaminofluorene; 4-Dimethylaminoazobenzene, or N-Nitrosodimethylamine.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—respirator program, medical surveillance program, emergency procedures
- Medical Surveillance*—program, initial, annual, and emergency examinations, written opinion
- Signs, Markings and Tags—posted signs, labels, posted emergency procedures
- Training and Communications—initial and annual training
- Recordkeeping*—records

Programs, Policies and Procedures

1910.1003(d)(1)—*Respiratory program.* The employer must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b), (c), (d) (except (d)(1)(iii) and (iv), and (d)(3)), and (e) through (m), which covers each employee required by this section to use a respirator.

1910.1003(e)(5)(i)—Each employee prior to being authorized to enter a regulated area, shall receive a training and indoctrination program [*Note:* Reference paragraph (e) for specific information.]

1910.1003(e)(5)(ii)—Specific emergency **procedures** shall be prescribed, and **posted**, and employees shall be familiarized with their terms, and rehearsed in their application.

1910.1003(g)—*Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

Medical Surveillance

1910.1003(d)(2)(iii)—*Special medical surveillance* by a physician shall be instituted within 24 hours for employees present in the potentially affected area at the time of the emergency.

1910.1003(g)—*Medical surveillance.* At no cost to the employee, a program of medical surveillance shall be established and implemented for employees considered for assignment to enter regulated areas, and for authorized employees.

1910.1003(g)(1)(i)—*Before an employee is assigned to enter a regulated area, a preassignment physical examination by a physician shall be provided.* The examination shall include the personal history of the employee, family and occupational background, including genetic and environmental factors.

1910.1003(g)(1)(ii)—*Authorized employees shall be provided periodic physical examinations, not less often than annually,* following the preassignment examination.

1910.1003(g)(2)(iii)—Any physician who conducts a medical examination required by this paragraph shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [*Note:* Reference paragraph (g) for specific information.]

Communication of Hazards

1910.1003(e)(1)(iii)—Employers shall include the carcinogens listed in paragraph (e)(1)(iv) of this section in the hazard communication program established to comply with the HCS (§ 1910.1200). Employers shall ensure that each employee has access to labels on containers of the carcinogens listed in paragraph (e)(1)(iv) and to safety data sheets, and is *trained* in accordance with the requirements of HCS and paragraph (e)(4) of this section.

Signs

1910.1003(e)(2)(i)—The employer shall *post* entrances to regulated areas with signs bearing the legend.

1910.1003(e)(2)(ii)—The employer shall post signs at entrances to regulated areas containing operations covered in paragraph (c)(5) of this section. The signs shall bear the legend.

1910.1003(e)(2)(v)—Appropriate signs and instructions shall be *posted* at the entrance to, and exit from, regulated areas, informing employees of the procedures that must be followed in entering and leaving a regulated area.

Training and Indoctrination

1910.1003(e)(4)(i)—Each employee prior to being authorized to enter a regulated area, shall receive a *training* and indoctrination program including, but not necessarily limited to:

- **1910.1003(e)(4)(i)(A)**—The nature of the carcinogenic hazards of a carcinogen addressed by this section, including local and systemic toxicity;
- **1910.1003(e)(4)(i)(B)**—The specific nature of the operation involving a carcinogen addressed by this section that could result in exposure;
- **1910.1003(e)(4)(i)(C)**—The purpose for and application of the medical surveillance program, including, as appropriate, methods of self-examination;
- **1910.1003(e)(4)(i)(D)**—The purpose for and application of decontamination practices and purposes;
- **1910.1003(e)(4)(i)(E)**—The purpose for and significance of emergency practices and procedures
- **1910.1003(e)(4)(i)(F)**—The employee’s specific role in emergency procedures;
- **1910.1003(e)(4)(i)(G)**—Specific information to aid the employee in recognition and evaluation of conditions and situations which may result in the release of a carcinogen addressed by this section;
- **1910.1003(e)(4)(i)(H)**—The purpose for and application of specific first aid procedures and practices;
- **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(e)(4)(ii)—Specific emergency procedures shall be prescribed, and posted, and employees shall be familiarized with their terms, and rehearsed in their application.

1910.1003(g)(2)(ii)—*Records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020 (a) through (e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These records shall also be provided upon request to the Director.*

1910.1003(g)(2)(iii)—Any physician who conducts a medical examination required by this paragraph *shall furnish to the employer a statement of the employee’s suitability for employment in the specific exposure. [Note: Reference paragraph (g) for specific information.]*

Recordkeeping

1910.1003(g)(2)(i)—Employers of employees examined pursuant to this paragraph shall cause to be *maintained complete and accurate records of all such medical examinations. Records shall be maintained for the duration of the employee’s employment.*

1910.1003(g)(2)(ii)—*Records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020 (a) through (e) and (g) through (i) [Access to Employee Exposure and Medical Records]. These records shall also be provided upon request to the Director.*

1910.1003(g)(2)(iii)—Any physician who conducts a medical examination required by this paragraph *shall furnish to the employer a **statement** of the employee's suitability for employment in the specific exposure. [Note: Reference paragraph (g) for specific information.]*

1926.1104—ALPHA-NAPHTHYLAMINE

Note: 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

Note: 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)

Note: 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

Note: 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

Note: 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

Note: 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

Note: 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

Note: The requirements applicable to construction work under this section are identical to those set forth at Sec. 1910.1003 [13 Carcinogens] of this chapter.

1926.113—BETA-PROPIOLACTONE

Note: 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

Note: 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

Note: 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

Note: 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

Note: 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

Note: This section includes requirements for the control of employee exposure to vinyl chloride (chloroethene).

Exception: This standard does not apply to the handling or use of fabricated products made of polyvinyl chloride.

STANDARD HIGHLIGHTS

- Programs, Policies and Procedures*—exposure monitoring program, respirator program, emergency plan, medical surveillance program, work practice controls, annual updates
- Exposure Monitoring*—program, monitoring quarterly, measurements, results posted
- Training and Communications*—initially, annually
- Medical Surveillance*—program, examinations, written opinions
- Signs, Markings and Tags—labels
- Recordkeeping*—retention requirements, medical records

Programs, Policies and Procedures

1910.1017(d)(1)—A program of initial monitoring and measurement shall be undertaken in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

1910.1017(d)(2)—Where a determination conducted under paragraph (d)(1)—Monitoring of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, a program for determining exposures for each such employee shall be established. Such a program:

- **1910.1017(d)(2)(i)**—Must be repeated at least quarterly for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.
- **1910.1017(d)(2)(ii)**—Must be repeated not less than every 6 months for any employee exposed without regard to the use of respirators, at or above the action level.

1910.1017(f)(2)—Wherever feasible engineering and work practice controls which can be instituted immediately are not sufficient to reduce exposures to at or below the permissible exposure limit, they shall nonetheless be used to reduce exposures to the lowest practicable level, and shall be supplemented by respiratory protection in accordance with paragraph (g) [Respiratory Protection] of this section. A program shall be established and implemented to reduce exposures to at or below the permissible exposure limit, or to the greatest extent feasible, solely by means of engineering and work practice controls, as soon as feasible.

1910.1017(f)(3)—Such plans must be updated at least annually.

1910.1017(g)(2)—Respirator program. The employer must implement a respiratory protection program in accordance 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), and (d)(3)(iii)(B)(1) and (2)), and (f) through (m) which covers each employee required by this section to use a respirator.

1910.1017(i)—Emergency situations. A written operational plan for emergency situations shall be developed for each facility storing, handling, or otherwise using vinyl chloride as a liquid or compressed gas. Appropriate portions of the plan shall be implemented in the event of an emergency.

1910.1017(j)—Training. Each employee engaged in vinyl chloride or polyvinyl chloride operations shall be provided training in a program relating to the hazards of vinyl chloride and precautions for its safe use. [Note: 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(k)(7)—If the examining physician determines that *alternative medical examinations to those required by paragraph (k)(1) [Medical Surveillance]* of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of *paragraph (k)(1) [Medical Surveillance]* of this section, if the *employer obtains a statement* from the examining physician setting forth the alternative examinations and the rationale for substitution. *This statement shall be available upon request for examination and copying* to authorized representatives of the Assistant Secretary and the Director.

1910.1017(n)—Employee notification of monitoring results. The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results* and the steps being taken to reduce exposures within the permissible exposure limit either individually *in writing or by posting the results* in an appropriate location that is accessible to affected employees.

Exposure Monitoring

1910.1017(d)(1)—A *program of initial monitoring and measurement shall be undertaken* in each establishment to determine if there is any employee exposed, without regard to the use of respirators, in excess of the action level.

1910.1017(d)(2)—Where a determination conducted under *paragraph (d)(1) [Monitoring]* of this section shows any employee exposures, without regard to the use of respirators, in excess of the action level, *a program for determining exposures for each such employee shall be established.* Such a program:

- **1910.1017(d)(2)(i)**—*Must be repeated at least quarterly* for any employee exposed, without regard to the use of respirators, in excess of the permissible exposure limit.
- **1910.1017(d)(2)(ii)**—*Must be repeated not less than every 6 months* for any employee exposed without regard to the use of respirators, at or above the action level.

1910.1017(n)—Employee notification of monitoring results. The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results* and the steps being taken to reduce exposures within the permissible exposure limit either individually *in writing or by posting the results* in an appropriate location that is accessible to affected employees.

Training and Communications

1910.1017(j)—*Training.* Each employee engaged in vinyl chloride or polyvinyl chloride operations *shall be provided training in a program* relating to the hazards of vinyl chloride and precautions for its safe use. [**Note:** Reference paragraph (j) for specific information.]

1910.1017(j)(1)(ix)—*A review of this standard at the employee's first training and indoctrination program, and annually thereafter.*

1910.1017(k)(4)—A *statement of each employee's suitability for continued exposure* to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A *copy of the physician's statement shall be provided each employee.* [**Note:** Reference paragraph (k) for specific information.]

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(n)—Employee notification of monitoring results. The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results* and the steps being taken to reduce exposures within the permissible exposure limit either individually *in writing or by posting the results* in an appropriate location that is accessible to affected employees.

Medical Surveillance

1910.1017(k)—*Medical surveillance. A program of medical surveillance shall be instituted for each employee exposed, without regard to the use of respirators, to vinyl chloride in excess of the action level. The program shall provide each such employee with an opportunity for examinations and tests in accordance with this paragraph. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician, and shall be provided without cost to the employee.*

1910.1017(k)(2)—*Examinations must be provided in accordance with this paragraph at least annually.*

- **1910.1017(k)(2)(i)**—*Every 6 months for each employee who has been employed in vinyl chloride or polyvinyl chloride manufacturing for 10 years or longer.*
- **1910.1017(k)(2)(ii)**—*Annually for all other employees.*

1910.1017(k)(3)—*Each employee exposed to an emergency shall be afforded appropriate medical surveillance.*

1910.1017(k)(4)—*A **statement** of each employee's suitability for continued exposure to vinyl chloride including use of protective equipment and respirators, shall be obtained from the examining physician promptly after any examination. A **copy** of the physician's **statement** shall be provided each employee. [Note: Reference paragraph (k) for specific information.]*

1910.1017(k)(7)—*If the examining physician determines that **alternative medical examinations to those required by paragraph (k)(1) [Medical Surveillance]** of this section will provide at least equal assurance of detecting medical conditions pertinent to the exposure to vinyl chloride, the employer may accept such alternative examinations as meeting the requirements of **paragraph (k)(1) [Medical Surveillance]** of this section, if the employer obtains a **statement** from the examining physician setting forth the alternative examinations and the rationale for substitution. **This statement shall be available upon request for examination and copying** to authorized representatives of the Assistant Secretary and the Director.*

Signs, Markings and Tags

1910.1017(l)(1)(iii)—*Employers shall include vinyl chloride in the hazard communication program established to comply with the HCS (§ 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) of this section.*

Signs

1910.1017(l)(2)(i)—*The employer shall **post** entrances to regulated areas with legible signs bearing the legend.*

1910.1017(l)(2)(ii)—*The employer shall **post** signs at areas containing hazardous operations or where emergencies currently exist. The signs shall be legible and bear the legend.*

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

Recordkeeping

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.*

1926.1118—INORGANIC ARSENIC

Note: 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

Note: This section applies to all occupational exposures to inorganic arsenic except that this section does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.

Exception: This standard does not apply to employee exposures in agriculture or resulting from pesticide application, the treatment of wood with preservatives or the utilization of arsenically preserved wood.

STANDARD HIGHLIGHTS

- Exposure Monitoring*—initially, quarterly and 6 month monitoring, written results posted
- Programs, Policies and Procedures*—compliance program, respirator program, training program, housekeeping and maintenance plan, medical surveillance program
- Medical Surveillance*—initial, examinations, written opinions
- Training and Communications—program, initial and annual training
- Signs, Markings and Tags—posted signs, labels
- Recordkeeping*—retention requirements

Exposure Monitoring

1910.1018(e)(2)—Initial monitoring. Each employer who has a workplace or work operation covered by this standard shall monitor each such workplace and work operation to accurately determine the airborne concentration of inorganic arsenic to which employees may be exposed.

1910.1018(e)(3)(ii)—If the initial monitoring, required by this section, or subsequent monitoring reveals employee exposure to be above the permissible exposure limit, the employer shall repeat monitoring at least quarterly.

1910.1018(e)(3)(iii)—If the initial monitoring, required by this section, or subsequent monitoring reveals employee exposure to be above the action level and below the permissible exposure limit the employer shall repeat monitoring at least every six months.

1910.1018(e)(3)(iv)—The employer shall continue monitoring at the required frequency until at least two consecutive measurements, taken at least seven (7) days apart, are below the action level at which time the employer may discontinue monitoring for that employee until such time as any of the events in paragraph (e)(4) [Additional Monitoring] of this section occur.

1910.1018(e)(4)—Additional monitoring. Whenever there has been a production, process, control or personal change which may result in new or additional exposure to inorganic arsenic, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to inorganic arsenic, additional monitoring which complies with paragraph (e) [Exposure Monitoring] of this section shall be conducted.

1910.1018(e)(5)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to affected employees.

- **1910.1018(e)(5)(ii)**—Whenever the results indicate that the representative employee exposure exceeds the permissible exposure limit, the employer shall include in the **written** notice a **statement** that the permissible exposure limit was exceeded and a description of the corrective action taken to reduce exposure to or below the permissible exposure limit.

Programs, Policies and Procedures

1910.1018(g)(1)(i)—The employer shall institute at the earliest possible time but not later than December 31, 1979, engineering and work practice controls to reduce exposures to or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible.

1910.1018(g)(2)(i)—The employer shall establish and implement a **written** program to reduce exposures to or below the permissible exposure limit by means of engineering and work practice controls.

1910.1018(h)(2)(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.

Medical Surveillance

1910.1018(n)(1)(i)—Employees covered. The employer shall institute a medical surveillance program.

1910.1018(n)(2)—Initial examinations. By December 1, 1978, for employees initially covered by the medical provisions of this section, or thereafter at the time of initial assignment to an area where the employee is likely to be exposed over the action level at least 30 days per year, the employer shall provide each affected employee an opportunity for a medical examination.

1910.1018(n)(3)(i)—Examinations must be provided in accordance with this paragraph at least annually.

1910.1018(n)(3)(ii)—Whenever a covered employee has not taken the examinations specified in paragraphs (n)(2)(i) and (n)(2)(ii) [Initial Examinations] of this section within six (6) months preceding the termination of employment, the employer shall provide such examinations to the employee upon termination of employment.

1910.1018(n)(5)—Information provided to the physician. The employer shall provide information to the examining physician. [Note: Reference paragraph (n)(5) for specific information.]

1910.1018(n)(6)(i)—The employer shall obtain a **written** opinion from the examining physician. [Note: Reference paragraph (n)(6) for specific information.]

1910.1018(n)(6)(iii)—The employer shall provide a copy of the **written** opinion to the affected employee.

Training and Communications

1910.1018(e)(5)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring 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)(5)—Information provided to the physician. The employer shall provide information to the examining physician. [Note: Reference paragraph (n)(5) for specific information.]

1910.1018(n)(6)(i)—The employer shall obtain a **written** opinion from the examining physician. [Note: Reference paragraph (n)(6) for specific information.]

1910.1018(n)(6)(iii)—The employer shall provide a copy of the **written** opinion to the affected employee.

1910.1018(o)(1)(i)—The employer shall train each employee who is subject to exposure to inorganic arsenic above the action level without regard to respirator use, or for whom there is the possibility of skin or eye irritation from inorganic arsenic, in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program. [Note: 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(q)(3)(i)—The employer *shall make available upon request all records required to be maintained by paragraph (q) [Recordkeeping]* of this section to the Assistant Secretary and the Director *for examination and copying*.

1910.1018(q)(3)(ii)—*Records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Employee Exposure and Medical Records]*.

Communication of Hazards

1910.1018(p)(1)(iii)—Employers shall include inorganic arsenic in the hazard communication program established to comply with the HCS (§ 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) of this section.

Signs

1910.1018(p)(2)(i)—The employer shall *post signs* demarcating regulated areas bearing the legend:

Recordkeeping

1910.1018(q)(1)(i)—The employer *shall establish and maintain an accurate record of all monitoring required by paragraph (e) [Exposure Monitoring]* of this section.

1910.1018(q)(1)(iii)—The employer *shall maintain these monitoring records for at least 40 years or for the duration of employment plus 20 years, whichever is longer*.

1910.1018(q)(2)(i)—The employer *shall establish and maintain an accurate record for each employee subject to medical surveillance as required by paragraph (n) [Medical Surveillance]* of this section.

1910.1018(q)(2)(iv)—The employer *shall maintain or assure that the physician maintains those medical records for at least 40 years, or for the duration of employment plus 20 years whichever is longer*.

1910.1018(q)(3)(i)—The employer *shall make available upon request all records required to be maintained by paragraph (q) [Recordkeeping]* of this section to the Assistant Secretary and the Director for examination and copying.

1910.1018(q)(3)(ii)—*Records required by this paragraph shall be provided upon request to employees, designated representatives, and the Assistant Secretary in accordance with 29 CFR 1910.1020(a)-(e) and (g)-(i) [Access to Employee Exposure and Medical Records]*.

1926.1126—CHROMIUM (VI)

Note: *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/m³ as an 8-hour time-weighted average (TWA) under any expected conditions of use.*

STANDARD HIGHLIGHTS

- Exposure Monitoring*—initial, 3 months, and 6 months monitoring, written results, posted
- Programs, Policies and Procedures—work controls, respirator program
- Signs, Markings and Tags—labels
- Medical Surveillance*—initial and annual examinations, emergency and termination examinations
- Training and Communications—employee training, inform launderer
- Recordkeeping*—retention requirements

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.

Programs, Policies 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.

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.

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

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

Recordkeeping

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. [Note: 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 maintain 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. [Note: Reference paragraph (k)(2)(ii) for specific information.]*

1926.1126(k)(2)(iii)—*The employer shall ensure that historical exposure **records** are maintained and made available in accordance with 29 CFR 1910.1020 [Access to Employee Exposure and Medical Records].*

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. [Note: 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. [Note: 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].

1926.1127—CADMIUM

Note: 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

- Exposure Monitoring*—determination, initial and periodic monitoring, written results, posting
- Competent Person—review program
- Markings, Signs and Tags—labels, posting signs, regulated areas
- Other—authorized person
- Programs, Policies and Procedures*—work controls, compliance program, respirator program, emergency action plan
- Medical Surveillance*—program, respirator use, initial and annual examinations
- Training and Communications—hazard communication, records, initial training
- Recordkeeping*—retention requirements
- Inspections and Tests—material testing

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. [Note: Reference paragraph (d)(5)(ii) for more 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(f)(5)(iii)—*A competent person shall review the comprehensive compliance program initially and after each change.*

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.*

Other

1926.1127(e)(3)—Access. Access to regulated areas *shall be limited to authorized persons*.

Programs, Policies 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(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*.

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. [**Note:** 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. [**Note:** Reference paragraph (l)(2)(ii) for specific information.]

1926.1127(l)(2)(ii)(B)—Biological monitoring that includes specific tests. [**Note:** 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. [**Note:** 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.* [**Note:** 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. [Note: 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*. [Note: 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. [Note: 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: [Note: Reference paragraph (l)(13) for specific information.]

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

Recordkeeping

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(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)(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. [**Note:** 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. [**Note:** 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.*

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.*

1926.1128—BENZENE

Note: 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

Note: This section applies to all occupational exposures to benzene.

Exception: *This standard does not apply to the storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities; loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid; containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene; oil and gas drilling, production and servicing operations; coke oven batteries; the cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) [Methods of Compliance], paragraph (e)(1) [Exposure Monitoring—General], and paragraph (e)(6) [Accuracy of Monitoring].*

STANDARD HIGHLIGHTS

- Signs, Markings and Tags—regulated area established
- Exposure Monitoring*—determination, periodic monitoring, posted results
- Programs, Policies and Procedures*—compliance program, respirator program, medical surveillance program, training program
- Medical Surveillance*—program, initial, annual and “other” examinations, written opinion
- Training and Communications*—program initial and annual training
- Recordkeeping*—retention requirements, records

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.*

Exposure Monitoring

1910.1028(e)(1)(i)—*Determinations of employee exposure shall be made from breathing zone air samples that are representative of each employee’s average exposure to airborne benzene.*

1910.1028(e)(2)(ii)—The initial monitoring required under *paragraph (e)(2)(i) [Initial Monitoring]* of this section shall be completed by 60 days after the effective date of this standard or within 30 days of the introduction of benzene into the workplace. Where the employer has monitored within one year prior to the effective date of this standard and the monitoring satisfies all other requirements of this section, the employer may rely on such earlier monitoring results to satisfy the requirements of *paragraph (e)(2)(i) [Initial Monitoring]* of this section.

1910.1028(e)(3)(i)—If the monitoring required by *paragraph (e)(2)(i) [Initial Monitoring]* of this section reveals employee exposure at or above the action level but at or below the TWA, the employer shall repeat such monitoring for each such employee at least every year.

1910.1028(e)(3)(ii)—If the monitoring required by *paragraph (e)(2)(i) [Initial Monitoring]* of this section reveals employee exposure above the TWA, the employer shall repeat such monitoring for each such employee at least every six (6) months.

1910.1028(e)(3)(iv)—Monitoring for the STEL shall be repeated as necessary to evaluate exposures of employees subject to short term exposures.

1910.1028(e)(5)(i)—The employer shall institute the exposure monitoring required under *paragraphs (e)(2) [Initial Monitoring]* and *(e)(3) [Periodic Monitoring and Monitoring Frequency]* of this section when there has been a change in the production, process, control equipment, personnel or work practices which may result in new or additional exposures to benzene, or when the employer has any reason to suspect a change which may result in new or additional exposures.

1910.1028(e)(5)(ii)—Whenever spills, leaks, ruptures or other breakdowns occur that may lead to employee exposure, the employer shall monitor (using area or personal sampling) after the cleanup of the spill or repair of the leak, rupture or other breakdown to ensure that exposures have returned to the level that existed prior to the incident.

1910.1028(e)(7)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to employees.

Programs, Policies and Procedures

1910.1028(f)(2)(i)—When any exposures are over the PEL, the employer shall establish and implement a **written** program to reduce employee exposure to or below the PEL primarily by means of engineering and work practice controls, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section.

1910.1028(f)(2)(ii)—The **written** program shall include a schedule for development and implementation of the engineering and work practice controls. These plans shall be reviewed and revised as appropriate based on the most recent exposure monitoring data, to reflect the current status of the program.

1910.1028(g)(2)(i)—The employer must implement a respiratory protection program in accordance with *Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1) and (2)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

1910.1028(i)(1)(i)—The employer shall make available a medical surveillance program for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

1910.1028(i)(3)(iii)—For persons required to use respirators for at least 30 days a year, a pulmonary function test shall be performed every three (3) years. A specific evaluation of the cardiopulmonary system shall be made at the time of the pulmonary function test.

1910.1028(j)(3)(ii)—The training program shall be in accordance with the requirements of *29 CFR 1910.1200(h)(1) and (2) [Hazard Communication]* and shall include specific information on benzene for each category of information included in that section.

Medical Surveillance

1910.1028(i)(1)(i)—The employer *shall make available a medical surveillance program* for employees who are or may be exposed to benzene at or above the action level 30 or more days per year; for employees who are or may be exposed to benzene at or above the PELs 10 or more days per year; for employees who have been exposed to more than 10 ppm of benzene for 30 or more days in a year prior to the effective date of the standard when employed by their current employer; and for employees involved in the tire building operations called tire building machine operators, who use solvents containing greater than 0.1 percent benzene.

1910.1028(i)(3)(i)—The employer shall provide each employee covered under *paragraph (i)(1)(i) [Medical Surveillance]* of this section with a *medical examination annually* following the previous examination.

1910.1028(i)(4)(i)—In addition to the surveillance required by *paragraph (i)(1)(i) [Medical Surveillance]*, if an employee is exposed to benzene in an emergency situation, the employer *shall have the employee provide a urine sample at the end of the employee's shift and have a urinary phenol test performed on the sample within 72 hours*. The urine specific gravity shall be corrected to 1.024.

1910.1028(i)(5)(i)—Where the results of the complete blood count required for the initial and periodic examinations indicate any of the following abnormal conditions exist, then the blood count *shall be repeated within 2 weeks*.

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

1910.1028(i)(7)(i)—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days of the examination*.

1910.1028(i)(8)(ii)—*Following the examination and evaluation* by the hematologist/internist, a *decision to remove an employee* from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This *decision shall be communicated in writing to the employer and employee*. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

Training and Communications

1910.1028(i)(1)(iii)—The employer shall assure that persons other than licensed physicians who administer the pulmonary function testing required by this section *shall complete a training course in spirometry* sponsored by an appropriate governmental, academic or professional institution.

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

1910.1028(i)(7)(i)—For each examination under this section, the employer *shall obtain and provide the employee with a copy of the examining physician's written opinion within 15 days of the examination*.

1910.1028(i)(8)(ii)—*Following the examination and evaluation* by the hematologist/internist, a *decision to remove an employee* from areas where benzene exposure is above the action level or to allow the employee to return to areas where benzene exposure is above the action level shall be made by the physician in consultation with the hematologist/internist. This *decision shall be communicated in writing to the employer and employee*. In the case of removal, the physician shall state the required probable duration of removal from occupational exposure to benzene above the action level and the requirements for future medical examinations to review the decision.

1910.1028(i)(8)(iv)—Whenever an employee is temporarily removed from benzene exposure pursuant to *paragraph (i)(8)(i) or (i)(8)(ii) [Medical Removal Plan]* of this section, the employer shall transfer the employee to a comparable job for which the employee is qualified (*or can be trained for in a short period*) and where benzene exposures are as low as possible, but in no event higher than the action level. The employer shall maintain the employee's current wage rate, seniority and other benefits. If there is no such job available, the employer shall provide medical removal protection benefits until such a job becomes available or for 6 months, whichever comes first.

1910.1028(i)(8)(v)—Whenever an employee is removed permanently from benzene exposure based on a physician's recommendation pursuant to *paragraph (i)(8)(iii) [Medical Removal Plan]* of this section, the employee shall be given the opportunity to transfer to another position which is available or later becomes available for which the employee is

qualified (*or can be trained for in a short period*) and where benzene exposures are as low as possible but in no event higher than the action level. The employer shall assure that such employee suffers no reduction in current wage rate, seniority or other benefits as a result of the transfer.

1910.1028(j)(3)(i)—The employer shall provide employees with **information** and training at the time of their initial assignment to a work area where benzene is present. If exposures are above the action level, employees shall be provided with **information** and training at least annually thereafter. [**Note:** Reference paragraph (j)(3) for specific information.]

Recordkeeping

1910.1028(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**].

1926.1129—COKE OVEN EMISSIONS

Note: 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

Note: 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.

STANDARD HIGHLIGHTS

- Exposure Monitoring*—monitoring every 3 months, after new process or change, posted results
- Programs, Policies and Procedures*—written work practice controls, inspection program, respirator program, medical surveillance program
- Inspections and Tests—inspection program, system, corrective action
- Training and Communications*—inform launderers, instruct physician, initial and annual training
- Medical Surveillance*—program, initial, annual, and “other” examinations
- Signs, Markings and Tags—labels, posted, regulated areas
- Recordkeeping*—retention requirements

Exposure Monitoring

1910.1029(e)(1)(i)—Each employer who has a place of employment where coke oven emissions are present shall monitor employees employed in the regulated area to measure their exposure to coke oven emissions.

1910.1029(e)(1)(iv)—The employer shall repeat the monitoring and measurements required by this paragraph (e)(1) [Monitoring Program] at least every three months.

1910.1029(e)(2)—**Redetermination.** Whenever there has been a production, process, or control change which may result in new or additional exposure to coke oven emissions, or whenever the employer has any other reason to suspect an increase in employee exposure, the employer shall repeat the monitoring and measurements required by paragraph (e)(1) [Monitoring Program] of this section for those employees affected by such change or increase.

1910.1029(e)(3)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to employees.

Programs, Policies and Procedures

1910.1029(f)(1)(i)(a)—The employer shall institute the engineering and work practice controls listed in paragraphs (f)(2), (f)(3) and (f)(4) [Priority of Compliance Methods] of this section in existing coke oven batteries at the earliest possible time, but not later than January 20, 1980, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.

1910.1029(f)(1)(ii)(a)—The employer shall institute the best available engineering and work practice controls on all new or rehabilitated coke oven batteries to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.

1910.1029(f)(1)(iii)(a)—The employer shall institute engineering and work practice controls on all beehive ovens at the earliest possible time to reduce and maintain employee exposures at or below the permissible exposure limit, except to the extent that the employer can establish that such controls are not feasible. In determining the earliest possible time for institution of engineering and work practice controls, the requirement, effective August 27, 1971, to implement feasible administrative or engineering controls to reduce exposures to coal tar pitch volatiles, shall be considered. Wherever the engineering and work practice controls which can be instituted are not sufficient to reduce employee exposures to or below the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls and shall supplement them by the use of respiratory protection which complies with the requirements of paragraph (g) [Respiratory Protection] of this section.

1910.1029(f)(3)(i)(b)—Establishment and implementation of a detailed **written** charging procedure, designed and operated to eliminate emissions during charging for each battery.

1910.1029(f)(3)(i)(c)—Establishment and implementation of a detailed **written** charging procedure, designed and operated to eliminate emissions during charging of each pipeline or enclosed charged battery.

1910.1029(f)(3)(ii)(d)—An inspection system and corrective action program to control door emissions to the maximum extent possible.

1910.1029(f)(3)(iv)—Maintenance and repair. The employer shall operate existing coke oven batteries pursuant to a detailed **written** procedure of maintenance and repair established and implemented for the effective control of coke oven emissions consisting of specific elements. [**Note:** 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.

Inspections and Tests

1910.1029(f)(3)(i)(a)(2)—*Inspection and cleaning* of goosenecks and standpipes prior to each charge to a specified minimum diameter sufficient to effectively move the evolved gases from the oven to the collector mains.

1910.1029(f)(3)(i)(a)(3)—*Inspection* for roof carbon build-up prior to each charge and removal of roof carbon as necessary to provide an adequate gas channel so that the gases are effectively moved from the oven into the collector mains.

1910.1029(f)(3)(i)(a)(4)—*Inspection* of the steam aspiration system prior to each charge so that sufficient pressure and volume is maintained to effectively move the gases from the oven to the collector mains.

1910.1029(f)(3)(i)(a)(5)—*Inspection* of steam nozzles and liquor sprays prior to each charge and cleaning as necessary so that the steam nozzles and liquor sprays are clean.

1910.1029(f)(3)(i)(a)(6)—*Inspection* of standpipe caps prior to each charge and cleaning and luting or both as necessary so that the gases are effectively moved from the oven to the collector mains.

1910.1029(f)(3)(i)(a)(7)—*Inspection* of charging holes and lids for cracks, warpage and other defects prior to each charge and removal of carbon to prevent emissions, and application of luting material to standpipe and charging hole lids where necessary to obtain a proper seal.

1910.1029(f)(3)(ii)(d)—An inspection system and corrective action program to control door emissions to the maximum extent possible.

1910.1029(f)(3)(iii)(b)(4)—*Inspection, adjustment and correction* of heating flue temperatures and defective flues at least weekly and after any green push, so as to prevent green pushes.

1910.1029(f)(3)(iv)(a)—*Regular inspection* of all controls, including goosenecks, standpipes, standpipe caps, charging hold lids and castings, jumper pipes and air seals for cracks, misalignment or other defects and prompt implementation of the necessary repairs as soon as possible.

1910.1029(f)(3)(iv)(c)—*Regular inspection* of the damper system, aspiration system and collector main for cracks or leakage, and prompt implementation of the necessary repairs.

1910.1029(f)(3)(iv)(d)—*Regular inspection* of the heating system and prompt implementation of the necessary repairs.

1910.1029(f)(3)(iv)(f)—*Regular inspection* and patching of oven brickwork.

1910.1028(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.

Training and Communications

1910.1029(e)(3)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to employees.

1910.1029(h)(2)(vi)—The employer shall inform any person who cleans or launders protective clothing required by this section, of the potentially harmful effects of exposure to coke oven emissions.

1910.1029(j)(1)(iii)—The employer shall inform any employee who refuses any required medical examination of the possible health consequences of such refusal and shall obtain a **signed** statement from the employee indicating that the employee understands the risk involved in the refusal to be examined.

1910.1029(j)(4)—**Information** provided to the physician. The employer shall provide information to the examining physician. [**Note:** Reference paragraph (j)(4) for specific information.]

1910.1029(j)(5)(i)—The employer shall obtain a **written** opinion from the examining physician. [**Note:** 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(k)(1)(i)—The employer shall train each employee who is employed in a regulated area in accordance with the requirements of this section. The employer shall institute a training program and ensure employee participation in the program.

1910.1029(k)(1)(ii)—The training program shall be provided as of January 27, 1977 for employees who are employed in the regulated area at that time or at the time of initial assignment to a regulated area. [**Note:** 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.

Medical Surveillance

1910.1029(j)(1)(i)—Each employer shall institute a medical surveillance program for all employees who are employed in a regulated area at least 30 days per year.

1910.1029(j)(1)(ii)—This program shall provide each employee covered under paragraph (j)(1)(i) [Medical Surveillance] of this section with an opportunity for medical examinations in accordance with this paragraph (j) [Medical Surveillance]. [**Note:** 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 [**Note:** Reference paragraph (j)(2) for specific information.]

1910.1029(j)(3)(i)—The employer shall provide the examinations specified in paragraphs (j)(2)(i)-(vi) [Initial Examinations] of this section at least annually for employees covered under paragraph (j)(1)(i) [Medical Surveillance] of this section.

1910.1029(j)(3)(ii)—The employer must provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually for employees 45 years of age or older or with five (5) or more years employment in the regulated area.

1910.1029(j)(3)(iii)—Whenever an employee who is 45 years of age or older or with five (5) or more years employment in a regulated area transfers or is transferred from employment in a regulated area, the employer must continue to provide the examinations specified in paragraphs (j)(2)(i) through (j)(2)(vii) [Initial Examinations] of this section at least annually as long as that employee is employed by the same employer or a successor employer.

1910.1029(j)(3)(iv)—Whenever an employee has not taken the examinations specified in paragraphs (j)(3)(i)-(iii) [Periodic Examinations] of this section with the six (6) months preceding the termination of employment the employer shall provide such examinations to the employee upon termination of employment.

1910.1029(j)(4)—**Information** provided to the physician. The employer shall provide **information** to the examining physician. [**Note:** Reference paragraph (j)(4) for specific information.]

1910.1029(j)(5)(i)—The employer shall obtain a **written** opinion from the examining physician. [**Note:** Reference paragraph (j)(5)(i) for specific information.]

1910.1029(j)(5)(iii)—The employer shall provide a **copy** of the **written** opinion to the affected employee.

Signs, Markings and Tags

1910.1029(d)(1)—The employer shall establish regulated areas and shall limit access to them to authorized persons.

1910.1029(l)(2)(i)—The employer shall post signs in the regulated area bearing the legends.

1910.1029(l)(3)—*Labels. The employer shall apply precautionary labels to all containers of protective clothing contaminated with coke oven emissions bearing the legend.*

Recordkeeping

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(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. [Note: Reference paragraph (m)(1) for specific information.]*

1910.1029(m)(1)(ii)—The employer shall maintain this **record** for at least 40 years or for the duration of employment plus 20 years, whichever is longer.

1910.1029(m)(2)—*Medical surveillance. The employer shall establish and maintain an accurate record for each employee subject to medical surveillance as required by paragraph (j) [Medical Surveillance] of this section. [Note: 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**].

1926.1144—1,2-DIBROMO-3-CHLOROPROPANE

Note: 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

Note: This section applies to occupational exposure to 1,2-dibromo-3-chloropropane (DBCP).

Exception: This standard does not apply to: exposure to DBCP which results solely from the application and use of DBCP as a pesticide; or the storage, transportation, distribution or sale of DBCP in intact containers sealed in such a manner as to prevent exposure to DBCP vapors or liquid.

STANDARD HIGHLIGHTS

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

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(i)(6)(i)—*Following an emergency, the employer shall conduct monitoring which complies with paragraph (f) [Exposure Monitoring] of this section.*

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.*

Programs, Policies and Procedures

1910.1044(g)(1)—Priority of compliance methods. The employer *shall institute engineering and work practice controls* to reduce and maintain employee exposures to DBCP at or below the permissible exposure limit, except to the extent that the employer establishes that such controls are not feasible. Where feasible engineering and work practice controls are not sufficient to reduce employee exposures to within the permissible exposure limit, the employer shall nonetheless use them to reduce exposures to the lowest level achievable by these controls, and shall supplement them by use of respiratory protection.

1910.1044(g)(2)(i)—The employer *shall establish and implement a written program* to reduce employee exposures to DBCP to or below the permissible exposure limit solely by means of engineering and work practice controls as required by *paragraph (g)(1) [Methods of Compliance]* of this section.

1910.1044(h)(2)—*Respirator program.* The employer *must implement a respiratory protection program in accordance with Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii)), and (f) through (m),* which covers each employee required by this section to use a respirator.

1910.1044(i)(1)(i)—A *written plan for emergency situations shall be developed* for each workplace in which DBCP is present.

1910.1044(m)(1)(i)—The employer *shall make available a medical surveillance program* for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. [*Note: 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.

Medical Surveillance

1910.1044(i)(5)—*Medical surveillance.* For any employee exposed to DBCP in an emergency situation, the employer *shall provide medical surveillance in accordance with paragraph (m)(6)—[Emergency Situations]* of this section.

1910.1044(m)(1)(i)—The employer *shall make available a medical surveillance program* for employees who work in regulated areas and employees who are subjected to DBCP exposures in an emergency situation. [*Note: 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. [**Note:** Reference paragraph (m)(4) for specific information.]

1910.1044(m)(5)(i)—For each examination under this section, the employer shall obtain and provide the employee with a **written** opinion from the examining physician.

1910.1044(m)(6)—Emergency situations. If the employee is exposed to DBCP in an emergency situation, the employer shall provide the employee with a sperm count test as soon as practicable, or, if the employee has been vasectomized or is unable to produce a semen specimen, the hormone tests contained in paragraph (m)(2)(iii) [Medical Surveillance] of this section. The employer shall provide these same tests three months later.

Training and Communications

1910.1044(f)(5)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to employees.

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

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.

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(o)(1)(i)—The employer may use labels or signs required by other statutes, regulations, or ordinances in addition to or in combination with, signs and labels required by this paragraph.

1910.1044(o)(3)(i)—The employer shall assure that precautionary labels are affixed to all containers of DBCP and of products containing DBCP in the workplace, and that the labels remain affixed when the DBCP or products containing DBCP are sold, distributed, or otherwise leave the employer's workplace. Where DBCP or products containing DBCP are sold, distributed or otherwise leave the employer's workplace bearing appropriate labels required by EPA under the regulations in 40 CFR Part 162, the labels required by this paragraph (o)(3) need not be affixed.

Recordkeeping

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]*.

1926.1145—ACRYLONITRILE

Note: 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

Note: This section applies to occupational exposure to acrylonitrile.

Exception: *This standard does not apply to exposures which result solely from the processing, use, and handling of the following materials: ABS resins, SAN resins, nitrile barrier resins, solid nitrile elastomers, and acrylic and modacrylic fibers, when these listed materials are in the form of finished polymers, and products fabricated from such finished polymers; materials made from and/or containing AN for which objective data is reasonably relied upon to demonstrate that the material is not capable of releasing AN in airborne concentrations in excess of 1 ppm as an eight (8)-hour time-weighted average, under the expected conditions of processing, use, and handling which will cause the greatest possible release; and solid materials made from and/or containing AN which will not be heated above 170 °F during handling, use, or processing.*

STANDARD HIGHLIGHTS

- Exposure Monitoring*—initially, every 6 months, and quarterly monitoring, posted results
- Programs, Policies and Procedures*—work controls, compliance program, respirator program, action plan, medical surveillance program, training program
- Medical Surveillance*—program, initial, annual, termination and “other” examinations
- Training and Communications*—training program, initial and annual training
- Signs, Markings and Tags—posted signs, labels
- Recordkeeping*—retention requirements, records

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 apart, are below the action level, and thereafter the employer may discontinue monitoring for that employee.

1910.1045(e)(3)(iii)—If the monitoring required by this section reveals employee exposure to be in excess of the permissible exposure limits, the employer must repeat these determinations for each such employee *at least quarterly. The employer must continue these quarterly measurements until* at least two consecutive measurements, taken at least seven (7) days apart, are at or below the permissible exposure limits, and thereafter the employer *must monitor at least every 6 months.*

1910.1045(e)(4)—*Additional monitoring.* Whenever there has been a production, process, control, or personnel change which may result in new or additional exposures to AN, or whenever the employer has any other reason to suspect a change which may result in new or additional exposures to AN, *additional monitoring which complies with this paragraph shall be conducted.*

1910.1045(e)(5)(i)—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in writing or by posting the results* in an appropriate location that is accessible to employees.

Programs, Policies and Procedures

1910.1045(g)(1)(i)—By November 2, 1980, the employer *shall institute engineering and work practice controls* to reduce and maintain employee exposures to AN, to or below the permissible exposure limits, except to the extent that the employer establishes that such controls are not feasible.

1910.1045(g)(2)(i)—The employer *shall establish and implement a **written** program* to reduce employee exposures to or below the permissible exposure limits solely by means of engineering and work practice controls, as required by *paragraph (g)(1) [Engineering and Work Practice Controls] of this section. [Note: Reference paragraph (g) for specific information.]*

1910.1045(g)(2)(v)—The plans required by this paragraph *must be revised and updated at least annually* to reflect the current status of the program.

1910.1045(h)(2)(i)—The employer *must implement a respiratory protection program in accordance with Sec. 1910.134 [Respiratory Protection] (b) through (d) (except (d)(1)(iii), (d)(3)(iii)(b)(1), and (2)), and (f) through (m)*, which covers each employee required by this section to use a respirator.

1910.1045(i)(1)(i)—A *written plan for emergency situations shall be developed* for each workplace where liquid AN is present. Appropriate portions of the plan shall be implemented in the event of an emergency.

1910.1045(n)(1)(i)—The employer *shall institute a program of medical surveillance* for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer *shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph. [Note: Reference paragraph (n) for specific information.]*

1910.1045(o)(1)(i)—The employer *shall train each employee* exposed to AN above the action level, each employee whose exposures are maintained below the action level by engineering and work practice controls, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer *shall institute a training program* and ensure employee participation in the program. *[Note: Reference paragraph (o)(1)(ii) for specific information.]*

Medical Surveillance

1910.1045(n)(1)(i)—The employer *shall institute a program of medical surveillance* for each employee who is or will be exposed to AN at or above the action level, without regard to the use of respirators. The employer *shall provide each such employee with an opportunity for medical examinations and tests in accordance with this paragraph. [Note: Reference paragraph (n) for specific information.]*

1910.1045(n)(2)—*Initial examinations. At the time of initial assignment, or upon institution of the medical surveillance program, the employer shall provide each affected employee an opportunity for a medical examination.*

1910.1045(n)(3)(i)—The employer *shall provide the examinations specified in paragraph (n)(2) [Initial Examinations] of this section at least annually* for all employees specified in *paragraph (n)(1) [Medical Surveillance]* of this section.

1910.1045(n)(3)(ii)—If an employee has not had the examination specified in *paragraph (n)(2) [Initial Examinations] of this section within 6 months preceding termination of employment, the employer shall make such examination available to the employee prior to such termination.*

1910.1045(n)(4)—*Additional examinations.* If the employee for any reason develops signs or symptoms which may be associated with exposure to AN, the employer *shall provide an appropriate examination* and emergency medical treatment.

1910.1045(n)(5)—*Information provided to the physician.* The employer *shall provide **information** to the examining physician. [Note: Reference paragraph (n)(5) for information.]*

1910.1045(n)(6)(i)—The employer *shall obtain a **written** opinion* from the examining physician.

1910.1045(n)(6)(iii)—The employer *shall provide a **copy** of the **written** opinion* to the affected employee.

Training and Communications

1910.1045(e)(5)(i)—The employer *must, within 15 working days after the receipt of the results* of any monitoring performed under this section, *notify each affected employee of these results either individually in **writing** or by **posting** the results* in an appropriate location that is accessible to employees.

1910.1045(j)(2)(v)—The employer *shall inform any person who launders or cleans protective clothing or equipment* of the potentially harmful effects of exposure to AN.

1910.1045(n)(5)—*Information provided to the physician. The employer shall provide information to the examining physician. [Note: Reference paragraph (n)(5) for information.]*

1910.1045(n)(6)(i)—The employer *shall obtain a **written** opinion* from the examining physician.

1910.1045(n)(6)(ii)—The employer *shall instruct the physician* not to reveal in the written opinion specific findings or diagnoses unrelated to occupational exposure to AN.

1910.1045(n)(6)(iii)—The employer *shall provide a **copy** of the **written** opinion* to the affected employee.

1910.1045(o)(1)(i)—The employer *shall train each employee* exposed to AN above the action level, each employee whose exposures are maintained below the action level by engineering and work practice controls, and each employee subject to potential skin or eye contact with liquid AN in accordance with the requirements of this section. The employer *shall institute a training program* and ensure employee participation in the program. [Note: 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.*

Signs, Markings and Tags

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(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(p)(2)(i)—The employer *shall post signs* to clearly indicate all workplaces where AN concentrations exceed the permissible exposure limits.

1910.1045(p)(3)(i)—The employer *shall assure that precautionary labels are affixed* to all containers of liquid AN and AN-based materials not exempted under *paragraph (a)(2) [Scope]* of this standard. The employer *shall assure that the labels remain affixed* when the materials are sold, distributed, or otherwise leave the employer's workplace.

Recordkeeping

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].

1926.1147—ETHYLENE OXIDE

Note: 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

Note: 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, and may not reasonably be foreseen to release EtO in excess of the excursion limit, under the expected conditions of processing, use, or handling that will cause the greatest possible release.

STANDARD HIGHLIGHTS

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

Exposure Monitoring

1910.1047(d)(1)(i)—Determinations of employee exposure shall be made from breathing zone air samples that are representative of the 8-hour TWA and 15-minute short-term exposures of each employee.

1910.1047(d)(1)(iii)—Where the employer can document that exposure levels are equivalent for similar operations in different work shifts, the employer need only determine representative employee exposure for that operation during one shift.

1910.1047(d)(2)(i)—Each employer who has a workplace or work operation covered by this standard, except as provided for in paragraph (a)(2) [Scope] or (d)(2)(ii) [Initial Monitoring] of this section, shall perform initial monitoring to determine accurately the airborne concentrations of EtO to which employees may be exposed.

1910.1047(d)(3)(i)—If the monitoring required by paragraph (d)(2) [Initial Monitoring] of this section reveals employee exposure at or above the action level but at or below the 8-hour TWA, the employer shall repeat such monitoring for each such employee at least every 6 months.

1910.1047(d)(3)(ii)—If the monitoring required by paragraph (d)(2)(i) [Initial Monitoring] of this section reveals employee exposure above the 8-hour TWA, the employer shall repeat such monitoring for each such employee at least every 3 months.

1910.1047(d)(3)(iii)—The employer may alter the monitoring schedule from quarterly to semiannually for any employee for whom two consecutive measurements taken at least 7 days apart indicate that the employee's exposure has decreased to or below the 8-hour TWA.

1910.1047(d)(3)(iv)—If the monitoring required by paragraph (d)(2)(i) [Initial Monitoring] of this section reveals employee exposure above the 15 minute excursion limit, the employer shall repeat such monitoring for each such employee at least every 3 months, and more often as necessary to evaluate exposure the employee's short-term exposures.

1910.1047(d)(5)—Additional monitoring. Notwithstanding the provisions of paragraph (d)(4) [Termination of Monitoring] of this section, the employer shall institute the exposure monitoring required under paragraphs (d)(2)(i) [Initial Monitoring] and (d)(3) [Monitoring Frequency] of this section whenever there has been a change in the production, process, control equipment, personnel or work practices that may result in new or additional exposures to EtO or when the employer has any reason to suspect that a change may result in new or additional exposures.

1910.1047(d)(7)(i)—The employer *must, within 15 working days after the receipt* of the results of any monitoring performed under this section, *notify each affected employee of these results either individually in **writing** or by **posting*** the results in an appropriate location that is accessible to employees.

Programs, Policies and Procedures

1910.1047(f)(1)(i)—The employer *shall institute engineering controls and work practices* to reduce and maintain employee exposure to or below the TWA and to or below the excursion limit, except to the extent that such controls are not feasible.

1910.1047(f)(2)(i)—Where the TWA or excursion limit is exceeded, the employer *shall establish and implement a **written** program* to reduce employee exposure to or below the TWA and to or below the excursion limit by means of engineering and work practice controls, as required by *paragraph (f)(1) [Engineering and Work Practice Controls]* of this section, and by the use of respiratory protection where required or permitted under this section.

1910.1047(f)(2)(iii)—*Written plans for a program required in paragraph (f)(2) [Compliance Program] shall be **developed*** and furnished upon request for examination and **copying** to the Assistant Secretary, the Director, affected employees and designated employee representatives. Such plans *shall be reviewed at least every 12 months, and shall be updated as necessary to reflect significant changes in the status of the employer's compliance program.*

1910.1047(g)(2)—*Respirator program. The employer must implement a respiratory protection program in accordance with 1910.134 [Respiratory Protection] (b) through (d) (except (d)(i)(iii)), and (f) through (m), which covers each employee required by this section to use a respirator.*

1910.1047(h)(1)(i)—A **written plan for emergency situations shall be developed** for each workplace where there is a possibility of an emergency. Appropriate portions of the plan shall be implemented in the event of an emergency.

- **1910.1047(h)(1)(iii)**—*The plan shall include the elements prescribed in 29 CFR 1910.38 and 29 CFR 1910.39, “Emergency action plans” and “Fire prevention plans,” respectively.*

1910.1047(i)(1)(i)(A)—The employer *shall institute a medical surveillance program* for all employees who are or may be exposed to EtO at or above the action level, without regard to the use of respirators, for at least 30 days a year.

1910.1047(j)(2)—**Safety data sheets.** Employers who are manufacturers or importers of EtO shall comply with the requirements *regarding development of **safety data sheets** as specified in 29 CFR 1910.1200(g) of OSHA's Hazard Communication standard.*

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

1910.1047(i)(4)(i)—The employer shall obtain a **written** opinion from the examining physician. This **written** opinion shall contain the results of the medical examination. [Note: Reference paragraph (i)(4)(i) for specifics.]

1910.1047(i)(4)(iii)—The employer shall provide a **copy** of the physician's **written** opinion to the affected employee within 15 days from its receipt.

Training and Communications

1910.1047(d)(7)(i)—The employer must, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results either individually in **writing** or by **posting** the results in an appropriate location that is accessible to employees.

1910.1047(i)(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.*

1910.1047(i)(3)—*Information provided to the physician. The employer shall provide **information** to the examining physician as specified in the standard. [Note: Reference paragraph (j)(3)(ii) for specific.]*

1910.1047(i)(4)(i)—The employer shall obtain a **written** opinion from the examining physician. This **written** opinion shall contain the results of the medical examination. [Note: Reference paragraph (i)(4)(i) for specifics.]

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)(3)(i)—The employer shall provide employees who are potentially exposed to EtO at or above the action level or above the excursion limit with **information** and training on EtO at the time of initial assignment and at least annually thereafter. [Note: Reference paragraph (j)(3)(ii) for specific information.]

- **1910.1047(j)(3)(iii)(D)**—The details of the hazard communication program developed by the employer, including an explanation of the labeling system and how employees can obtain and use the appropriate hazard information.

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)(i)—The employer shall post and maintain legible signs demarcating regulated areas and entrances or accessways to regulated areas.

1910.1047(j)(1)(ii)—The employer shall ensure that precautionary 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, reaction vessels, storage tanks, and pipes or piping systems are not considered to be containers. The labels shall comply with the requirements of 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard.

Recordkeeping

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].*

1926.1148—FORMALDEHYDE

Note: 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

Note: This standard applies to occupational exposure to formaldehyde, its solutions, and materials that release formaldehyde.

STANDARD HIGHLIGHTS

- Exposure Monitoring*—periodic monitoring, posted results
- Programs, Policies and Procedures*—work controls, respirator program, housekeeping program, medical surveillance program, hazard communication program, training program, preventive maintenance
- Inspections and Tests—pulmonary function tests
- Signs, Markings and Tags—regulated areas, posted signs, labels
- Medical Surveillance*—questionnaires, initial and annual examinations
- Training and Communications Program*—training program, initial and annual training
- Recordkeeping*—retention requirements

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.

Programs, Policies and Procedures

1910.1048(f)(1)—Engineering controls and work practices. The employer shall institute engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

1910.1048(g)(2)(i)—The employer must implement a respiratory protection program in accordance with 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.

1910.1048(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 (FEV₁), and forced expiratory flow (FEF).

1910.1048(j)—Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

1910.1048(j)(1)—Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

1910.1048(k)—Emergencies. For each workplace where there is the possibility of an emergency involving formaldehyde, the employer shall assure appropriate procedures are adopted to minimize injury and loss of life. Appropriate procedures shall be implemented in the event of an emergency.

1910.1048(l)(1)(i)—The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. [**Note:** Reference paragraph (l) for specific information.]

Communication of Hazards

1910.1048(m)(1)(iii)—Employers shall include formaldehyde in the hazard communication program established to comply with the HCS (§ 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) of this section.

Labels

1910.1048(m)(2)(i)—In addition to the requirements in paragraphs (m)(1) through (m)(1)(iv) of this section, for materials listed in paragraph (m)(1)(iv) capable of releasing formaldehyde at levels above 0.5 ppm, labels shall appropriately address all hazards as defined in paragraph (d) of § 1910.1200 and Appendices A and B to § 1910.1200, including cancer and respiratory sensitization, and shall contain the hazard statement “May Cause Cancer.”

1910.1048(m)(2)(ii)—As a minimum, for all materials listed in paragraph (m)(1)(i) and (iv) of this section capable of releasing formaldehyde at levels of 0.1 ppm to 0.5 ppm, labels shall identify that the product contains formaldehyde;

list the name and address of the responsible party; and state that physical and health hazard information is readily available from the employer and from **safety data sheets**.

1910.1048(m)(4)(i)—Any employer who uses formaldehyde-containing materials listed in *paragraph (m)(1)(i) [Hazard Communication]* shall comply with the requirements of 29 CFR 1910.1200(g) [**Safety Data Sheets**] with regard to the development and updating of **safety data sheets**.

1910.1048(m)(4)(ii)—Manufacturers, importers, and distributors of formaldehyde-containing materials listed in *paragraph (m)(1)(i) [Hazard Communication]* shall assure that **safety data sheets** and updated **information** are provided to all employers purchasing such materials at the time of the initial shipment and at the time of the first shipment after a **safety data sheet** is updated.

1910.1048(m)(5)—**Written hazard communication program.** The employer shall develop, implement, and maintain at the workplace, a **written hazard communication program** for formaldehyde exposures in the workplace, which at a minimum describes how the requirements specified in this paragraph for labels and other forms of warning and **safety data sheets**, and *paragraph (n) [Employee Information and Training]* for employee information and training, will be met. Employers in multi-employer workplaces shall comply with the requirements of 29 CFR 1910.1200(e)(2) [*Hazard Communication*].

1910.1048(n)(1)—Participation. The employer shall assure that all employees who are assigned to workplaces where there is exposure to formaldehyde participate in a training program, except that where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training. [**Note:** Reference *paragraph (n)(3)* for specific information.]

Inspections and Tests

1910.1048(j)—Housekeeping. For operations involving formaldehyde liquids or gas, the employer shall conduct a program to detect leaks and spills, including regular visual inspections.

1910.1048(j)(1)—Preventative maintenance of equipment, including surveys for leaks, shall be undertaken at regular intervals.

Signs, Markings and Tags

1910.1048(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(e)(1)—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.

1910.1048(h)(2)(ii)—When ventilating formaldehyde-contaminated clothing and equipment, the employer shall establish a storage area so that employee exposure is minimized. Containers for contaminated clothing and equipment and storage areas shall have labels and signs.

1910.1048(m)(3)(i)—The employer shall assure that hazard warning labels complying with the requirements of 29 CFR 1910.1200(f) [*Labels and Other Forms of Warning*] are affixed to all containers of materials listed in *paragraph (m)(1)(i) [Hazard Communication]*, except to the extent that 29 CFR 1910.1200(f) [*Labels and Other Forms of Warning*] is inconsistent with this paragraph.

Medical Surveillance

1910.1048(l)(1)(i)—The employer shall institute medical surveillance programs for all employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL. [**Note:** 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)(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)(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)(6)—*Information provided to the physician. The employer shall provide information to the examining physician (specifically listed in standard). [Note: Reference paragraph (l)(6) for specific information.]*

1910.1048(l)(7)(i)—*For each examination required under this standard, the employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde.*

1910.1048(l)(9)(ii)—*The employer shall promptly notify an employee of the right to seek a second medical opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.*

1910.1048(l)(9)(iii)—*The employer may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within fifteen (15) days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial physician's written opinion, whichever is later.*

Training and Communications

1910.1048(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(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)(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(l)(6)—*Information provided to the physician. The employer shall provide information to the examining physician (specifically listed in standard). [Note: 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(m)(1)(iii)—*Employers shall include formaldehyde in the hazard communication program established to comply with the HCS (§ 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) of this section.*

1910.1048(m)(2)—Manufacturers and importers who produce or import formaldehyde or formaldehyde-containing products *shall provide downstream employers* using or handling these products with an *objective determination through the required labels and MSDSs* if these items may constitute a health hazard within the meaning of 29 CFR 1910.1200(d) [Hazard Determination] under normal conditions of use.

1910.1048(n)(1)—Participation. The employer *shall assure that all employees who are assigned to workplaces* where there is exposure to formaldehyde participate in a training program, except that where the employer can show, using objective data, that employees are not exposed to formaldehyde at or above 0.1 ppm, the employer is not required to provide training. [**Note:** Reference paragraph (n)(3) for specific information.]

1910.1048(n)(2)—Frequency. Employers *shall provide such information and training* to employees at the time of initial assignment, and whenever a new exposure to formaldehyde is introduced into the work area. The training shall be repeated at least annually.

Recordkeeping

1910.1048(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*.

1926.1152—METHYLENE CHLORIDE

Note: 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

Note: This section applies to occupational exposure to methylene chloride.

STANDARD HIGHLIGHTS

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

Exposure Monitoring

1910.1052(d)(2)—Initial determination. Each employer whose employees are exposed to MC *shall perform initial exposure monitoring* to determine each affected employee's exposure.

1910.1052(d)(2)(i)—Where objective data demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The objective data shall represent the highest MC exposures

likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer *shall document the objective data* exemption as specified in *paragraph (m) [Recordkeeping]* of this section.

1910.1052(d)(3)—*Periodic monitoring.* Where the initial determination shows employee exposures at or above the action level or above the STEL, the employer *shall establish an exposure monitoring program for periodic monitoring of employee exposure to MC in accordance with Table 1.*

1910.1052(d)(4)(i)—The employer *shall perform exposure monitoring when a change in workplace conditions indicates that employee exposure may have increased.* Examples of situations that may require additional monitoring include changes in production, process, control equipment, or work practices, or a leak, rupture, or other breakdown.

1910.1052(d)(5)(i)—The employer *shall, within 15 working days after the receipt of the results of any monitoring performed under this section, notify each affected employee of these results in writing, either individually or by posting of results* in an appropriate location that is accessible to affected employees.

Signs, Markings and Tags

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

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(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. [**Note:** 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. [**Note:** Reference paragraph (j)(9) 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 (§ 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) of this section.

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(i)(6)—Whenever there are workplace changes, such as modifications of tasks or procedures or the institution of new tasks or procedures, which increase employee exposure, and where those exposures exceed or can reasonably be expected to exceed the action level, the employer shall update the training as necessary to ensure that each affected employee has the requisite proficiency.

1910.1052(i)(7)—An employer whose employees are exposed to MC at a multi-employer worksite shall notify the other employers with work operations at that site in accordance with the requirements of the Hazard Communication Standard, 29 CFR 1910.1200, 29 CFR 1915.1200, or 29 CFR 1926.59, as appropriate.

Programs, Policies and Procedures

1910.1052(f)(1)—Engineering and work practice controls. The employer shall institute and maintain the effectiveness of engineering controls and work practices to reduce employee exposure to or below the PELs except to the extent that the employer can demonstrate that such controls are not feasible. Wherever the feasible engineering controls and work practices which can be instituted are not sufficient to reduce employee exposure to or below the 8-TWA PEL or STEL, the employer shall use them to reduce employee exposure to the lowest levels achievable by these controls and shall supplement them by the use of respiratory protection that complies with the requirements of paragraph (g) [Respiratory Protection] of this section.

1910.1052(f)(3)(i)—The employer shall implement procedures to detect leaks of MC in the workplace. In work areas where spills may occur, the employer shall make provisions to contain any spills and to safely dispose of any MC-contaminated waste materials.

1910.1052(g)(2)(i)—The employer must implement a respiratory protection program in accordance with 1910.134 (b) through (m) (except (d)(1)(iii)), which covers each employee required by this section to use a respirator.

1910.1052(g)(4)—Medical evaluation. Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer must:

- **1910.1052(g)(4)(i)**—Have a physician or other licensed health-care professional (PLHCP) evaluate the employee's ability to use such respiratory protection.
- **1910.1052(g)(4)(ii)**—Ensure that the PLHCP provides their findings in a *written opinion to the employee and the employer*.

Medical Surveillance

1910.1052(g)(4)—Medical evaluation. Before having an employee use a supplied-air respirator in the negative-pressure mode, or a gas mask with an organic-vapor canister for emergency escape, the employer must:

- **1910.1052(g)(4)(i)**—Have a physician or other licensed health-care professional (PLHCP) evaluate the employee's ability to use such respiratory protection.

1910.1052(j)(1)—Affected employees. The employer shall make medical surveillance available for employees who are or may be exposed to MC.

1910.1052(j)(4)(i)—Initial surveillance. The employer shall provide initial medical surveillance under the schedule provided by paragraph (m)(2)(iii) [Medical Surveillance] of this section, or before the time of initial assignment of the employee, whichever is later. The employer need not provide the initial surveillance if medical *records* show that an affected employee has been provided with medical surveillance that complies with this section within 12 months before April 10, 1997.

1910.1052(j)(4)(ii)—Periodic medical surveillance. The employer shall update the medical and work history for each affected employee annually. The employer shall provide periodic physical examinations, including appropriate laboratory surveillance, as follows:

- **1910.1052(j)(4)(ii)(A)**—For employees 45 years of age or older, within 12 months of the initial surveillance or any subsequent medical surveillance.
- **1910.1052(j)(4)(ii)(B)**—For employees younger than 45 years of age, within 36 months of the initial surveillance or any subsequent medical surveillance.

1910.1052(j)(4)(iii)—*Termination of employment or reassignment.* When an employee leaves the employer's workplace, or is reassigned to an area where exposure to MC is consistently at or below the action level and STEL, medical surveillance shall be made available if six months or more have elapsed since the last medical surveillance.

1910.1052(j)(4)(iv)—*Additional surveillance.* The employer shall provide additional medical surveillance at frequencies other than those listed above when recommended in the **written** medical opinion. (For example, the physician or other licensed health care professional may determine an examination is warranted in less than 36 months for employees younger than 45 years of age based upon evaluation of the results of the annual medical and work history.)

1910.1052(j)(8)—**Information** provided to the physician or other licensed health care professional. The employer shall provide **information** (specified in the standard) to a physician or other licensed health care professional who is involved in the diagnosis of MC-induced health effects. [**Note:** Reference paragraph (j) for specific information.]

1910.1052(j)(14)(ii)—If the employee does not agree with the opinion of the employer-selected PLHCP, notifies the employer of that fact, and takes steps to make an appointment with a second PLHCP within 15 days of receiving a **copy** of the **written** opinion of the initial PLHCP, the employer shall pay for the PLHCP chosen by the employee to perform specific tests. [**Note:** Reference paragraph (j)(14) for specific information.]

1910.1052(j)(9)(i)—For each physical examination required by this section, the employer shall ensure that the physician or other licensed health care professional provides to the employer and to the affected employee a **written** opinion regarding the results of that examination within 15 days of completion of the evaluation of medical and laboratory findings, but not more than 30 days after the examination. The **written** medical opinion shall be limited to specific information. [**Note:** Reference paragraph (j)(9) for specific information.]

Recordkeeping

1910.1052(d)(2)(i)—Where objective data demonstrate that MC cannot be released in the workplace in airborne concentrations at or above the action level or above the STEL. The objective data shall represent the highest MC exposures likely to occur under reasonably foreseeable conditions of processing, use, or handling. The employer shall **document** the objective data exemption as specified in paragraph (m) [**Recordkeeping**] of this section.

1910.1052(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**].

Subpart CC—Cranes and Derricks in Construction

1926.1402—GROUND CONDITIONS

Note: 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.

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.

Note: 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

Note: *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, Policies and Procedures—procedures for manufacturers and employers

Programs, Policies and Procedures

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].*)

1926.1404—ASSEMBLY/DISASSEMBLY—GENERAL REQUIREMENTS (APPLIES TO ALL ASSEMBLY AND DISASSEMBLY OPERATIONS)

Note: *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

- Competent Person
- Qualified Person—qualified rigger
- Programs, Policies and Procedures—procedures, review procedures
- Training and Communications—understand procedures, inform operator
- Recordkeeping*—documentation, written manufacturer approval
- Inspections and Tests—post assembly inspection

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.*

Programs, Policies 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.)*

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. [Note: 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.*

Recordkeeping

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.*

Inspections

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]).*

1926.1406—ASSEMBLY/DISASSEMBLY—EMPLOYER PROCEDURES—GENERAL REQUIREMENTS

Note: 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

- Qualified Person—develop procedures

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

Note: 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, Policies and Procedures—determination
- Other—dedicated spotter
- Training and Communications—planning meeting, confirmation with utilities
- Signs, Warnings and Tags—posted warnings

Programs, Policies 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. [Note: Reference paragraph (a) for specific options.]*

Other

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. [*Note: Reference paragraph (b)(3) for all measures.*]

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.

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

Note: 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

- Training and Communications—planning meeting, utilities confirmation, training
- Signs, Markings and Tags—warning signs and lines, barricades
- Other—dedicated spotter

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

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) [Hazard Assessments and Precautions Inside the Work Zone]* in addition to implementing one of the measures described in §§ 1926.1408(b)(4)(i), (iii), (iv) and (v).

Other

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) [Hazard Assessments and Precautions Inside the Work Zone]* 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.* [**Note:** *Reference paragraph (b)(4) for specific options.*]

1926.1409—POWER LINE SAFETY (OVER 350 KV)

Note: *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.*

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 sub-*

stituted; 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

Note: 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: 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.

[**Note:** Reference Sec. 1926.1408 for specific requirements.]

STANDARD HIGHLIGHTS

- Training and Communications—planning meetings, consultation with utilities, training
- Qualified Person—planning meetings
- Other—dedicated spotter, authority
- Signs, Markings and Tags—markings
- Programs, Policies and Procedures*—documented, available, develop procedures

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.* [**Note:** 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. [Note: Reference paragraph (d) for procedures.]*

Other

1926.1410(d)(2)—*A dedicated spotter who is in continuous contact with the operator. [Note: 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.*

Programs, Policies and Procedures

1926.1410(e)—*The procedures developed to comply with paragraph (d) of this section are **documented** and immediately available on-site.*

1926.1410(g)—*The procedures developed to comply with paragraph (d) of this section are implemented.*

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.*

1926.1411—POWER LINE SAFETY—WHILE TRAVELING UNDER OR NEAR POWER LINES WITH NO LOAD

Note: 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 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

- Other—dedicated spotter
- Training and Communications—continuous contact with driver/operator

Other

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. [**Note:** Reference paragraph (b)(4) for specific duties.]

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. [**Note:** Reference paragraph (b)(4) for specific duties.]

1926.1412—INSPECTIONS

Note: *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

- Qualified Person—inspections, modification/additions approval, registered professional engineer
- Inspections and Tests—Inspections conducted prior to use, each shift and annually
- Competent Person—inspections
- Recordkeeping*—retention requirements

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, load-sustaining 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. [Note:* 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. [**Note:** 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.* [**Note:** Reference paragraph (g) for specific information.]

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, load-sustaining 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.* [**Note:** 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. [**Note:** 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. [**Note:** 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. [**Note:** 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.

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. [**Note:** 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 .

Recordkeeping

1926.1412(e)(3)(i)—Information must be **documented** and maintained by the employer that conducts the inspection. [**Note:** 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**, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection. [**Note:** Reference paragraph (f)(7) for specific information.]

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.

1926.1413—WIRE ROPE—INSPECTION

Note: 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

- Competent Person—visual inspections prior to each shift, determinations
- Inspections and Tests—visual, each shift, monthly, and annual inspections

- Qualified Person—inspections
- Recordkeeping*—retention, documentation

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. [**Note:** *Reference paragraph (a)(4)(i) for specific information.*]

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

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

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.

1926.1414—WIRE ROPE—SELECTION AND INSTALLATION CRITERIA

***Note:** 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

- Qualified Person—inspections
- Inspections and Tests—qualified person, records, monthly and annual inspections
- Recordkeeping*—documentation

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.

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.

Recordkeeping

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

***Note:** 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

- 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(d)(3)(iii)—Articulating cranes manufactured after December 31, 1999, that are equipped with a load hoist must be equipped with a device that 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 must prevent such damage at all points where two-blocking could occur.

- *Temporary alternative measures:* When two-blocking could only occur with movement of the load hoist, 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. When two-blocking could occur without movement of the load hoist, 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(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

Note: 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, Policies and Procedures*—procedures signed by registered professional engineer
- Qualified Person—procedures
- Competent Person
- Signs, Markings and Tags—notices
- Other*—designated person
- Training and Communications*—notify employees, written documentation

Programs, Policies 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.*

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. [**Note:** *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.

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: [**Note:** *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; or

- **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.

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. [Note: 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.*

Other

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.

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.

1926.1418—AUTHORITY TO STOP OPERATION

Note: *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

- Qualified Person—authority

Qualified Person

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

Note: 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

- Other—signal person
- Training and Communications—hand signals

Other

1926.1419(a)—A signal person must be provided in specific situations. [**Note:** Reference paragraph (a) for specific information.]

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.*

1926.1420—SIGNALS—RADIO, TELEPHONE OR OTHER ELECTRONIC TRANSMISSION OF SIGNALS

Note: 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—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

Note: 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

- 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

Note: 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

- Signs, Markings and Tags—posted hand signal charts

Signs, Markings and Tags

Hand signal charts must be either **posted** on the equipment or conspicuously **posted** in the vicinity of the hoisting operations.

1926.1423—FALL PROTECTION

Note: 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

- Competent Person—visual inspections
- Qualified Person—determinations
- Inspections and Tests—visual inspections, competent person
- Training and Communications—employee training

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]*.

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. [Note: Reference paragraph (k) for specific information.]*

1926.1424—WORK AREA CONTROL

Note: 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

- Training and Communications—training, employee instruction
- Signs, Markings and Tags—warning signs
- Programs, Policies and Procedures—system for coordinating operations

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.

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.*

Programs, Policies 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.*

1926.1425—KEEPING CLEAR OF THE LOAD

Note: *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

- Qualified Person—qualified rigger
- Training and Communications—instructions

Qualified Person

1926.1425(c)(3)—The materials *must be rigged by a 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).

1926.1427—OPERATOR QUALIFICATION AND CERTIFICATION

Note: *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

- Certification*—valid 5 years, qualifications, licensing
- Other—accreditations, auditors, literacy requirements
- Inspections and Tests—written and practical tests, audits
- Recordkeeping*—retention requirements
- Programs, Policies and Procedures—monitoring
- Training and Communications—verbally, initial training

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. [**Note:** 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.* [**Note:** 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.* [**Note:** 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.* [**Note:** Reference paragraph (d) for specific information.]

1926.1427(e)—*Option (4): Licensing by a government entity.* [**Note:** 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.* [**Note:** Reference paragraph (j)(1) for specific information.]

Other

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).*

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(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)(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.*

Programs, Policies and Procedures

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. [Note: 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. [Note: 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.*

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: [Note: 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*.

1926.1428—SIGNAL PERSON QUALIFICATIONS

Note: *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

- Recordkeeping*—qualifications documented
- Training and Communications—retrain
- Inspections and Tests—oral, written, practical tests

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.

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*.

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.*

1926.1429—QUALIFICATIONS OF MAINTENANCE & REPAIR EMPLOYEES

Note: *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

- 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

Note: *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

- Training and Communications*—initial and retraining
- Competent Person—trained
- Qualified Person—trained
- Programs, Policies and Procedures—evaluations
- Certification—qualifications

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. [*Note: 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)(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.

Programs, Policies and Procedures

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.

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]*.

1926.1431—HOISTING PERSONNEL

Note: 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

- Qualified Person—determinations, designing
- Competent Person—inspections, determinations
- Inspections and Tests—competent person, visual inspections, proof tests, trial lifts
- Signs, Markings and Tags—posting, markings
- Training and Communications—pre-lift meetings, communications

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).

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

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. [**Note:** Reference paragraph (h)(2) 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(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.

Signs, Markings and Tags

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.

1926.1431(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.

Training and Communications

1926.1431(m)—Pre-lift meeting. A pre-lift meeting must be: [**Note:** 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.

1926.1432—MULTIPLE-CRANE/DERRICK LIFTS— SUPPLEMENTAL REQUIREMENTS

Note: 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, Policies and Procedures—qualified person, development of plan
- Qualified Person—plan development, determinations
- Training and Communications—meeting to review plan

Programs, Policies 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. [**Note:** Reference paragraph (a) for more information.]

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).

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.

1926.1433—DESIGN, CONSTRUCTION AND TESTING

Note: 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*—prototype testing, physical testing
- Qualified Person—determinations
- Signs, Markings and Tags—markings
- Recordkeeping*—documentation

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. [*Note: 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.

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.

1926.1433(d)(3)—Hook and ball assemblies and load blocks *must be marked* with their rated capacity and weight.

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.

1926.1434—EQUIPMENT MODIFICATIONS

Note: 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

- Recordkeeping*—written manufacturer approval, modification records
- Qualified Person*—registered professional engineer

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. [*Note: 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.

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.

1926.1435—TOWER CRANES

Note: 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 tower cranes; all sections of this subpart apply to tower cranes unless specified otherwise.

STANDARD HIGHLIGHTS

- Inspections and Tests*—qualified person, annual, post erection, and pre-erection inspections
- Qualified Person—inspections, registered professional engineer
- Recordkeeping*—documentation, inspections, load tester
- Programs, Policies and Procedures—manufacturer procedures and instructions, procedures
- Competent Person

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. [**Note**: 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.

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.

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(b)(7)—*Climbing procedures.* Prior to, and during, all climbing procedures (including inside climbing and top climbing), the employer must do specific items. [**Note:** Reference paragraph (b)(7) for more information.]

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.

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.

1926.1436—DERRICKS

Note: 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

- Training and Communications—qualifications, operator training
- Signs, Markings and Tags*—load chart posted
- Inspections and Tests—load testing prior to use, daily and annual inspections
- Qualified Person—inspections
- Competent Person—load testing
- Recordkeeping*—documentation, manufacturer information

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.

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.

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. [**Note:** 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. [**Note:** 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.* [**Note:** Reference paragraph (p)(2) for more information.]

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

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. [Note: 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. [Note: 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*.

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. *[Note: 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. *[Note: Reference paragraph (c)(2)(iii) for more information.]*

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.

1926.1437—FLOATING CRANES/DERRICKS AND LAND CRANES/DERRICKS ON BARGES

Note: 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 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

- Inspections and Tests—shifts, monthly, and annual inspections, qualified person
- Competent Person—inspections
- Qualified Person—inspections
- Recordkeeping*—retention requirements
- Signs, Markings and Tags—load charts posted, markings
- Training and Communications—
- Programs, Policies and Procedures—procedures, written design plan

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

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. [Note: 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)(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)(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)(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)(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.

Recordkeeping

1926.1437(h)(6)—**Documentation.** *The monthly and annual inspections required in paragraphs (h)(2) [Monthly] and (h)(4) [Annually] of this section are **documented** in accordance with § 1926.1412 (e)(3) [Documentation] and 1926.1412(f)(7) [Documentation of Annual/Comprehensive Inspection], respectively, and that the four-year inspection required in paragraph (h)(5) [Four-Year: Internal Vessel/Flotation Device Inspection] of this section is **documented** in accordance with § 1926.1412(f)(7) [Documentation of Annual/Comprehensive Inspection], 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(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*.

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.*

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.*

Programs, Policies 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.

1926.1441—EQUIPMENT WITH A RATED HOISTING/LIFTING CAPACITY OF 2,000 POUNDS OR LESS

Note: 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: 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

- Recordkeeping*—documentation, written, registered professional engineer, availability
- Inspections and Tests—post assembly inspections
- Programs, Policies and Procedures*—registered professional engineer
- Qualified Person*—qualifications, registered professional engineer
- Training and Communications—employee training
- Signs, Markings and Tags—load chart

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. [**Note:** 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.*

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**.

Programs, Policies 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.*

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. [**Note:** 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.*

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.

Signs, Markings and Tags

1926.1441(c)(3)(i)—The *load chart* is available to the operator at the control station.

29 CFR Subpart D—Cranes and Derricks Used in Demolition and Underground Construction

1926.1501—CRANES AND DERRICKS

Note: This subpart applies only to employers engaged in demolition work covered by § 1926.856 [Removal of Walls, Masonry Sections and Chimneys] and § 1926.858 [Removal of Steel Construction], and underground construction work covered by § 1926.800 [Underground Construction]. This subpart applies in lieu of § 1926 subpart CC [Cranes and Derricks in Construction].

STANDARD HIGHLIGHTS

- Qualified Person*—qualified engineer, documented determinations
- Recordkeeping*—tests, inspections, manufacturer specifications, ANSI records
- Signs, Markings and Tags*—warnings, instructions, hand signals, posted load capacities
- Inspections and Tests*—records, competent person, atmospheric tests, proof tests, trial lifts
- Competent Person—inspections
- Programs, Policies and Procedures—trial run
- Training and Communications—pre-lift meetings
- Certification*—record

Qualified Person

1926.1501(a)(1)—The employer *shall comply with the **manufacturer’s specifications** and limitations applicable* to the operation of any and all cranes and derricks. Where **manufacturer’s specifications** are not available, the limitations assigned to the equipment *shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately **documented and recorded***. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

Recordkeeping

1926.1501(a)(1)—The employer *shall comply with the **manufacturer’s specifications** and limitations applicable* to the operation of any and all cranes and derricks. Where **manufacturer’s specifications** are not available, the limitations assigned to the equipment *shall be based on the determinations of a qualified engineer competent in this field and such determinations will be appropriately **documented and recorded***. Attachments used with cranes shall not exceed the capacity, rating, or scope recommended by the manufacturer.

1926.1501(a)(6)—A thorough, *annual inspection of the hoisting machinery shall be made by a competent person*, or by a government or private agency recognized by the U.S. Department of Labor. The employer *shall maintain a **record*** of the dates and results of inspections for each hoisting machine and piece of equipment.

1926.1501(a)(11)—Whenever internal combustion engine powered equipment exhausts in enclosed spaces, *tests shall be made and recorded* to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

1926.1501(b)(2)—All crawler, truck, or locomotive cranes in use *shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation* as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes. However, the **written**, dated, and **signed** inspection **reports** and **records** of the monthly inspection of critical items prescribed in section 5-2.1.5 of the ANSI B30.5-1968 standard are not required. Instead, the employer *shall prepare a **certification record*** which includes the date the crane items were inspected; the signature of the person who inspected the crane items; and a serial number, or other identifier, for the crane inspected. The *most recent **certification record** shall be maintained on file until a new one is prepared*.

1926.1501(c)(5)—All hammerhead tower cranes in use *shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed by the manufacturer*.

Signs, Markings and Tags

1926.1501(a)(2)—Rated load capacities, and recommended operating speeds, special hazard warnings, or instruction, *shall be conspicuously **posted** on all equipment. **Instructions** or warnings shall be visible* to the operator while he is at his control station.

1926.1501(a)(4)—Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standard for the type of crane in use. An *illustration of the signals shall be posted* at the job site.

1926.1501(d)(1)—The **rated load** of the crane shall be plainly marked on each side of the crane, and if the crane has more than one hoisting unit, each hoist shall have its rated load marked on it or its load block, and this marking shall be clearly legible from the ground or floor.

Inspections and Tests

1926.1501(a)(5)—The employer shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.

1926.1501(a)(6)—A thorough, annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a **record** of the dates and results of inspections for each hoisting machine and piece of equipment.

1926.1501(a)(11)—Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and **recorded** to see that employees are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

1926.1501(a)(15)(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. The following precautions shall be taken when necessary to dissipate induced voltages. [Note: Reference paragraph (a)(15)(vii) for specific information.]

1926.1501(b)(2)—All crawler, truck, or locomotive cranes in use shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes. However, the **written**, dated, and **signed** inspection reports and **records** of the monthly inspection of critical items prescribed in section 5-2.1.5 of the ANSI B30.5-1968 standard are not required. Instead, the employer shall prepare a **certification record** which includes the date the crane items were inspected; the signature of the person who inspected the crane items; and a serial number, or other identifier, for the crane inspected. The most recent **certification record** shall be maintained on file until a new one is prepared.

1926.1501(c)(5)—All hammerhead tower cranes in use shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed by the manufacturer.

1926.1501(g)(5)(i)—A trial lift with the unoccupied personnel platform loaded at least to the anticipated lift weight shall be made from ground level, or any other location where employees will enter the platform to each location at which the personnel platform is to be hoisted and positioned. This trial lift shall be performed immediately prior to placing personnel on the platform. The operator shall determine that all systems, controls and safety devices are activated and functioning properly; that no interferences exist; and that all configurations necessary to reach those work locations will allow the operator to remain under the 50 percent limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the platform, as provided in paragraphs (g)(4)(iii)(D), and (E) [Personnel Platforms] of this section for the trial lift. A single trial lift may be performed at one time for all locations that are to be reached from a single set up position.

1926.1501(g)(5)(ii)—The trial lift shall be repeated prior to hoisting employees whenever the crane or derrick is moved and set up in a new location or returned to a previously used location. Additionally, the trial lift shall be repeated when the lift route is changed unless the operator determines that the route change is not significant (i.e. the route change would not affect the safety of hoisted employees.)

1926.1501(g)(5)(iii)—After the trial lift, and just prior to hoisting personnel, the platform shall be hoisted a few inches and inspected to ensure that it is secure and properly balanced. Employees shall not be hoisted unless conditions are determined to exist. [Note: Reference paragraph (g)(5)(ii) for specific information.]

1926.1501(g)(5)(iii)(D)—The hoisting system shall be inspected if the load rope is slack to ensure all ropes are properly stated on drums and in sheaves.

1926.1501(g)(5)(iv)—A visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

1926.1501(g)(5)(vi)—*At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform’s rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (this may be done concurrently with the trial lift). After proof testing, a competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted.* Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.

Competent Person

1926.1501(a)(5)—The employer *shall designate a competent person who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use.*

1926.1501(a)(6)—A thorough, *annual inspection of the hoisting machinery shall be made by a competent person, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment.*

1926.1501(g)(5)(iv)—A *visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by a competent person immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.*

1926.1501(g)(5)(vi)—*At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform’s rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (this may be done concurrently with the trial lift). After proof testing, a competent person shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted.* Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.

Recordkeeping

1926.1501(a)(16)—*No modifications or additions which affect the capacity or safe operation of the equipment shall be made by the employer 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.*

1926.1501(b)(2)—All crawler, truck, or locomotive cranes in use *shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes. However, the written, dated, and signed inspection reports and records of the monthly inspection of critical items prescribed in section 5-2.1.5 of the ANSI B30.5-1968 standard are not required. Instead, the employer shall prepare a certification record which includes the date the crane items were inspected; the signature of the person who inspected the crane items; and a serial number, or other identifier, for the crane inspected. The most recent certification record shall be maintained on file until a new one is prepared.*

1926.1501(d)(4)—All overhead and gantry cranes in use *shall meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed in the ANSI B30.2.0-1967, Safety Code for Overhead and Gantry Cranes.*

1926.1501(e)—Derricks. All *derricks in use shall meet the applicable requirements for design, construction, installation, inspection, testing, maintenance, and operation as prescribed in American National Standards Institute B30.6-1969, Safety Code for Derricks.*

Programs, Policies and Procedures

1926.1501(g)(7)(ii)—Under any circumstances where a crane would travel while hoisting personnel, the employer *shall implement procedures to safeguard employees. [Note: Reference paragraph (g)(7)(ii) for specific information.]*

- **1926.1501(g)(7)(ii)(D)**—*A complete trial run shall 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 (g)(5)(i) [Trial Lift, Inspections and Proof Testing] of this section which tests the route of the lift.*

Training and Communications

1926.1501(g)(8)(i)—A *meeting* attended by the crane or derrick operator, signal person(s) (if necessary for the lift), employee(s) to be lifted, and the person responsible for the task to be performed shall be held to review the appropriate requirements of *paragraph (g) [Crane or Derrick Suspended Personnel Platforms]* of this section and the *procedures to be followed*.

1926.1501(g)(8)(ii)—This meeting *shall be held prior to the trial lift at each new work location, and shall be repeated* for any employees newly assigned to the operation.

Certification

1926.1501(b)(2)—All crawler, truck, or locomotive cranes in use *shall meet the applicable requirements for design, inspection, construction, testing, maintenance and operation* as prescribed in the ANSI B30.5-1968, Safety Code for Crawler, Locomotive and Truck Cranes. However, the *written*, dated, and *signed* inspection *reports* and *records* of the monthly inspection of critical items prescribed in section 5-2.1.5 of the ANSI B30.5-1968 standard are not required. Instead, the employer *shall prepare a certification record* which includes the date the crane items were inspected; the signature of the person who inspected the crane items; and a serial number, or other identifier, for the crane inspected. The *most recent certification record shall be maintained on file until a new one is prepared*.

OSH Publications

We provide a variety of OSH publications. These include general industry and construction regulations, industry guides that cover different OSH topics, quick cards, fact sheets and brochures that cover a wide variety of serious safety and health workplace hazards. Workplace labor law posters are available free of charge. To obtain publications, call toll free at 1-800-NC-LABOR (1-800-625-2267) or direct at 919-807-2875. You may view the list of publications and also download many of them at **www.nclabor.com/pubs.htm**.

Occupational Safety and Health (OSH) Sources of Information

You may call 1-800-NC-LABOR (1-800-625-2267) to reach any division of the N.C. Department of Labor; or visit the NCDOL home page on the World Wide Web: <http://www.nclabor.com>.

Occupational Safety and Health Division

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Local Telephone: 919-807-2900 Fax: 919-807-2856

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 3rd Floor)

For information concerning education, training, interpretations of occupational safety and health standards, and OSH recognition programs contact:

Education, Training and Technical Assistance Bureau

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-807-2875 Fax: 919-807-2876

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 4th Floor)

For information concerning occupational safety and health consultative services contact:

Consultative Services Bureau

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-807-2899 Fax: 919-807-2902

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 3rd Floor)

For information concerning migrant housing inspections and other related activities contact:

Agricultural Safety and Health Bureau

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-807-2923 Fax: 919-807-2924

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 2nd Floor)

For information concerning occupational safety and health compliance contact:

Safety and Health Compliance District Offices

Raleigh District Office (3801 Lake Boone Trail, Suite 300, Raleigh, NC 27607)
Telephone: 919-779-8570 Fax: 919-420-7966

Asheville District Office (204 Charlotte Highway, Suite B, Asheville, NC 28803-8681)
Telephone: 828-299-8232 Fax: 828-299-8266

Charlotte District Office (901 Blairhill Road, Suite 200, Charlotte, NC 28217-1578)
Telephone: 704-665-4341 Fax: 704-665-4342

Winston-Salem District Office (4964 University Parkway, Suite 202, Winston-Salem, NC 27106-2800)
Telephone: 336-776-4420 Fax: 336-767-3989

Wilmington District Office (1200 N. 23rd St., Suite 205, Wilmington, NC 28405-1824)
Telephone: 910-251-2678 Fax: 910-251-2654

To make an OSH Complaint, **OSH Complaint Desk:** 919-807-2796

For statistical information concerning program activities contact:

Planning, Statistics and Information Management Bureau

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-807-2950 Fax: 919-807-2951

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 2nd Floor)

For information about books, periodicals, vertical files, videos, films, audio/slide sets and computer databases contact:

N.C. Department of Labor Library

Mailing Address:
1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-807-2848 Fax: 919-807-2849

Physical Location:
111 Hillsborough St.
(Old Revenue Building, 5th Floor)

N.C. Department of Labor (Other than OSH)

1101 Mail Service Center
Raleigh, NC 27699-1101
Telephone: 919-733-7166 Fax: 919-733-6197