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OSHA Activity

OSHA Revises Confined Space Rule

OSHA recently published a technical amendment revising the Atmospheric Monitoring section of Appendix E to the confined space rule (29 CFR 1910.146). The amendment adds information regarding air contaminant sensor instruments which must be used before entry into sewer systems.

In June 1993 OSHA published a correction document to the confined space rule. In that document, OSHA removed all references to "broad range sensor instruments" from the Atmospheric Monitoring section of non-mandatory Appendix E. At that time, the Agency felt it was inappropriate to suggest a particular type of sensor instrument for all sewer entries.

By removing the reference to broad range sensors, OSHA inadvertently created the impression that it favored using substance-specific sensors over broad range sensors for the monitoring of hazardous air in sewer systems. That was not the intent of the Agency.

OSHA expects employers to choose sensors or other monitoring equipment which will best identify the atmospheric hazards present or potentially present in a sewer. If the employer has already identified those hazards, substance-specific sensors are preferable because they accurately indicate the concentrations of the identified air contaminants. However, if the employer has not been able to identify the specific atmospheric hazards present, broad range sensors are preferred because they indicate that the hazardous threshold of a contaminant in the sewer has been exceeded.

Therefore, OSHA is revising the information in §1910.146, Appendix E by restoring the reference to broad range sensors and clearly stating the advantages and limitations of both the oxygen sensor/broad range sensor instrument and the substance-specific device. OSHA expresses no preference for either type of meter. Instrument selection is left up to the employer, who is in a position to decide what type of testing instrument is appropriate for a particular sewer entry.

In this technical amendment, OSHA has also added a metric equivalent (1.52 meters) of 5 feet to §1910.146(k)(3)(ii). This section

OSHA Extends Comment Period on Indoor Air Quality

Due to exceptionally heavy interest in the proposed indoor air quality standards, OSHA is adding six weeks to the comment period and rescheduling the start of hearings. The proposal, which was issued on March 24, covers general indoor air quality and environmental tobacco smoke in all indoor non-industrial work environments.

OSHA is extending the comment period from June 29 to August 13, and the public hearings on the proposal will begin September 20 rather than July 12. According to Joseph Dear, Assistant Secretary of Labor, the indoor air proposal has generated more than 5,000 comments.

Notice of the extension was published in the June 14, 1994 *Federal Register*. For more information, contact Frank Kane, OSHA, (202) 219-8151.

requires that a mechanical device be used to retrieve personnel from vertical type permit spaces more than 5 feet deep. In the original rule, this metric equivalent was omitted.

The rule became effective May 19, 1994. For more information, contact James Foster, OSHA, (202) 219-8181.

Willful Violation Penalties Increase Five-Fold

OSHA has increased minimum penalties for willful violation of workplace safety rules to \$25,000, according to a recent announcement by Secretary of Labor, Robert Reich.

"The increase in minimum proposed penalties for the more serious willful violations will make it that much more difficult for those few bad actors to regard penalties as simply a cost of doing business," Reich said. The increased penalties are in line with OSHA's directive to implement a four-pronged enforcement policy of targeting the worst offenders and offenses; protecting vulnerable populations; deterring violations with significant penalties, including criminal penalties; and getting results swiftly and efficiently.

Raising penalties for willful violations is one of several enforcement strategies being looked at by OSHA to enhance the agency's effectiveness. According to OSHA's Administrator, Joseph Dear, "Willful violations are but a small percentage of all cited violations, but they result from employer conduct which, deliberately or through plain indifference, endangers the safety and health of workers."

Proposed penalties for willful violations will be set on "gravity-based" factors (i.e. high, medium or low) with adjusted reductions up to 30 percent for the employer's size. The firm's job safety and health history could reduce penalties up to an additional 10 percent. There will be no adjustment on proposed penalties for willful violations based on a cited firm's good faith efforts.

The penalty revision became effective June 16, 1994 and state-plan-states had 30 additional days to notify OSHA of their intent to enforce the new federal penalty levels. Minimum penalties for willful violations deemed other-than-serious remain at \$5,000.

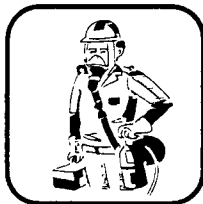
Gravity-Based Proposed Penalties

The chart below lists maximum gravity-based proposed penalties for willful violations which otherwise would have been deemed "serious" with percentage reductions based on size and job safety and health history. The main factor will be the size of a company with up to a 30 percent reduction possible, and an additional 10 percent based on the company's history.

Penalty amounts thus could be reduced from 0 to 40 percent based on size and history. Gravity is based on the severity of the violation (i.e. the probability of serious injury or death) determined by facts noted during an inspection. Proposed penalties for regulatory violations (i.e. recordkeeping, reporting or posting requirements) that are considered willful will be multiplied by 10 but in no case will the proposed penalty be less than \$5,000 after adjustment for size.

Penalties to be Proposed (Rounded to the closest \$500)					
Percentage Reduction for size and/or history	0%	10%	20%	30%	40%
High Gravity	\$70,000	\$63,000	\$56,000	\$49,000	\$42,000
Medium Gravity	\$55,000	\$49,500	\$44,000	\$38,500	\$33,000
Low Gravity	\$40,000	\$36,000	\$32,000	\$28,000	\$25,000

Percentage of Reduction Based on Size	
Number of Employees	Percentage of Reduction
1-25	30
26-100	20
101-250	10
251 or more	0



Proposals Transfer Sole Responsibility for Respiratory Protective Devices to NIOSH

In proposed rulemakings issued May 23, 1994, the existing rules requiring joint approval of respiratory protective equipment by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA) would be removed. The rules would be replaced by revised approval procedures and technical requirements for respirators which would be administered solely by NIOSH under CFR Title 42, Part 84. Joint agency certification and approval would be retained regarding only those respirators which are unique to the mining industry.

While MSHA currently reviews applications for respirator approvals and has conducted some

product evaluations and laboratory testing for certain respirators, the responsibility for the administering of quality control provisions involving testing and certification activities is primarily NIOSH's. The May proposals would remove the MSHA respiratory protection Part 11 from Title 30. This would, however, be contingent on publication of the NIOSH proposal as a final rule. Existing MSHA *respirator use* provisions in Part 11 would be retained and recodified in CFR Title 30, Parts 70 and 71.

Under the NIOSH proposal, MSHA and NIOSH would continue to review and approve respirators jointly for mine emergencies and mine rescue, and their associated service-life plans and users' manuals. Among the types of devices which would continue to be subject to joint approval are self-contained, self-rescue devices. In addition, MSHA would continue to test electrical components of certain respirators to be used in mines and issue a separate MSHA approval under 30 CFR part 18 for such respirators.

Both NIOSH and MSHA rulemaking activities will be coordinated to ensure that the level of respiratory protection afforded to all affected workers will be maintained during the transition period. The National Institute for Occupational Safety and Health and Mine Safety and Health Administration proposals were published in the May 24, 1994 *Federal Register*. For more information, contact Patricia Silvey, MSHA (703) 235-1910.

NIOSH Proposal Reclassifies Respirator Particulate Filters

In conjunction with the proposed transfer of respirator responsibilities from the Mine Safety and Health Administration, NIOSH has included a proposal to upgrade current testing requirements for particulate filters. The new requirements would significantly improve the current approach to evaluating the effectiveness of an air-purifying respirator's filter to remove toxic particulates from the air.

The new filter provisions would provide a particulate efficiency determination and classification system consistent with advances in respiratory protection technology. Tests would enable classification of the filters based on their ability to inhibit the penetration of particulates. This will result in the formation of a three-tiered classification system which will eliminate the need to test and classify the filter respirator according to composition of contaminant (e.g. dust, fume, mist and asbestos). The penetration rate for particulates in the atmosphere, regardless of composition, will not exceed that of the test particulate.

Provisions in this proposal also address performance requirements for certifying air-purifying respirators against biological agents. This addresses the current risk of tuberculosis (TB) transmission in health care and other facilities. The only certified air-purifying respirator class that meets biological protection criteria is a respirator with a high efficiency (HEPA) filter. However, all six classes of air-purifying particulate respirators to be certified under provisions of the new tests (filter penetration) would meet or exceed performance recommendations of the Centers for Disease Control (CDC). Because immediate implemen-

tation of respirator modifications in this proposal should promote a substantial increase in respiratory protection to all workers potentially exposed to TB, NIOSH is moving forward with a schedule to publish a final rule pertaining to particulate filters in late 1994.

NIOSH estimates that these changes to the particulate filter requirements will affect approximately 80 percent of all respirators currently marketed. This proposal was published in the May 24, 1994 *Federal Register*. For more information, contact Richard Metzler, NIOSH, (304) 284-5713.

Modules to Upgrade Respirator Requirements

The upgrading of current testing requirements for particulate filters is just the first step in NIOSH's proposal for respiratory protective devices. The Institute is planning a series of module actions which will, over the next several years, upgrade current respirator requirements. This modular approach will allow improvements to be implemented on a priority basis as well as facilitate adaptation to new requirements by the manufacturers and users of respirators.

The anticipated subjects and sequence of the NIOSH modular rulemaking approach are:

Subject Area	Anticipated timetable for proposed rule
Particulate Filter Tests	May 1994
Assigned Protection Factors	Late 1994
Administrative Program (application submittal and processing, fee structure, etc.)	Early 1995
Quality Assurance Requirements	Early 1995
Gas and Vapor Requirements	Mid 1995
Positive Pressure SCBA Requirements	Early 1996
Simulated Workplace Protection Factor Test	Early 1997

This proposal was published in the May 24, 1994 *Federal Register*. For more information, contact Richard Metzler, NIOSH (304) 284-5713.



OSHA Selects Four New Training Centers

OSHA recently announced the selection of four new job safety and health education centers. Officially called OSHA Training Institute (OTI) Education Centers, these additions double the number of such training facilities and reflect the growing public desire for improving workplace safety and health.

OTI Education Centers were established to expand training opportunities for members of the private sector and other federal agencies. The Centers receive no federal funds and their costs are covered by tuition. Courses to be offered for general industry include machinery and machine guarding standards; guides to voluntary compliance in safety and health; and voluntary compliance in the industrial hygiene area. A collateral duty course for other federal agencies and a course for instructors on OSHA's construction standards will also be available.

The four Centers initially established under a pilot program are located at:

1. Georgia Tech Research Institute in Atlanta, GA;
2. Maple Woods Community College in Kansas City, MO;
3. Red Rocks Community College in Lakewood, CO; and
4. University of California in San Diego.

The four newly selected Centers are located at:

1. Keene State College in Keene, NH;

2. Niagara County Community College in Sanborn, NY;
3. National Resource Center for Construction Safety and Health, AFL-CIO Building and Construction Trades Department in Washington, DC in conjunction with West Virginia University in Morgantown, WV; and
4. Texas Engineering Extension Service in College Station in conjunction with the Texas Safety Association in Austin, TX.

For more information, contact Deborah Page Crawford, OSHA, (202) 219-8151.

OSHA's Top 1992/1993 Violations

Standard	Description	No. of Violations
1910.1200	Hazard Communication	17,979
1910.147	Lockout/Tagout	7,134
1910.305	Wiring Methods, Components, & Equipment	4,864
1910.219	Mechanical Power Transmission Apparatus	4,644
1910.451	Scaffolding	4,507
1904.2	Log Summary of Occupational Injuries & Illness	4,281
1910.1030	Bloodborne Pathogens	4,094
1910.134	Respiratory Protection	3,954
1910.212	General Requirements for Machines (Guarding)	3,828

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OSHA Delivers Record Breaking Lead Penalty

Labor Secretary Robert Reich recently issued a \$5,088,500 penalty, the largest single-employer construction penalty to date, against a Pennsylvania painting company. The penalty is for allegedly subjecting employees to lead exposures that were in some cases hundreds of times greater than the level permitted by regulations.

OSHA's inspections found that employees removing lead-based paint were exposed to levels of airborne lead nearly 700 times the permissible exposure limit (PEL) for construction workers. The violations involve 90 employees performing abrasive blasting, repainting and general work on a bridge which had previously been painted with lead-bearing paint.

In its inspection, OSHA found that 20 of the 90 employees were overexposed to lead and that the employer failed to provide appropriate engineering controls and respiratory protection. The company also failed to adequately train employees in the hazards of working with lead and how they should protect themselves.

OSHA's new interim final rule on lead in construction, mandated by Congress, became effective June 3, 1993 with various provisions phased in over time. It reduces the permissible exposure limit for lead in construction to the same level that applies in general industry, a level one-fourth the earlier PEL for lead in construction.

Proposal Targets Fall Hazards in Longshoring

OSHA's recent proposal is targeting worker protection from fall hazards in the longshoring industry. The industry has changed dramatically since the OSHA standards were adopted in 1971 and methods of cargo handling and equipment technology have undergone significant modifications.

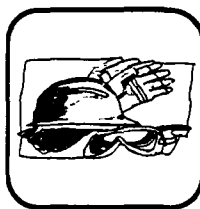
A major issue brought about by intermodalism (containerization) is container-top fall protection. Longshore workers often are required to work on top of containers on ship decks where the fall distance is typically 50 feet. As a

result of improvements in container securing devices, OSHA believes that many work operations which expose workers to fall hazards now can be eliminated. The use of semi-automatic twistlocks which secure one container to another eliminates the need for workers to go aloft in 90 percent of the cases. These devices represent an initial investment cost, but also result in significant productivity increases.

Other hazards addressed by the proposal include those associated with cargo lifting gear, vehicular cargo transfers, manual cargo handling, and hazardous atmospheres and materials. Marine terminal standards which were adopted in 1983 and parallel those of longshoring would also be updated under this proposal.

The proposal is what is known as a "vertical" standard, to apply specifically to the industry. Vertical standards can encourage voluntary compliance because they are directed to the particular problems of the industry, and because they only contain provisions that are appropriate to the industry. OSHA expects that the rule will prevent three deaths and 1,300 injuries, and save the industry more than \$18 million annually.

Hearings will be held on the proposal later this year in Charleston, SC, Seattle, WA, and New Orleans, LA. This proposed rulemaking was published in the June 2, 1994 *Federal Register*. For more information, contact James Foster, OSHA, (202) 219-8148.



Guidelines to Help You Meet the New PPE Requirements

OSHA's revised safety standards for personal protective equipment (PPE) became effective on July 5, 1994. The new rule requires employers to assess the workplace to determine if hazards are present which necessitate the use of personal protective equipment. The employer is required to verify the hazard assessment in writing. If hazards are present, the employer must select, and have each affected employee use, the types of PPE that

will protect against the identified hazard. PPE must properly fit each employee.

The employer must also provide training for each employee required to use PPE. Training should include when PPE is necessary, what PPE is necessary, how to wear PPE, the proper care, maintenance, useful life, and disposal of the PPE. Employers must certify in writing that the employee has received and understands the training.

To assist employers and employees in implementing the requirements of the rule, OSHA has developed non-mandatory guidelines for performing hazard assessments in the workplace and selecting appropriate personal protective equipment. These guidelines should help you meet the new requirements and create a safer work environment for your employees.

Appendix B to Subpart I—Non-mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection

1. *Controlling hazards.* PPE devices alone should not be relied on to provide protection against hazards, but should be used in conjunction with guards, engineering controls, and sound manufacturing practices.

2. *Assessment and selection.* It is necessary to consider certain general guidelines for assessing the foot, head, eye and face, and hand hazard situations that exist in an occupational or educational operation or process, and to match the protective devices to the particular hazard. It should be the responsibility of the safety officer to exercise common sense and appropriate expertise to accomplish these tasks.

3. *Assessment guidelines.* In order to assess the need for PPE the following steps should be taken:

a. *Survey.* Conduct a walk-through survey of the areas in question. The purpose of the survey is to identify sources of hazards to workers and co-workers. Consideration should be given to the basic hazard categories:

- (a) Impact
- (b) Penetration

(c) Compression (roll-over)

(d) Chemical

(e) Heat

(f) Harmful dust

(g) Light (optical) radiation

b. *Sources.* During the walk-through survey the safety officer should observe:

(a) Sources of motion; i.e., machinery or processes where any movement of tools, machine elements or particles could exist, or movement of personnel that could result in collision with stationary objects;

(b) Sources of high temperatures that could result in burns, eye injury or ignition of protective equipment, etc.;

(c) Types of chemical exposures;

(d) Sources of harmful dust;

(e) Sources of light radiation, i.e., welding, brazing, cutting, furnaces, heat treating, high intensity lights, etc.;

(f) Sources of falling objects or potential for dropping objects;

(g) Sources of sharp objects which might pierce the feet or cut the hands;

(h) Sources of rolling or pinching objects which could crush the feet;

(i) Layout of workplace and location of co-workers; and

(j) Any electrical hazards. In addition, injury/accident data should be reviewed to help identify problem areas.

c. *Organize data.* Following the walk-through survey, it is necessary to organize the data and information for use in the assessment of hazards. The objective is to prepare for an analysis of the hazards in the environment to enable proper selection of protective equipment.

d. *Analyze data.* Having gathered and organized data on a workplace, an estimate of the potential for injuries should be made. Each of the basic hazards (paragraph 3.a.) should be

reviewed and a determination made as to the type, level of risk, and seriousness of potential injury from each of the hazards found in the area. The possibility of exposure to several hazards simultaneously should be considered.

4. *Selection guidelines.* After completion of the procedures in paragraph 3, the general procedure for selection of protective equipment is to:

a) Become familiar with the potential hazards and the type of protective equipment that is available, and what it can do; i.e., splash protection, impact protection, etc.;

b) Compare the hazards associated with the environment; i.e., impact velocities, masses, projectile shape, radiation intensities, with

the capabilities of the available protective equipment;

c) Select the protective equipment which ensures a level of protection greater than the minimum required to protect employees from the hazards; and

d) Fit the user with the protective device and give instructions on care and use of the PPE. It is very important that end users be made aware of all warning labels for and limitations of their PPE.

5. *Fitting the device.* Careful consideration must be given to comfort and fit. PPE that fits poorly will not afford the necessary protection. Continued wearing of the device is more likely if it fits the wearer comfortably. Protective

Eye and Face Protection Selection Chart

Source	Assessment of Hazard	Protection
IMPACT—Chipping, grinding machining, masonry work, woodworking, sawing, drilling, chiseling, powered fastening, riveting, and sanding..	Flying fragments, objects, large chips, particles sand, dirt, etc..	Spectacles with side protection, goggles, face shields. See notes (1), (3), (5), (6), (10). For severe exposure, use faceshield.
HEAT—Furnace operations, pouring, casting, hot dipping, and welding.	Hot sparks	Faceshields, goggles, spectacles with side protection. For severe exposure use faceshield. See notes (1), (2), (3).
	Splash from molten metals	Faceshields worn over goggles. See notes (1), (2), (3).
	High temperature exposure	Screen face shields, reflective face shields. See notes (1), (2), (3).
CHEMICALS—Acid and chemicals handling, degreasing plating..	Splash	Goggles, eyecup and cover types. For severe exposure, use face shield. See notes (3), (11).
	Irritating mists	Special-purpose goggles.
DUST— Woodworking, buffing, general dusty conditions.	Nuisance dust	Goggles, eyecup and cover types. See note (8).
LIGHT and/or RADIATION—		
Welding: Electric arc	Optical radiation	Welding helmets or welding shields. Typical shades: 10-14. See notes (9), (12)
Welding: Gas	Optical radiation	Welding goggles or welding face shield. Typical shades: gas welding 4-8, cutting 3-6, brazing 3-4. See note (9)
Cutting, Torch brazing, Torch soldering	Optical radiation	Spectacles or welding face-shield. Typical shades, 1.5-3. See notes (3), (9)
Glare	Poor vision	Spectacles with shaded or special-purpose lenses, as suitable. See notes (9), (10).

Notes to Eye and Face Protection Selection Chart:

(1) Care should be taken to recognize the possibility of multiple and simultaneous exposure to a variety of hazards. Adequate protection against the highest level of each of the hazards should be provided. Protective devices do not provide unlimited protection.

(2) Operations involving heat may also involve light radiation. As required by the standard, protection from both hazards must be provided.

(3) Faceshields should only be worn over primary eye protection (spectacles or goggles).

(4) As required by the standard, filter lenses must meet the requirements for shade designations in §1910.133(a)(5). Tinted and shaded lenses are not filter lenses unless they are marked or identified as such.

(5) As required by the standard, persons whose vision requires the use of prescription (Rx) lenses must wear either protective devices fitted with prescription (Rx) lenses or protective devices designed to be worn over regular prescription (Rx) eyewear.

(6) Wearers of contact lenses must also wear appropriate eye and face protection devices in a hazardous environment. It should be recognized that dusty and/or chemical environments may represent an additional hazard to contact lens wearers.

(7) Caution should be exercised in the use of metal frame protective devices in electrical hazard areas.

(8) Atmospheric conditions and the restricted ventilation of the protector can cause lenses to fog. Frequent cleansing may be necessary.

(9) Welding helmets or faceshields should be used only over primary eye protection (spectacles or goggles).

(10) Non-sideshield spectacles are available for frontal protection only, but are not acceptable eye protection for the sources and operations listed for "impact."

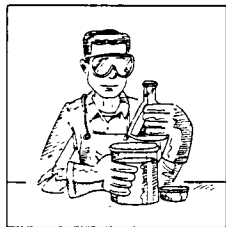
(11) Ventilation should be adequate, but well protected from splash entry. Eye and face protection should be designed and used so that it provides both adequate ventilation and protects the wearer from splash entry.

(12) Protection from light radiation is directly related to filter lens density. See note (4). Select the darkest shade that allows task performance.

devices are generally available in a variety of sizes. Care should be taken to ensure that the right size is selected.

6. *Devices with adjustable features.* Adjustments should be made on an individual basis for a comfortable fit that will maintain the protective device in the proper position. Particular care should be taken in fitting devices for eye protection against dust and chemical splash to ensure that the devices are sealed to the face. In addition, proper fitting of helmets is important to ensure that it will not fall off during work operations. In some cases a chin strap may be necessary to keep the helmet on an employee's head. (Chin straps should break at a reasonable low force, however, so as to prevent a strangulation hazard). Where manufacturer's instructions are available, they should be followed carefully.

7. *Reassessment of hazards.* It is the responsibility of the safety officer to reassess the workplace hazard situation as necessary, by identifying and evaluating new equipment and processes, reviewing accident records, and reevaluating the suitability of previously selected PPE.



8. *Selection chart guidelines for eye and face protection.*

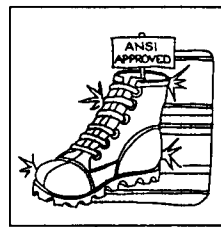
Some occupations (not a complete list) for which eye protection should be routinely considered are: carpenters, electricians, machinists, mechanics and repairers, millwrights, plumbers and pipe fitters, sheet metal workers and tinsmiths, assemblers, sanders, grinding machine operators, lathe and milling machine operators, sawyers, welders, laborers, chemical process operators and handlers, and timber cutting and logging workers. The selection chart provides general guidance for the proper selection of eye and face protection to protect against hazards associated with the listed hazard "source" operations. (See Chart on page 8).

9. *Selection guidelines for head protection.* All head protection (helmets) is designed to provide protection from impact and penetration hazards caused by falling objects. Head protection is also available which provides protection

from electric shock and burn. When selecting head protection, knowledge of potential electrical hazards is important. Class A helmets, in addition to impact and penetration resistance, provide electrical protection from low-voltage conductors (they are proof tested to 2,200 volts). Class B helmets, in addition to impact and penetration resistance, provide electrical protection from high-voltage conductors (they are proof tested to 20,000 volts). Class C helmets provide impact and penetration resistance (they are usually made of aluminum which conducts electricity), and should not be used around electrical hazards.

Where falling object hazards are present, helmets must be worn. Some examples include: working below other workers who are using tools and materials which could fall; working around or under conveyor belts which are carrying parts or materials; working below machinery or processes which might cause material or objects to fall; and working on exposed energized conductors.

Some examples of occupations for which head protection should be routinely considered are: carpenters, electricians, linemen, mechanics and repairers, plumbers and pipe fitters, assemblers, packers, wrappers, sawyers, welders, laborers, freight handlers, timber cutting and logging, stock handlers, and warehouse laborers.



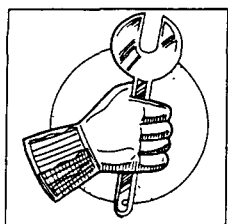
10. *Selection guidelines for foot protection.*

Safety shoes and boots which meet the ANSI Z41-1991 Standard provide both impact and compression protection. Where necessary, safety shoes can be obtained which provide puncture protection. In some work situations, metatarsal protection should be provided, and in other special situations electrical conductive or insulating safety shoes would be appropriate.

Safety shoes or boots with impact protection would be required for carrying or handling materials such as packages, objects, parts or heavy tools, which could be dropped; and, for other activities where objects might fall onto the feet. Safety shoes or boots with compression protection would be required for work

activities involving skid trucks (manual material handling carts) around bulk rolls (such as paper rolls) and around heavy pipes, all of which could potentially roll over an employee's feet. Safety shoes or boots with puncture protection would be required where sharp objects such as nails, wire, tacks, screws, large staples, scrap metal etc., could be stepped on by employees causing a foot injury.

Some occupations (not a complete list) for which foot protection should be routinely considered are: shipping and receiving clerks, stock clerks, carpenters, electricians, machinists, mechanics and repairers, plumbers and pipe fitters, structural metal workers, assemblers, drywall installers and lathers, packers, wrappers, craters, punch and stamping press operators, sawyers, welders, laborers, freight handlers, gardeners and grounds-keepers, timber cutting and logging workers, stock handlers and warehouse laborers.



11. *Selection guidelines for hand protection.* Gloves are often relied upon to prevent cuts, abrasions, burns, and skin contact with chemicals that are capable of causing local or systemic effects following dermal exposure.

OSHA is unaware of any gloves that provide protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn, and whether it can be reused.

It is also important to know the performance characteristics of gloves relative to the specific hazard anticipated; e.g., chemical hazards, cut hazards, flame hazards, etc. These performance characteristics should be assessed by using standard test procedures. Before purchasing gloves, the employer should request documentation from the manufacturer that the gloves meet the appropriate test standard(s) for the hazard(s) anticipated.

Other factors to be considered for glove selection in general include:

(A) As long as the performance characteristics are acceptable, in certain circumstances, it may be more cost effective to regularly change cheaper gloves than to reuse more expensive types; and,

(B) The work activities of the employee should be studied to determine the degree of dexterity required, the duration, frequency, and degree of exposure of the hazard, and the physical stresses that will be applied.

With respect to selection of gloves for protection against chemical hazards:

(A) The toxic properties of the chemical(s) must be determined; in particular, the ability of the chemical to cause local effects on the skin and/or to pass through the skin and cause systemic effects;

(B) Generally, any "chemical resistant" glove can be used for dry powders;

(C) For mixtures and formulated products (unless specific test data are available), a glove should be selected on the basis of the chemical component with the shortest breakthrough time, since it is possible for solvents to carry active ingredients through polymeric materials; and,

(D) Employees must be able to remove the gloves in such a manner as to prevent skin contamination.

12. *Cleaning and maintenance.* It is important that all PPE be kept clean and properly maintained. Cleaning is particularly important for eye and face protection where dirty or fogged lenses could impair vision.

For the purposes of compliance with §1910.132(a) and (b), PPE should be inspected, cleaned, and maintained at regular intervals so that the PPE provides the requisite protection.

It is also important to ensure that contaminated PPE which cannot be decontaminated is disposed of in a manner that protects employees from exposure to hazards.

TABLE 2—Number of Employees and Parts of the Body Requiring Personal Protective Equipment Among the Population at Risk

SICs	Industries	Production Employees	Total Exposed Population	Body Part Exposed*				
				Head	Eye	Face	Hand	Foot
20,21	Food & Tobacco	1,196,818	782,205	112,574	91,806	0	220,059	652,884
22	Textiles	596,846	255,815	36,685	104,918	3,877	134,689	129,498
23,31	Apparel & Leather	964,677	558,884	16,527	72,682	0	462,683	133,101
24	Lumber & Wood Products	597,764	405,054	65,597	29,483	104,352	103,547	388,436
25	Furniture & Fixtures	412,323	306,280	26,231	41,767	26,130	127,295	234,696
26	Paper & Allied Products	479,730	387,578	35,146	132,898	4,576	156,569	326,256
27	Printing & Publishing	680,370	462,259	0	242,298	0	257,095	333,121
28	Chemicals	497,054	402,925	116,763	158,344	3,098	155,596	322,095
29	Petroleum Refining	44,169	33,805	14,562	11,918	476	16,136	15,948
30	Rubber & Plastics	565,705	393,468	47,984	57,839	20,048	124,766	313,688
32	Stone, Glass, Concrete	400,987	282,065	64,462	38,156	19,234	81,620	243,835
33	Primary Metals	549,603	476,145	95,001	95,727	120,272	214,995	394,255
34	Fabricated Metals	921,660	638,577	33,157	85,767	12,101	144,447	570,595
35	Machinery & Computers	1,018,420	788,598	59,583	146,365	2,246	329,603	631,485
36	Electric & Electronics	1,204,266	810,492	66,001	334,211	611	469,622	455,479
37	Transportation Equipment	1,113,656	894,417	53,777	129,841	4,575	315,617	759,262
38,39	Misc. Manufacturing	599,624	410,532	35,815	124,151	9,092	203,543	284,091
41,42	Transportation	1,258,897	688,183	70,798	79,546	588	67,043	665,473
48	Communications	788,800	642,609	461,102	133,783	15,162	341,999	182,129
49	Utilities	334,492	266,440	126,995	106,879	24,321	96,394	246,691
501,55,75	Automotive Trade & Services	1,373,718	803,309	55,791	297,398	0	407,995	595,690
50,51,52	Wholesale & Retail Trade	963,641	822,312	255,319	154,863	4,842	134,153	742,635
7692	Welding Repair	24,622	20,317	797	11,108	172	10,492	15,278
13	Oil & Gas Extraction	117,579	92,602	49,872	51,451	0	51,804	76,391
078,08	Horticulture & Forestry	173,863	106,782	22,050	39,546	5,146	83,217	44,856
TOTAL		16,879,284	11,731,653	1,922,589	2,772,745	380,919	4,710,979	8,757,868

* "Exposed body part" total exceeds total exposed population because some employees are exposed to multiple hazards.
Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

PPE Impacts on General Industry

The hazards addressed by the new personal protective equipment standards are present in varying degrees in virtually all workplaces covered by OSHA's General Industry standards. Impact varies by industry, depending on the hazards, the types of occupational activity, and current practices regarding PPE use.

PPE has been in widespread use for many years. However, until recently very little statistical data existed to determine the number of employees who are using PPE or who should be using PPE by virtue of the hazards to which they are exposed. OSHA inspection documents indicate that approximately 3.5 percent of all planned safety inspections result in citations under PPE standards.

Statistics published by the Bureau of Labor Statistics (BLS) provide evidence that many injured workers are not wearing adequate personal protective equipment. Based on BLS data, relatively few firms with serious recordable injury cases have performed a formal assessment of the potential hazards in their

workplace. In addition, these firms offered minimal training to workers regarding the importance of using protective equipment.

To obtain information on the need for personal protective equipment and the extent to which that need is being met, OSHA conducted a national survey in 1989. The survey sampled 5,361 establishments from 61 SIC groups. It identified hazards related to industrial processes and types of PPE required when working in or near these processes. Answers to survey questions were used to evaluate the appropriateness of PPE use, training, and hazard assessment.

The survey identified over 11 million workers who should be wearing some form of PPE. Occupational categories include craft, operating, maintenance and material handling employees. These categories encompass most production employees and are most likely to be affected by this standard. However, OSHA has previously estimated over a million other workers may also be exposed to hazards requiring PPE use in the rest of general industry.

TABLE 4—Injuries Prevented Through Compliance With New PPE Requirements

SIC	Industry	Lost Workday Cases Prevented	Lost Workdays Prevented	Non-lost-workday Cases Prevented
20,21	Food & Tobacco	3,178	57,195	3,945
22	Textiles	710	12,780	1,405
23,31	Apparel & Leather	607	11,531	1,482
24	Lumber & Wood Products	1,850	35,151	2,375
25	Furniture & Fixtures	1,216	20,680	1,818
26	Paper & Allied Products	978	21,512	1,718
27	Printing & Publishing	755	14,340	1,361
28	Chemicals	783	14,870	1,082
29	Petroleum Refining	120	2,529	125
30	Rubber & Plastics	1,873	31,837	2,625
32	Stone, Glass, Concrete	989	19,782	1,578
33	Primary Metals	1,829	36,587	2,821
34	Fabricated Metals	3,506	63,114	6,097
35	Machinery & Computers	3,372	57,324	6,744
36	Electric & Electronics	1,343	24,173	2,578
37	Transportation Equipment	1,966	37,359	5,829
38,39	Misc. Manufacturing	1,044	19,374	1,610
41,42	Transportation	2,127	54,710	2,355
48	Communications	255	4,846	357
49	Utilities	740	13,318	867
501,55,75	Automotive Trade & Services	1,423	26,005	7,942
50,51,52	Wholesale & Retail Trade	6,243	109,743	7,005
7692	Welding Repair	90	1,424	91
13	Oil & Gas Extraction	389	11,680	404
078,08	Horticulture & Forestry	537	10,358	316
		37,924	712,223	64,530

Source: U.S. Department of Labor, Bureau of Labor Statistics and OSHA, Office of Regulatory Analysis

Table 2 (page 11) shows that almost 8.8 million workers are exposed to foot injury, while the potential for hand injury exists for 4.7 million workers. Other anatomical parts covered by this rule are eyes (2.8 million workers), head (1.9 million workers) and face (381,000 workers).

OSHA expects that employers will be able to comply with the new and revised requirements without difficulty, because the means of compliance are readily available and because the final rule "grandfathers" equipment that complies with the existing standards.

Costs of Compliance

OSHA estimated compliance costs using data on current practices and exposed population from the PPE survey. Annual compliance costs under the new provisions will approximate \$52.4 million.

OSHA's survey identified 433,149 establishments which need to take steps to come into compliance with the new provisions for hazard assessment. Approximately 47 percent already have a hazard assessment program in place. The cost to conduct hazard assessments for all establishments was estimated to be \$15.9 mil-

lion per year, assuming a reassessment is conducted once every five years.

The new provision for PPE training will affect approximately 10.8 million employees in need of training, at an annual cost of \$36.5 million.

Assessment of Hazards and Benefits

OSHA believes that the risk of fatality and injury to workers is unacceptably high among sectors affected by the revised personal protective equipment standard. The revised standard is designed to enhance compliance with existing requirements and ensure future compliance related to a heightened level of hazard awareness and training. These changes to the standard should help to eliminate or reduce accidents within industries subject to the rule.

The standard has performance-oriented provisions addressing eye, face, hand, head and foot hazards that allow employers to adopt the most up-to-date PPE for use in their establishments. The flexibility to substitute new materials and technologies should produce more comfortable and protective PPE, increasing worker acceptance. OSHA's expectation is that increased use of better equipment will prevent or lessen the severity of many accidents.

Injuries

According to BLS statistics in *Occupational Injuries and Illnesses in the United States by Industry, 1989*, there were a total of 1.6 million lost-workday cases and 1.8 million non-lost-workday cases during the survey year. Estimated injuries which could be prevented by the new standards are shown in Table 4 (page 12).

OSHA estimates that employers will save 712,000 lost workdays and 65,000 non-lost workday cases from compliance with requirements for employee training and workplace hazard assessment. These benefits will be gained through selection of more appropriate PPE, increased awareness of hazards and improved consistency in use.

Accident data indicates that 125 fatal head injuries occur annually. While most fatal head injuries are the result of crushing injuries, falls, explosions and other traumatic events beyond the scope of this standard, some are preventable with the use of head protection. OSHA believes that four head injury fatalities could be prevented each year through compliance with the new provisions of the standard.

Cost Savings to Employers

Based upon the estimated reduction in injuries, OSHA estimates that society will reap substantial economic benefits from prevented injuries. Lost work time injuries are particularly expensive.

While employers typically bear only a fraction of the costs related to injuries, these costs can be substantial. Employers specifically will benefit from reduced lost production time, administrative time spent preparing insurance claims and accident reports, and replacing injured workers. The average lost worktime injury costs employers at least \$4000 and the new rule could save firms over \$150 million annually. Costs involved include:

- Administrative cost of handling insurance company claims.
- Wages paid to other workers for the time not worked (work interrupted).

- Cost of scheduling and funding overtime necessitated by the accident.
- Cost to find and train a replacement worker.
- Extra wage cost to rehabilitate the returning worker at a reduced capacity.
- Cost to clean up, repair, or replace damage from the accident.
- Cost for safety and clerical personnel to record and investigate the accident.

However, the cost of workplace injuries is typically borne primarily by employees themselves. Applying this figure to OSHA's estimate of 37,924 lost workday injuries prevented annually, revisions to the rule should save employees, employers and third parties over \$1 billion annually.

These figures of economic benefits may be conservative, since the benefits analysis focuses on injuries prevented, not reduced severity of injuries. In sum, OSHA estimates the rule will save society over \$1 billion annually, dwarfing the initial \$52 million investment. Employers themselves should save over \$150 million through full compliance with revisions to the PPE standard, approximately three times the estimated cost of compliance.



Danger From Above - Hard Hats Protect Workers

In two recent incidents, workers were struck and injured by falling objects that were dislodged from loads hoisted overhead. In both cases, hard hats worn by the workers prevented more serious injuries from occurring.

- The first incident occurred when workers were preparing to lower two conveyor belt rollers down a shaft. The rollers were secured in a sling. When a worker pulled the tag line to adjust the load, the line slid along the roller and dislodged a 10-pound bearing on the end. The bearing fell 200 feet down the shaft, ricocheted off the lower shaft wall, and hit a worker standing 10 feet inside the shaft. The bearing struck the worker's hard hat, which he was wearing backwards, and hit him on the forehead, knocking him to the ground.
- The second incident occurred while a flagpole was being raised. An iron worker steadying the base of the pole was struck on the head and shoulder by a piece of wood that came loose when the crane operator inadvertently released tension on the choker. The worker initially declined medical attention but received treatment for cervical injury the next day. He underwent neck surgery about two months after the incident.

These incidents suggest a shared lesson regarding the use of hard hats.

- Wear your hard hat, and wear it properly. Hard hats are vital pieces of personal protective equipment. They should be worn near hoisted loads and in all other situations for which they are required. Workers who wear their equipment improperly do not receive the maximum benefit of its protection.

Whenever loads are hoisted overhead, there is always a danger that something will fall. To mitigate this danger, the following precautions should be taken:

- Stay clear of hoisted loads. Workers should take all reasonable precautions to avoid placing themselves beneath a hoisted load.
- Always pay attention to your surroundings. In the second incident, the crane operator's momentary distraction allowed the choker to become slack.

- All loads must be thoroughly checked before they are moved. Loose items must be properly secured or removed and hoisted separately. Rigging should be appropriate for the lift.



EPA Activity

Freon Release Brings Citation from EPA

The owner/manager of a Missouri car-repair shop pleaded guilty for knowingly releasing freon (which contains chlorofluorocarbons or CFCs) while servicing automobile air conditioners at his business. Approximately 60 automobiles were serviced at the shop between January 1992 and July 1993, the period covered by this citation. The owner could face up to five years in prison and/or a \$250,000 fine.

This was the first case filed involving Clean Air Act (CAA) requirements that repair shops use freon recycling equipment. The requirements also mandate that employees be trained and certified in the use of this equipment before servicing motor vehicle air conditioners (MVACs). Mechanics using proper equipment can capture freon in the machine, filter it, and resell it to the next customer.

EPA estimates that prior to implementation of the 1992 CAA requirements, 30 percent of all CFCs released into the atmosphere came from mobile air conditioners with most of the releases occurring during A/C service and repair.

For more information: Contact Linda Algar, EPA Region 7, (913) 551-7060.

EPA Considers Removing Pigment Blue 15:1 from Toxic Chemical List

The Environmental Protection Agency has issued a proposal to remove Pigment Blue 15:1 (copper monochlorophthalocyanine) from the "copper compounds" category of the toxic chemicals list. EPA has concluded that copper

monochlorophthalocyanine is not known to cause acute or chronic toxicity in humans or to have adverse effects in the environment and therefore, does not meet the criteria of EPCRA section 313(d)(2).

The toxic chemicals list is comprised of over 300 chemicals subject to reporting under section 313 of the Emergency Planning and Community Right-to-Know Act. For more information, contact Maria Doa, EPA, (202) 260-9592 or the EPCRA Hotline (800) 535-0202.

EPA Compiles Radon Maps for Upper Midwest

Region 5 of the Environmental Protection Agency (EPA) recently released maps identifying radon risks for each county in the six upper Midwest states. Radon is a radioactive gas which rises naturally from the soil and can accumulate in buildings. Annually, an estimated 14,000 deaths in the U.S. are attributed to radon contamination.

The maps will help government and other organizations target high-risk areas and populations. They can determine whether counties fall into high, moderate, or low radon zones and where special building codes may be necessary.

EPA compiled the maps using data on indoor radon measurements, foundation types, the amount of uranium in underground rocks, geology, and soil permeability. The Environmental Protection Agency strongly recommends radon testing.

For more information on the maps or on radon issues, contact EPA's Region 5 at (312) 886-6042.

"Safe & Secure", Television Show Highlights Keller's Official OSHA Safety Handbook

Tune your TV sets to CNBC on July 30 at 4:00 p.m. (EST) to watch a full-featured segment on Keller's latest innovation in safety training. This 200-page, full-color, illustrated handbook features all 17 of OSHA's most focused-on topics including lockout tagout, confined spaces and forklift safety. The employee receipt page used for training documentation and the low cost make this publication an ideal training tool for all your employees. For a free sample please call us toll-free at 1-800-531-8899.

RCRA Updates Inspection Manual

The Environmental Protection Agency (EPA) recently announced the availability of *The 1993 RCRA Inspection Manual*. This updated guide for final inspections replaces the 1988 RCRA Inspection Manual.

This manual is primarily intended for use by RCRA field inspectors to assist them in compliance evaluation inspections of RCRA generators, transporters, and treatment, storage, and disposal (TSDs) facilities. However, EPA has made it available to the public.

Copies of the new manual are available for viewing at all EPA libraries. It can be purchased from the National Technical Information Service (NTIS), U.S. Department of Commerce, Springfield, VA 22161 (703) 487-4600. Request *The 1993 RCRA Inspection Manual* (NTIS #PB94-963-605).

CTL023224

SEMINARS AND WORKSHOPS

J.J. Keller & Associates, Inc., will be holding the following seminars and workshops in September and October of this year. Call (800) 642-2067 for more information.

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20 Albany, NY
21 East Syracuse, NY
22 Buffalo, NY

OSHA WORKSHOP

13 Ontario, CA
15 San Diego, CA

ALCOHOL & DRUG COMPLIANCE SEMINAR

20-21 Houston, TX
22-23 Dallas, TX
27-28 Nashville, TN
29-30 Memphis, TN

WORKER'S COMPENSATION SEMINAR

1 Philadelphia, PA
13 Des Moines, IA
14 Kansas City, MO
15 St. Louis, MO
20 Natick, MA
21 Saddlebrook, NJ
22 East Elmhurst, NY

HM-181 SEMINAR

20 Fort Wayne, IN
21 Indianapolis, IN
22 New Albany, IN

HM-181 WORKSHOP

13-14 Tulsa, OK
15-16 Oklahoma City, OK

HM-181 TECHNICAL TRAINING COURSE

14-16 Natick, MA

HAZARDOUS WASTE MANAGEMENT SEMINAR

27 Knoxville, TN
28 Nashville, TN
29 Memphis, TN

OCTOBER

OSHA MANAGEMENT - BEYOND COMPLIANCE

19-21 King of Prussia, PA

ALCOHOL & DRUG COMPLIANCE SEMINAR

11-12 Minneapolis, MN
13-14 Milwaukee, WI
18-19 Coraopolis, PA
20-21 Harrisburg, PA

WORKER'S COMPENSATION SEMINAR

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5 Columbus, OH
6 Cleveland, OH
11 Memphis, TN
12 Birmingham, AL
13 Atlanta, GA
25 Portage, IN
26 LaGrange, IL
27 Arlington Heights, IL

HM-181 TECHNICAL TRAINING COURSE

26-28 Long Beach, CA

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Highlight on Publications —

Compliance Audits

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Specifications

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Compliance Need

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Product Information

This "one-stop" reference helps save time by consolidating compliance requirements for OSHA/EPA/DOT training and recordkeeping. It clearly explains requirements and how to handle them to avoid duplicating compliance efforts. It also provides a unified, comprehensive approach to recordkeeping to help assure successful compliance as well as proper documentation in the event of a lawsuit or agency enforcement action. Samples of forms, logs and other support documentation are included.

Specifications

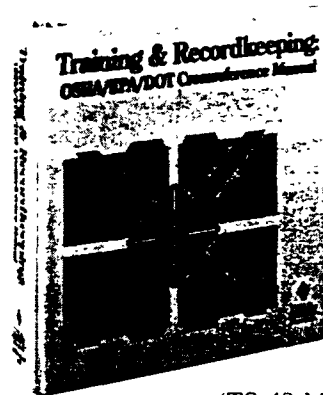
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Highlight on Training —

Lockout/Tagout Safety Training

A Video Training Kit

Compliance Need

29 CFR 1910.147 requires that employees involved in certain processes must be provided with a specific training program, on lockout/tagout.

Product Information

A full-color video shows employees practicing proper lockout/tagout procedures in an actual manufacturing plant. It includes employee handbooks filled with the exact training information called for in 29CFR, Part 1910.147. the kit focuses on energy sources - how to identify them, what procedures are required to avoid life threatening situations, how to ensure a "Zero Energy State", when to use tags, what rules to follow for using multiple locks, and other information. It includes the proper paperwork for meeting documentation requirements. Each kit contains enough material to train up to 10 employees. Additional materials can be ordered separately.

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- ▼ 1 VHS, full-color, 13-minute Video
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- ▼ 10 Employee Handbooks (20 pages each; pre- and post-training quizzes included)
- ▼ 1 Training Log
- ▼ 10 Wallet Cards

Safe Forklift Operations

A Video Training Kit

Compliance Need

1910.178(1) states that anyone who operates a powered industrial truck (forklift) must be trained.

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This ready-to-use program covers everything the forklift operator needs to know based on OSHA's Part 1910.178 training requirements. The full-color training video shows professional forklift drivers in different warehouse situations. Topics covered include: inspecting the forklift, picking up and traveling with loads, stacking and dropping loads, working with smaller lift devices, and proper procedures for using hand trucks and other equipment. The kit comes in an attractive clamshell binder for convenient storage of components. Each kit contains enough material to train up to 10 employees. Additional materials can be ordered separately.

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- ▼ 10 Employee Handbooks (20 pages each; pre- and post-training quizzes included)
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