Job Safety & Health Quarterly

JSHQ

Volume 11 Number 1
Fall 1999

Trenching Is a Dangerous and Dirty Business!

U.S. Department of Labor
Alexis M. Herman, Secretary

Occupational Safety and Health Administration
Charles N. Jeffress, Assistant Secretary

Job Safety & Health Quarterly is the official magazine of the Occupational Safety and Health Administration, U.S. Department of Labor. It is available by subscription from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402, for $15.00 per year, or $18.75 if mailed to a foreign address. Single copies are $5.00 (U.S.) or $6.25 (foreign).

The Secretary of Labor has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Department. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget.

Editorial communications should be addressed to the Editor, Job Safety & Health Quarterly, Occupational Safety and Health Administration, 200 Constitution Avenue, N.W., Washington, DC 20210.

STAFF
Anne Crown-Cyr, *Editor*
Kerri L. Lawrence, *Associate Editor*
Edwin Bowers, *Writer*
Pat Foreman, *Writer*
Kristin Landry, GVA Inc., *Art/Production*
Photography: Ken Papaleo, cover, p. 26, "Reprinted with permission of the Denver Rocky Mountain News", Denver, CO; Dave Miller, OSHA Area Office, Baltimore, MD, p. 25; Jim Boom, OSHA Directorate of Compliance, Washington, DC, p. 27; Washington State Department of Labor and Industries, SHARP staff, Olympia, WA, p. 35; OSHA Office of Occupational Health Nursing, Directorate of Technical Support, U.S. Department of Labor, Washington, DC, pp. 30-31. U.S. Department of Labor, Washington, DC, pp. 39-44.

From the Editor...

Our cover focuses on trenching and excavation in the construction industry—one of the top four hazards OSHA looks at in this risky business. Previous issues of Job Safety & Health Quarterly identified the hazards of the construction industry and the use of scaffolds. Reducing worker fatalities by 15 percent in construction and other high-hazard industries is one of the agency's goals.

Another article features various state initiatives on ergonomics—the science of fitting the job to the worker—which is the solution to many musculoskeletal disorders. About 600,000 such injuries strike workers every year and cost businesses $1 of every $3 spent for workers' compensation.

We also take a look at global labeling requirements—pursuant to OSHA's hazard communication standard—and how the U.S. and its partners are dealing with this complex topic. And we also see how OSHA's Nurse Intern Program benefits both students and the agency.

See our *Q&A, What's Happening?, Mark Your Calendar,* and the *OSHA Semiannual Agenda* columns for the latest information on OSHA programs, activities, and training. Our *Toolbox* and *FatalFacts* columns identify trenching hazards and preventive measures. We've added an *ErgoFacts* that shows how process improvements reduce worker injuries from lifting.

Enjoy the issue.

Anne Crown-Cyr

Anne Crown-Cyr
Editor

Job Safety & Health Quarterly

JSHQ

Volume 11 Number 1
Fall 1999

FEATURES

VPP

DEPARTMENTS

Assistant Secretary

We've all been told if we pay attention to little details, we can avoid big problems. Oil the machine and prevent the breakdown. Watch the pot and keep the sauce from burning. Add insulation and save on the heating bill.

That's true with our bodies as well. If we deal with little aches and pains, we can foresee and forestall serious injury. And that's what ergonomics is all about. It's the science of fitting work to workers. The goal is to reduce unnecessary wear and tear on human muscles and joints and prevent injuries.

A mismatch between workers and their work can lead to serious injury. We want to prevent painful, potentially disabling, musculoskeletal disorders (MSDs) that result from overexertion or repetitive motion. That is why OSHA has proposed a new ergonomics standard.

Each year, more than 600,000 workers experience MSDs serious enough to cause them to miss work. Injuries to another 1.2 million workers limit their ability to handle their regular jobs. MSDs cost employers $15-$20 billion every year in workers' compensation costs alone while other direct costs add another $30-$40 billion.

OSHA's proposed ergonomics standard would save $9 billion per year by preventing an average of 300,000 injuries annually—one-sixth of the total. Over 10 years, 3 million injuries would be prevented. The average annual cost of fixing a problem job is only about $150.

Hundreds of companies have proven that a systematic approach to MSDs—an ergonomics program—works to reduce injuries. Companies like 3M, Ford Motor

Company, Kraft Foods, and Fieldcrest Cannon have demonstrated that establishing an ergonomics program leads to fewer injuries, lower costs, increased productivity, and higher employee morale. But less than 30 percent of all U.S. businesses have followed their lead.

OSHA's proposal focuses on high risk jobs—manual handling and manufacturing production. These jobs account for about 60 percent of the lost-workday injuries. About 25 percent of general industry worksites include jobs like these and would automatically need to develop a basic ergonomics program.

If an employee actually experiences a covered MSD, an employer would need to do more. That just makes sense. If workers are getting hurt, employers need to address the problem. In some cases, employers could use a "Quick Fix"—just fix the job within 90 days and be done with it. For more complicated problems, an employer would need to establish a full ergonomics program for the problem job.

We've based our proposal on existing good industry practices—interventions that businesses are actually using and that have been proven effective in protecting workers. The proposal offers maximum flexibility for employers to tailor solutions to their individual worksites. In addition, it includes a grandfather clause for successful ergonomics programs that employers have already put in place.

Ergonomics programs work. They reduce injuries. They improve employee morale. And they save money for employers. Good ergonomics is good economics. That makes ergonomics truly a win-win proposition.

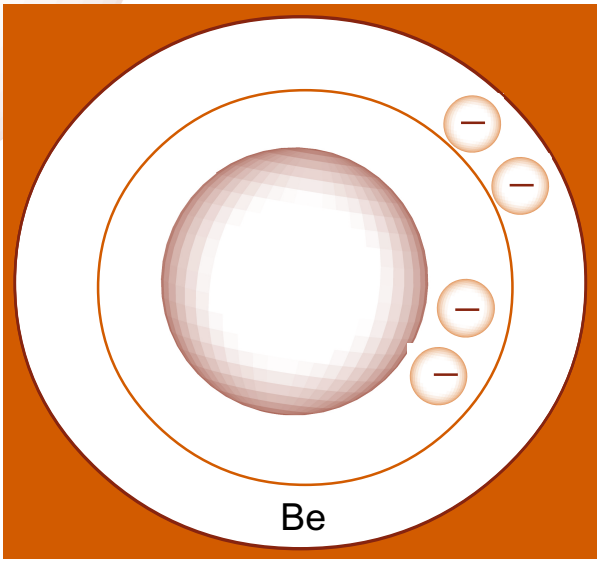
Charles Jeffress
Assistant Secretary of Labor
for Occupational Safety and Health

Q What steps is OSHA taking to deal with the hazards of beryllium?

A Beryllium, a metal found in beryl and bertandite rock, is extremely lightweight and hard, nonmagnetic, and a good conductor of electricity and heat. Its use in the U.S. began in the 1940s in making atomic weapons. Today, it is still used in that capacity and in many others, including metalworking, ceramic manufacturing, electronic applications, laboratory work, dental alloys, and sporting goods.

OSHA recently issued a comprehensive, widespread health hazard bulletin warning workers of the danger of beryllium exposure even at levels below OSHA's standard. Under the current OSHA standard, it is unsafe for workers to be exposed to more than 2 micrograms of beryllium per cubic meter of air for an 8-hour, time-weighted average or to more than 5 micrograms per cubic meter of air for more than 30 minutes. Further, employees should never be exposed to more than 25 micrograms of beryllium per cubic meter of air, no matter how short the duration. OSHA is working on revising its standard to a more stringent exposure level.

To alert the public about beryllium, OSHA published and distributed a *Hazard Information Bulletin* to various health and safety officials across the country. OSHA recommends that employers use engineering controls, work practices, and personal protective equipment to limit exposure by inhalation or skin contact. The bulletin also includes a list of several research centers that offer health screening and surveillance programs to assist in identifying and treating beryllium-exposed workers who may have become sensitized or who may have chronic beryllium disease (CBD). Symptoms of CBD include unexplained cough, shortness of breath, fatigue, weight loss or loss of appetite, fever, and/or skin rash. OSHA urges that exposed employees see a physician or a health care professional who specializes in occupational lung diseases to determine the presence of the disease or beryllium sensitization, an allergic reaction that increases the risk of CBD.



"The Department of Energy (DOE) has proposed a revision of its beryllium regulation for DOE sites," says Assistant Secretary of Labor for Occupational Safety and Health Charles Jeffress, "and we will review the issue following DOE's actions."

In addition to probable changes by DOE and OSHA to reduce the risk of disease from beryllium exposure, the American Conference of Governmental Hygienists recently announced that it intends to slash its recommended exposure limits by 90 percent, from 2 micrograms per cubic meter of air to 0.2 micrograms per cubic meter averaged over an 8-hour work shift. For more information on beryllium, visit OSHA's website at www.osha.gov.

Q What is OSHA's new proposed policy on companies' voluntary safety and health self-audits during an OSHA inspection?

A The draft policy statement provides that compliance safety and health officers will NOT routinely request employers' voluntary self-audit reports when initiating an inspection. In addition, the agency proposes to encourage employers to conduct voluntary self-audits by establishing a safe harbor against a finding of willfulness.

OSHA includes in many of its standards an explicit requirement that employers conduct self-audits, but many businesses go beyond the requirements of the standards and conduct voluntary audits of their workplaces. Although some stakeholders have complained that OSHA's use of voluntary self-audits in enforcement proceedings discourages employers from conducting them, the agency points out that there is no evidence that a significant number of employers have stopped doing voluntary self-audits or that fewer employers are initiating them. In fact, the evidence from recent surveys shows that most employers conduct voluntary self-audits and that OSHA's use of self-audits in enforcement proceedings has not discouraged them.

OSHA also will seek access to such reports only in limited situations in which the agency believes that a specific safety or health hazard warrants investigation and determines that such records may be relevant to identify or determine the circumstances of the hazardous condition. An example of such a situation is when a fatal or catastrophic accident occurs and OSHA investigates the causes. Another example would be when the agency has reason to believe a hazardous, non-complying condition exists and then seeks to evaluate the extent of the hazard.

OSHA's safe-harbor provision means that if an employer is responding in good faith to a violative condition identified in a voluntary self-audit report and OSHA discovers the violation during an enforcement inspection, OSHA will not treat the report as evidence of a willful violation.

OSHA also proposes that an employer's prompt and appropriate response to a condition discovered during a voluntary self-audit may be considered evidence of good faith, qualifying the employer for a substantial civil penalty reduction. According to OSHA's *Field Inspection Reference Manual*, employers who have implemented a safety and health program, including voluntary self-audits, can receive up to a 25-percent penalty reduction. JSHQ

Publications

NCI

The National Cancer Institute's (NCI) publication, *Advanced Cancer: Living Each Day*, provides information about end-of-life issues for patients with advanced cancer as well as those facing the loss of a loved one to the disease.

To order a copy of the booklet, contact the National Cancer Institute, Building 31, Room 10A03, Bethesda, MD 20892, or the NCI website at http://www.nci.nih.gov.

NIOSH

The National Institute for Occupational Safety and Health (NIOSH) has some new publications on safety and health.

- *Hazard Controls*—"Control of Drywall Sanding Dust Exposures," HC30, July 8, 1999; (http://www.cdc.gov. niosh. he30.html).
- *Hazard Controls*—"Control of Dusts from Sanding in Autobody Repair Shops," HC1, July 9, 1999; (http:// www.cdc.gov/niosh/hazcommn. html).
- *Providing Safety and Health Protection for a Diverse Construction Workforce: Issues and Ideas*, DHHS (NIOSH) Publication 98-136, October 5, 1999; (http:/ /www.cdc.gov.niosh.99-140.html).

Published copies of these items, are available from NIOSH, Centers for Disease Control and Prevention, Publications Division, 4676 Columbia Parkway, Mail Stop C13, Cincinnati, OH 45226; 1-800-35-NIOSH. For more information on these and other related safety and health issues, visit the NIOSH website at www.cdc.gov/ niosh.

Awards

The United Steelworkers of America honored former OSHA Area Director and Acting Regional Administrator, Ron McCann, Chicago, IL, at their annual safety conference held in Pittsburgh in mid-November. McCann received the union's "J. William Lloyd" award for outstanding service in the cause of worker safety and health.

McCann joins former recipients Eula Bingham, Peg Seminario, Tom Mancuso, Elie Martell, and Lou Beliczky as a Lloyd awardee. Of McCann, the union said that he "never wavered in his vigorous application of the law and his insistence on worker and union rights. His courage, integrity, and dedication have improved the lives of thousands of American workers."

The union also presented its "A.Q. Evans Award" to several USWA locals for their efforts to fight for workers exposed to serious health and safety hazards, including exposure to lead on the job. The USWA created the A.Q. Evans award in honor of Evans' efforts and contributions in passing OSHA's lead standard. Also honored at the ceremony was Evans' daughter, Celesta Hunt, now an OSHA employee in Indianapolis.

Calument City, Illinois, Area Director Gary Anderson and Indianapolis Area Director Kenneth Gilbert, now Hunt's supervisor, were among the OSHA investigators whose work with Evans was instrumental in developing the lead standard. Hunt remarked at the award ceremony, "I am proud to work for an agency that my father held so much respect for. The A.Q. Evans Award is a great tribute to a man that dedicated his life in the fight for a safer and healthier environment for all American workers."

VPP Update

Star Program

New

- Allied Signal, Inc., Specialty Films, Pottsville, PA
- Bush, Boake & Allen, Inc., Norwood, NJ
- Ciba Specialty Chemicals Corp., Tarrytown, NY
- East Penn Manufacturing Co., Inc., Metals Division, Lyon Station, PA
- Foster Wheeler Environmental Corp., Rocky Mountain Arsenal Remediation Project, Commerce, CO
- General Electric International, Inc., Inspection and Repairs Center, Dallas, TX
- General Electric Company, Plainville, CT
- Georgia Pacific Corp., Sweetwater, TX
- International Paper, Meldrim, GA
- International Paper's Alabama Supertree Nursery, Selma, AL
- International Paper's El Paso Container, EL Paso, TX
- International Paper's Liquid Packaging, Philadelphia, PA
- Lucent Engineering Research Center, Hopewell, NJ
- Lucent Technologies, Systems and Components Division, Mesquite, TX
- Morton International, Morton Automotive Coatings, Lansing, IL

- PP&L, Inc., Martins Creek Steam Electric Station, Martins Creek, PA
- Reichold, Inc., Omaha, NE
- Rohm & Haas Bristol, Bristol, PA

Continuing	Years
• Kerr McGee Chemical, LLC, Hamilton, MS	6
• Fort James Corp., Green Bay, WI	4
• Milliken & Company, Alma Plant, Nicholls, GA	4
• WestPoint Stevens, Inc., Valley, AL	4
• Russell Corporation, Yarn Plant Three, Alexander City, AL	4
• American Ref-Fuel of Niagara, L.P., Niagara Falls, NY	3
• Georgia Pacific Corp., Warrenton Chip-N-Saw Mill, Warrenton, GA	3
• International Paper, Oswego, NY	3
• International Paper, Vicksburg, MS	3
• Solutia Chemical, J.F. Queeny Plant, St. Louis, MO	3
• Solutia, Inc., Chocolate Bayou, Alvin, TX	3
• Titleist and Foot-Joy Worldwide, Ball Plant 1, Acushnet, MA	3

Advanced From Merit to Star

- 3M Company, Valley, NE
- Champion International, Corrigan Mill, Corrigan, TX
- Champion International, Camden Complex, Camden, TX
- General Electric Co., Decatur, AL
- Iams Co., North Sioux City, SD
- International Paper's Pluswood Site, Oshkosh, WI
- Laboratory Corporation of America, Uniondale, NY
- M.A. Mortenson's Town Creek (WTP), Macon, GA
- Potlatch Corp., Post Falls Particleboard, Post Falls, ID
- The Sherwin Williams Co., Chicago, IL
- Westway Terminal Company, Inc., Jacksonville, FL

Merit Program

New

- Boone Retirement Center, Columbia, MO
- Carrier Corp., Residential Light and Commercial Systems, Tyler, TX
- Department of Interior, Bureau of Reclamation, Elephant Butte Field Division, Albuquerque, NM
- Lozier Corp., McClure, PA

Continuing Sites

Demonstration

- Gregg Industries Insulators, Inc. at Texas Eastman's Plant, Longview, TX

This brings the total participants to **442** sites in the Federal VPP: **376** in ***Star***, **49** in ***Merit***, and **17** in ***Demonstration***.

For more information on OSHA's Voluntary Protection Programs, write the OSHA Directorate of Federal-State Operations, 200 Constitution Avenue, N.W., Room N-3700, Washington, DC 20210; or call (202) 693-2213. See also **Outreach** on OSHA's website at www.osha.gov.

Mark Your Calendar

OSHA Training Institute Schedule

121 Introduction to Industrial Hygiene for Safety Personnel

Focuses on the general concepts of industrial hygiene, including the recognition of common health hazards such as air contaminants and noise, hazard evaluation through screening and sampling, and control methods for health hazards including ventilation and personal protective equipment.

Tuition: $1,200
Dates: 01/25/00 - 02/04/00

200a Construction Standards

A shortened version of course 200 that gives an overview of OSHA's construction standards and of the requirements of the most frequently referenced standards.

Tuition: $624
Dates: 03/06/00 - 03/10/00

201a Hazardous Materials

A shortened version of course 201 that covers OSHA general industry standards and consensus and proprietary standards relating to hazardous materials such as flammable and combustible liquids, compressed gases, LP-gases, and cryogenic liquids.

Tuition: $624
Dates: 01/24/00 - 01/28/00

204 Machinery and Machine Guarding Standards

Focuses on the various types of common machinery and the related safety standards. Also includes hands-on training in the laboratories.

Tuition: $912
Dates: 03/02/00 - 03/10/00

205 Cranes and Rigging Safety for Construction

Describes various types of mobile and tower cranes used in construction operations and provides information on crane operations, inspection, and maintenance.

Tuition: $480
Dates: 03/28/00 - 03/31/00

207a Fire Protection and Life Safety

A shortened version of course 207 that helps the student recognize potential fire hazards and emergency procedures. Includes the chemistry of fire, types and effectiveness of extinguishing agents, means of egress, detection and alarm systems, fire brigades, fire prevention plans, and the Life Safety Code (NFPA 101).

Tuition: $624
Dates: 01/31/00 - 02/04/00

220 Industrial Noise

Deals with problems of occupational noise such as nature, hazards, evaluation, and control. Includes physics of sound, effects of noise, occupational noise standards, noise instrumentation and measurement, frequency analysis, and noise control techniques.

Tuition: $912
Dates: 03/31/00 - 04/07/00

221 Principles of Industrial Ventilation

Describes the principle of industrial ventilation as a means of controlling hazardous air contaminants. Includes the classification of ventilation systems, fundamentals of airflow, makeup air, fans, air cleaners, ventilation system surveys, and OSHA policies and standards.

Tuition: $912
Dates: 03/02/00 - 03/10/00

222 Respiratory Protection

Discusses the requirements for establishing, maintaining, and monitoring a respirator program. Includes terminology, OSHA and ANSI* standards, NIOSH certifications, and medical evaluation recommendations.

Tuition: $912
Dates: 02/10/00 - 02/18/00

222a Respiratory Protection

A shortened version of course 222 that includes the requirements for establishing, maintaining, and monitoring a respirator program. Includes terminology, OSHA and ANSI standards, NIOSH certifications, and medical evaluation recommendations.

Tuition: $480
Dates: 03/21/00 - 03/24/00

223 Industrial Toxicology

Focuses on the principles of toxicology as they relate to industrial processes. Includes recent toxicological data related to OSHA standards and current methods of toxicological testing as well as the chemical hazards encountered in the industrial environment.

Tuition: $480
Dates: 03/21/00 - 03/24/00

234 Biohazards

Assists health and safety professionals in the recognition, evaluation, and control of biological hazards during occupational exposure. Focuses on work practices, personal protective equipment, control techniques, recognized pathogens, and current applicable OSHA standards.

Tuition: $480
Dates: 01/11/00 - 01/14/00

245 Evaluation of Safety and Health Programs

Focuses on assessing safety and health programs, emphasizing techniques to evaluate the thoroughness of the programs and the effectiveness of their implementation.

Tuition: $480
Dates: 03/07/00 - 03/10/00

30l Excavation, Trenching, and Soil Mechanics

Presents detailed information on OSHA standards and on the safety aspects of excavation and trenching. Introduces concepts such as practical soil mechanics and its relationship to the stability of shored and unshored slopes and walls of excavations.

Tuition: $480
Dates: 01/25/00 - 01/28/00

302 Tunneling and Underground Operations

This 3-day course focuses on safety and health aspects of underground operations and related OSHA standards. Introduces the student to basic tunneling operations, from sinking the initial shaft to completing the project. Topics include inspection procedures, drill and blast methods, boring machines, and environmental controls, including air quality and ventilation.

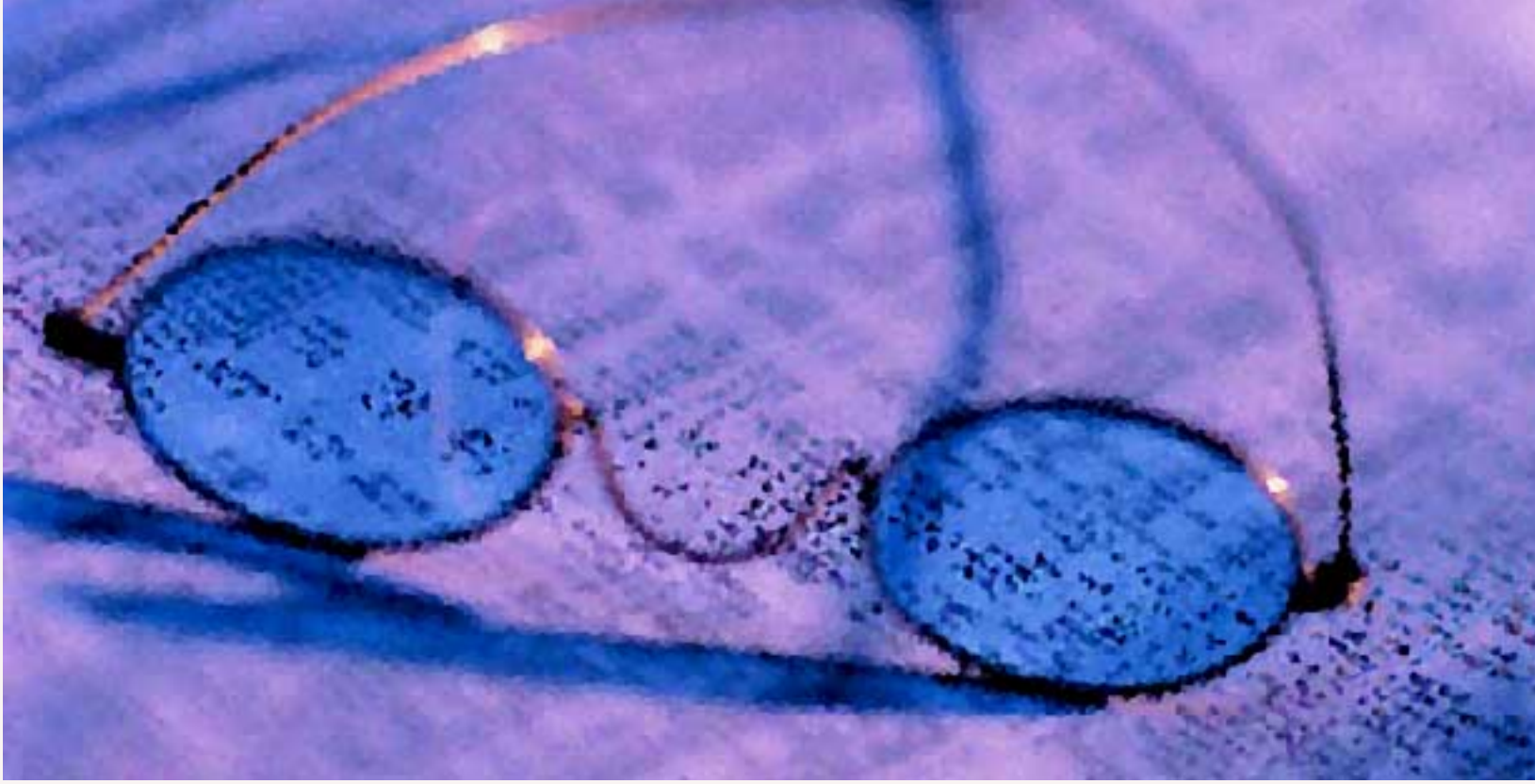
Tuition: $432
Dates: 01/25/00 - 01/27/00

303 Concrete, Forms, and Shoring

Teaches the principles of forms and shoring and the quality of concrete, hot and cold weather placing practices, and inspection procedures, including reinforced concrete, lift-slab construction, and reading concrete blueprints and shoring plans.

Tuition: $432
Dates: 03/21/00 - 03/23/00

* ANSI—American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036; www.ansi.org.



304 Power Press Guarding

Discusses part-revolution and full-revolution clutch mechanisms. Students operate presses, determine appropriate safeguards, and analyze press operations.

Tuition: $480
Dates: 02/08/00 - 02/11/00

308 Principles of Scaffolding

Presents detailed information on the safety aspects of scaffolding from installation to dismantling. Includes built-up scaffolds, suspension scaffolds, and interpretation of related standards. Demonstrates installation and dismantling methods.

Tuition: $480
Dates: 02/15/00 - 02/18/00

309 Electrical Standards

Provides an in-depth study of OSHA's electrical standards and hazards associated with electrical installations and equipment. Includes single- and three-phase systems, cord- and plug-connected and fixed equipment, grounding, ground-fault circuit interrupters, hazardous locations, and safety-related work practices.

Tuition: $1,200
Dates: 03/14/00 - 03/24/00

309a Electrical Standards

A shortened version of course 309 that provides an in-depth study of OSHA's electrical standards and hazards associated with electrical installations and equipment. Includes single- and three-phase systems, cord- and plug-connected and fixed equipment, grounding, ground-fault circuit interrupters, hazardous locations, and safety related work practices.

Tuition: $624
Dates: 01/10/00 - 01/14/00

311 Fall Arrest Systems

Provides an overview of state-of-the-art technology for fall protection, including the principles of fall protection, the components of fall arrest systems, the limitations of fall arrest equipment, and OSHA policies regarding fall protection.

Tuition: $480
Dates: 01/11/00 - 01/14/00
03/28/00 - 03/31/00

500 Trainer Course in Occupational Safety and Health Standards for Construction Industry

Teaches how the provisions of the *OSH Act* may be implemented in the workplace. Includes an introduction to OSHA's general industry standards and an overview of the requirements of the more frequently referenced standards.

Tuition: $624
Dates: 02/28/00 - 03/03/00

502 Update for Construction Industry Outreach Trainers

For personnel in the private sector who have completed course 500 and who are active trainers in the outreach program. Provides an update on such topics as OSHA construction standards, policies, and regulations.

Tuition: $432
Dates: 02/08/00 - 02/10/00

503 Update for General Industry Outreach Trainers

For personnel in the private sector who have completed course 501 and who are active trainers in the outreach program. Provides an update on OSHA general industry standards and OSHA policies.

Tuition: $432
Dates: 02/29/00 - 03/02/00

510 Occupational Safety and Health Standards for the Construction Industry

Covers OSHA policies, procedures, standards, and construction safety and health principles as well as the scope and application of the OSHA construction standards.

Tuition: $624
Dates: 01/31/00 - 02/04/00

600 Collateral Duty Course for Other Federal Agencies

Teaches how the provisions of the *OSH Act*, Executive Order 12196, Title 29 of the *Code of Federal Regulations* (*CFR*) Part 1960, and *29 CFR 1910* may be implemented in the workplace and effectively assist agency safety and health officers in inspection and abatement efforts.

Tuition: $552
Dates: 01/10/00 - 01/14/00

To register for courses or to obtain a training catalog, write the OSHA Training Institute, 1555 Times Drive, Des Plaines, IL 60018; or call (847) 297-4913. See also **Outreach** on OSHA's website at www.osha.gov.

OSHA Training Institute Education Centers

The OSHA Training Institute also has a program for other institutions to conduct OSHA courses for the private sector and federal agencies. These include Eastern Michigan University/United Auto Workers, Ypsilanti, MI, (800) 932-8689; Georgia Technological Research Institute, Atlanta, GA, (800) 653-3629; Great Lakes OSHA Training Consortium, St. Paul, MN, (800) 493-2060; Keene State College, Manchester, NH, (800) 449-6742; Metropolitan Community Colleges—Business and Technology Center, Kansas City, MO, (800) 841-7158; National Resource Center for OSHA Training, Washington, DC, (800) 367-6724; National Safety Education Center, DeKalb, IL, (800) 656-5317; Niagara County Community College, Lockport, NY, (800) 280-6742; Red Rocks Community College and Trinidad State Junior College, Lakewood, CO, (800) 933-8394; Texas Engineering Extension Service, Mesquite, TX, (800) 723-3811; University of California, San Diego, CA, (800) 358-9206; and University of Washington, Seattle, WA, (800) 326-7568.

For tuition rates and registration information, contact the institution offering the courses and see also OSHA's website at **www.osha.gov**. For alternate course locations noted in parentheses, please contact the institution for more information.

201a Hazardous Materials

Location:	Eastern Michigan University United Auto Workers (Findlay, OH)	Dates: 03/06/00 - 03/09/00
Location:	Keene State College	Dates: 03/06/00 - 03/09/00
Location:	National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 03/13/00 - 03/16/00
Location:	Niagara County Community College	Dates: 03/27/00 - 03/30/00

204a Machinery and Machine Guarding Standards

Location:	Georgia Technological Research Institute	Dates: 02/21/00 - 02/25/00
Location:	Keene State College	Dates: 02/21/00 - 02/25/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 03/13/00 - 03/16/00
Location:	National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 03/06/00 - 03/09/00
Location:	Niagara County Community College	Dates: 01/18/00 - 01/21/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates: 02/29/00 - 03/03/00
Location:	University of California, San Diego	Dates: 03/07/00 - 03/10/00
Location:	University of Washington (Portland, OR)	Dates: 03/21/00 - 03/24/00

222a Respiratory Protection

Location:	Eastern Michigan University-United Auto Workers	Dates: 02/28/00 - 03/02/00
Location:	Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 02/01/00 - 02/04/00 02/14/00 - 02/17/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 01/24/00 - 01/27/00 03/20/00 - 03/23/00
Location:	National Safety Education Center (Itasca, IL)	Dates: 02/07/00 - 02/09/00
Location:	Niagara County Community College	Dates: 01/11/00 - 01/14/00 03/27/00 - 03/30/00

225 Principles of Ergonomics

Location:	Georgia Technological Research Institute	Dates: 02/15/00 - 02/18/00
Location:	Great Lakes OSHA Training Consortium	Dates: 02/23/00 - 02/25/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 02/21/00 - 02/24/00
Location:	National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 02/07/00 - 02/10/00
Location:	Niagara County Community College	Dates: 02/28/00 - 03/02/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates: 01/05/00 - 01/07/00
Location:	Texas Engineering Extension Service	Dates: 03/06/00 - 03/08/00
Location:	University of Washington	Dates: 02/28/00 - 03/01/00

226 Permit Required Confined Space Entry

Location:	Eastern Michigan University-United Auto Workers (Findlay, OH)	Dates: 01/11/00 - 01/13/00 03/21/00 - 03/23/00
Location:	Great Lakes OSHA Training Consortium	Dates: 03/08/00 - 03/10/00
Location:	Keene State College	Dates: 03/27/00 - 03/30/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 02/21/00 - 02/23/00
Location:	National Safety Education Center (Hillside, IL)	Dates: 03/07/00 - 03/09/00

Location:	Niagara County Community College	Dates:	01/24/00 - 01/27/00
Location:	Red Rocks Community College Trinidad State Junior College	Dates:	03/27/00 - 03/29/00
Location:	Texas Engineering Extension Service (Houston, TX)	Dates:	01/18/00 - 01/20/00 03/06/00 - 03/08/00
Location:	University of California, San Diego	Dates:	03/13/00 - 03/15/00

309a Electrical Standards

Location:	Great Lakes OSHA Training Consortium	Dates:	03/28/00 - 03/31/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates:	01/18/00 - 01/21/00
Location:	National Resource Center for OSHA Training (Morgantown, WV)	Dates:	02/08/00 - 02/11/00
Location:	Niagara County Community College	Dates:	02/22/00 - 02/25/00
Location:	Red Rocks Community College Trinidad State Junior College	Dates:	01/18/00 - 01/21/00
Location:	Texas Engineering Extension Service (Houston, TX)	Dates:	02/14/00 - 02/18/00
Location:	University of California, San Diego	Dates:	01/31/00 - 02/03/00

500 Trainer Course in Occupational Safety and Health Standards for the Construction Industry

Location:	Eastern Michigan University-United Auto Workers (Findlay, OH)	Dates: 01/10/00 - 01/13/00 02/21/00 - 02/24/00 03/06/00 - 03/09/00
Location:	Georgia Technological Research Institute (Orlando, FL)	Dates: 01/24/00 - 01/28/00
Location:	Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 01/11/00 - 01/14/00 01/18/00 - 01/21/00
Location:	Keene State College	Dates: 02/28/00 - 03/03/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 01/10/00 - 01/13/00 03/20/00 - 03/23/00
Location:	National Resource Center for OSHA Training (Charleston,WV)	Dates: 01/25/00 - 01/28/00
	(Silver Spring, MD)	02/28/00 - 03/02/00
	(Pittsburgh, PA)	03/07/00 - 03/10/00
Location:	National Safety Education Center (Hillside, IL)	Dates: 01/17/00 - 01/21/00
	(Itasca, IL)	03/06/00 - 03/10/00
Location:	Niagara County Community College	Dates: 01/10/00 - 01/13/00 03/13/00 - 03/16/00
Location:	Red Rocks Community College Trinidad State Junior College	Dates: 01/03/00 - 01/06/00 02/07/00 - 02/10/00 03/06/00 - 03/09/00
Location:	Texas Engineering Extension Service (Austin, TX)	Dates: 01/10/00 - 01/14/00 01/24/00 - 01/28/00
	(Houston, TX)	02/07/00 - 02/11/00
	(Baton Rouge, LA)	03/20/00 - 03/24/00
Location:	University of California, San Diego (Las Vegas, NV)	Dates: 01/24/00 - 01/27/00 02/07/00 - 02/10/00
	(San Francisco, CA)	03/06/00 - 03/09/00 03/20/00 - 03/23/00
Location:	University of Washington (Portland, OR)	Dates: 01/10/00 - 01/13/00 03/21/00 - 03/24/00

501 Trainer Course in Occupational Safety and Health Standards for General Industry

Location:	Eastern Michigan University-United Auto Workers (Livonia, MI)	Dates: 01/31/00 - 02/03/00 03/13/00 - 03/16/00
Location:	Georgia Technological Research Institute (Orlando, FL)	Dates: 01/24/00 - 01/28/00 03/06/00 - 03/10/00
Location:	Great Lakes OSHA Training Consortium	Dates: 02/29/00 - 03/03/00
Location:	Keene State College	Dates: 01/24/00 - 01/28/00 02/21/00 - 02/25/00 03/20/00 - 03/24/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 01/31/00 - 02/03/00
Location:	National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 01/10/00 - 01/13/00 03/20/00 - 03/23/00
	(Charleston, SC)	03/27/00 - 03/30/00
Location:	National Safety Education Center (Itasca, IL)	Dates: 01/24/00 - 01/28/00 02/14/00 - 02/18/00
	(Elgin, IL)	03/06/00 - 03/10/00
Location:	Niagara County Community College	Dates: 01/03/00 - 01/06/00 02/07/00 - 02/10/00 03/06/00 - 03/09/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates: 01/10/00 - 01/13/00 02/14/00 - 02/17/00 03/13/00 - 03/16/00

Location:	Texas Engineering Extension Service (Houston, TX)	Dates: 01/10/00 - 01/14/00 01/24/00 - 01/28/00
	(Santa Fe, NM)	02/14/00 - 02/18/00
	(San Antonio, TX)	02/14/00 - 02/18/00 02/28/00 - 03/03/00
	(Corpus Christi, TX)	03/27/00 - 03/31/00
Location:	University of California, San Diego	Dates: 01/10/00 - 01/13/00
	(Las Vegas, NV)	02/07/00 - 02/10/00 02/28/00 - 03/02/00
	(San Francisco, CA)	03/06/00 - 03/09/00
Location:	University of Washington (Portland, OR)	Dates: 01/24/00 - 01/27/00 03/13/00 - 03/16/00

502 Update for Construction Industry Outreach Trainers

Location:	Eastern Michigan University-United Auto Workers	Dates: 03/14/00 - 03/16/00
Location:	Georgia Technological Research Institute	Dates: 01/11/00 - 01/13/00
Location:	Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 02/01/00 - 02/03/00 03/01/00 - 03/03/00
Location:	Keene State College	Dates: 02/07/00 - 02/09/00
Location:	Metropolitan Community Colleges Business and Technology Center	Dates: 02/07/00 - 02/09/00
Location:	National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 02/14/00 - 02/16/00
Location:	National Safety Education Center (Itasca, IL)	Dates: 01/11/00 - 01/13/00
	(Hillside, IL)	03/14/00 - 03/16/00
Location:	Niagara County Community College	Dates: 02/16/00 - 02/18/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates: 02/21/00 - 02/23/00
Location:	Texas Engineering Extension Service (Austin, TX)	Dates: 01/10/00 - 01/12/00 01/24/00 - 01/26/00

503 Update for General Industry Outreach Trainers

Location:	Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 01/10/00 - 01/12/00
Location:	Keene State College	Dates: 03/13/00 - 03/15/00

Location: Metropolitan Community Colleges Business and Technology Center	Dates: 02/28/00 - 03/01/00	
Location: National Resource Center for OSHA Training (Morgantown, WV)	Dates: 02/16/00 - 02/18/00	
Location: National Safety Education Center (Itasca, IL)	Dates: 02/29/00 - 03/02/00	
Location: Niagara County Community College	Dates: 01/05/00 - 01/07/00 03/08/00 - 03/10/00	
Location: Red Rocks Community College-Trinidad State Junior College	Dates: 02/23/00 - 02/25/00	
Location: Texas Engineering Extension Service (Houston, TX)	Dates: 01/10/00 - 01/12/00 01/24/00 - 01/26/00	
Location: University of California, San Diego	Dates: 02/07/00 - 02/10/00	
Location: University of Washington (Richland, WA)	Dates: 03/06/00 - 03/08/00	

510 Occupational Safety and Health Standards for the Construction Industry

Location: Eastern Michigan University United Auto Workers	Dates: 02/07/00 - 02/10/00	
Location: Keene State College (Groton, CT)	Dates: 01/10/00 - 01/14/00 03/27/00 - 03/31/00	
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 01/24/00 - 01/27/00	
Location: National Resource Center for OSHA Training (Morgantown, WV)	Dates: 03/21/00 - 03/24/00	
Location: National Safety Education Center (Hillside, IL)	Dates: 02/28/00 - 03/03/00	
Location: Niagara County Community College	Dates: 02/14/00 - 02/17/00	
Location: Red Rocks Community College-Trinidad State Junior College	Dates: 01/24/00 - 01/27/00	
Location: Texas Engineering Extension Service (Houston, TX)	Dates: 01/31/00 - 02/03/00	
Location: University of California, San Diego	Dates: 02/28/00 - 03/02/00	
Location: University of Washington	Dates: 01/03/00 - 01/06/00	

521 OSHA Guide to Industrial Hygiene

Location:	Eastern Michigan University-United Auto Workers	Dates:	02/21/00 - 02/24/00
Location:	Georgia Technological Research Institute	Dates:	02/07/00 - 02/11/00
Location:	Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates:	01/25/00 - 01/28/00 03/14/00 - 03/17/00
Location:	Niagara County Community College	Dates:	03/20/00 - 03/23/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates:	01/24/00 - 01/27/00
Location:	Texas Engineering Extension Service (Austin, TX)	Dates:	03/20/00 - 03/23/00
Location:	University of California, San Diego	Dates:	02/07/00 - 02/10/00

600 Collateral Duty Course for Other Federal Agencies

Location:	Eastern Michigan University-United Auto Workers	Dates:	02/28/00 - 03/02/00
Location:	Georgia Technological Research Institute	Dates:	03/20/00 - 03/24/00
Location:	Niagara County Community College	Dates:	01/31/00 - 02/03/00
Location:	Red Rocks Community College-Trinidad State Junior College	Dates:	02/01/00 - 02/04/00
Location:	University of California, San Diego	Dates:	03/06/00 - 03/09/00
Location:	University of Washington JSHQ	Dates:	02/07/00 - 02/10/00

Newly revised from the National Cancer Institute (NCI)

Advanced Cancer
Living Each Day

Booklet includes
the following topics:

- Coping
- Choices for Care
- Personal Planning

To order free copies of this publication,
call the NCI's Cancer Information Services.

1-800-4-CANCER

federal

Developed biannually, the agenda includes all regulations expected to be under development or review by the agency during that period. The following list is from the agenda as published in the ***Federal Register, October 1999***.

Prerules

Title and Regulation Identifier Number (RIN)*

Control of Hazardous Energy Sources (Lockout/Tagout)(Section 610 Review)
1218-AB59

Cotton Dust
1218-AB74

Fall Protection in the Construction Industry
1218-AB62

Grain Handling Facilities
1218-AB73

Hearing Loss Prevention in Construction Workers
1218-AB89

Occupational Exposure to Ethylene Oxide (Section 610 Review)
1218-AB60

Occupational Exposure to Perchloroethylene
1218-AB86

Process Safety Management of Highly Hazardous Chemicals
1218-AB63

Safety Standards for Scaffolds Used in the Construction Industry—Part II
1218-AB68

Proposed Rules

Ergonomics Programs: Preventing Musculoskeletal Disorders
1218-AB36

Fire Protection in Shipyard Employment (Part 1915, Subpart P) (Shipyards: Fire Safety)
1218-AB51

Nationally Recognized Testing Labs Programs: Fees
1218-AB57

Occupational Exposure to Hexavalent Chromium (Preventing Occupational Illness: Chromium)
1218-AB45

Permissible Exposure Limits (PELs) for Air Contaminants
1218-AB54

Plain Language Revision of the Mechanical Power Transmission Apparatus
1218-AB66

Revocation of Certification Records for Tests, Inspections, and Training
1218-AB65

Safety and Health Programs (for General Industry and the Maritime Industry)
1218-AB41

Signs, Signals, and Barricades
1218-AB88

Spray Applications
1218-AB84

Standards Improvement (Miscellaneous Changes) for General Industry, Marine Terminals, and Construction Standards (Phase II)
1218-AB81

Final Rules

Consultation Agreements
1218-AB79

Employer Payment for Personal Protective Equipment
1218-AB77

Occupational Exposure to Tuberculosis
1218-AB46

Recording and Reporting Occupational Injuries and Illnesses (Simplified Injury/Illness Recordkeeping Requirements)
1218-AB24

Respiratory Protection (Proper Use of Modern Respirators)
1218-AA05

Steel Erection (Part 1926) Safety Protection for Ironworkers
1218-AA65

Long Term

Access and Egress in Shipyards (Part 1915, Subpart E) (Phase I) (Shipyards: Emergency Exits and Aisles)
1218-AA70

Accreditation of Training Programs for Hazardous Waste Operations (Part 1910)
1218-AB27

Confined Spaces in Construction (Part 1926) (Construction: Preventing Suffocation/Explosions in Confined Spaces)
1218-AB47

Consolidation of Records Maintenance Requirements in OSHA Standards
1218-AB78

Control of Hazardous Energy (Lockout) in Construction (Part 1926) (Preventing Construction Injuries/Fatalities; Lockout)
1218-AB71

Electric Power Transmission and Distribution; Electrical Protective Equipment in the Construction Industry
1218-AB67

Exit Routes
1218-AB82

Flammable and Combustible Liquids
1218-AB61

General Working Conditions for Shipyard Employment
1218-AB50

Glycol Ethers: 2-Methoxyethanol, 2-Ethoxyethanol, and Their Acetates: Protecting Reproductive Health
1218-AA84

Indoor Air Quality in the Workplace
1218-AB37

Longshoring and Marine Terminal (Parts 1917 and 1918)—Reopening of the Record (Vertical Tandem Lifts (VTLs))
1218-AA56

Metalworking Fluids: Protecting Respiratory Health
1218-AB58

Occupational Exposure to Beryllium
1218-AB76

Occupational Exposure to Crystalline Silica
1218-AB70

Oil and Gas Well Drilling and Servicing
1218-AB83

Prevention of Needlestick and Other Sharps Injuries
1218-AB85

Safety and Health Programs for Construction
1218-AB69

Sanitation
1218-AB87

Scaffolds in Shipyards (Part 1915-Subpart N) (Phase I) (Shipyards: Safer Scaffolds)
1218-AA68

Walking Working Surfaces and Personal Fall Protection Systems (Part 1910) (Slips, Trips, and Fall Prevention)
1218-AB80

Completed Actions

Fire Brigades
1218-AB64

Plain English Revision of Existing Standards
1218-AB55
JSHQ

*Office of Management and Budget (OMB) Identification Number. For copies of OSHA final rules published in the *Federal Register*, contact the Superintendent of Documents, Government Printing Office, Washington, DC 20402, for $8.00 a copy prepaid. Subscriptions are available at $607 per year. GPO products also can be ordered online at http://www.gpo.gov.

Trenching Is a Dangerous and Dirty Business!

by Jim Boom

Tragically, every year workers continue to lose their lives from trench or excavation cave-ins. What is even more tragic is that virtually all of the cave-in fatalities could have been prevented by following OSHA's excavation standard.[1] Newspaper articles reporting these tragedies are often accompanied by photos of coworkers or fire department rescue teams attempting to rescue the victims, sometimes placing the would-be rescuers in danger as well. These accidents happen because persons responsible for providing a safe workplace choose to ignore well-known safety requirements for trenches and excavations.

Trenching and excavating work is dangerous. In 1998, 33 workers lost their lives while doing excavation work, with cave-ins accounting for nearly 70 percent, or 23, of the fatalities.[2] Five deaths resulted from employee contact with backhoe buckets within an excavation. The remaining fatalities were due to electrocution and crushing incidents from dropped loads and/or equipment rollovers into an excavation.

In light of OSHA's strong enforcement since the beginning of its special emphasis program[3] in 1985, these fatality numbers are perplexing for anyone in the safety business. For example, from October 1997 through September 1998, the number of excavation inspections accounted for 8.2 percent[4] of the total number of all construction inspections conducted in that year. The total amount of penalty proposed for excavation violations, however, represents 21 percent[5] of the total penalties for all construction violations. In 1998, two out of the top 10 violations cited for all of the construction industry were for excavations.[6]

In 1998, 33 workers lost their lives while doing excavation work, with cave-ins accounting for nearly 70 percent, or 23, of the fatalities.

The weight of soil sloughing off the side of an unprotected trench can cause a crushing blow to an employee on the bottom, resulting in a serious injury or fatality. The financial consequences for an employer knowingly exposing employees to unprotected trenches and violating the excavation standard also can be devastating to a company or corporation.

Construction is one of five high-hazard industries OSHA is targeting to reduce injuries and illnesses.[7] During Fiscal Year 1999, OSHA's Directorate of Construction reviewed more than 70 construction inspection cases each with proposed monetary penalties in excess of $100,000. Thirty percent of the cases reviewed involved contractors that allegedly violated the excavation standard.

[1] U.S. Department of Labor, Occupational Safety and Health Administration, *Title 29 of the Code of Federal Regulations* (*CFR*), Part 1926, Subpart P.

[2] Based on OSHA's Integrated Management Information System (IMIS) data base for Fiscal Year 1998 (Federal Only).

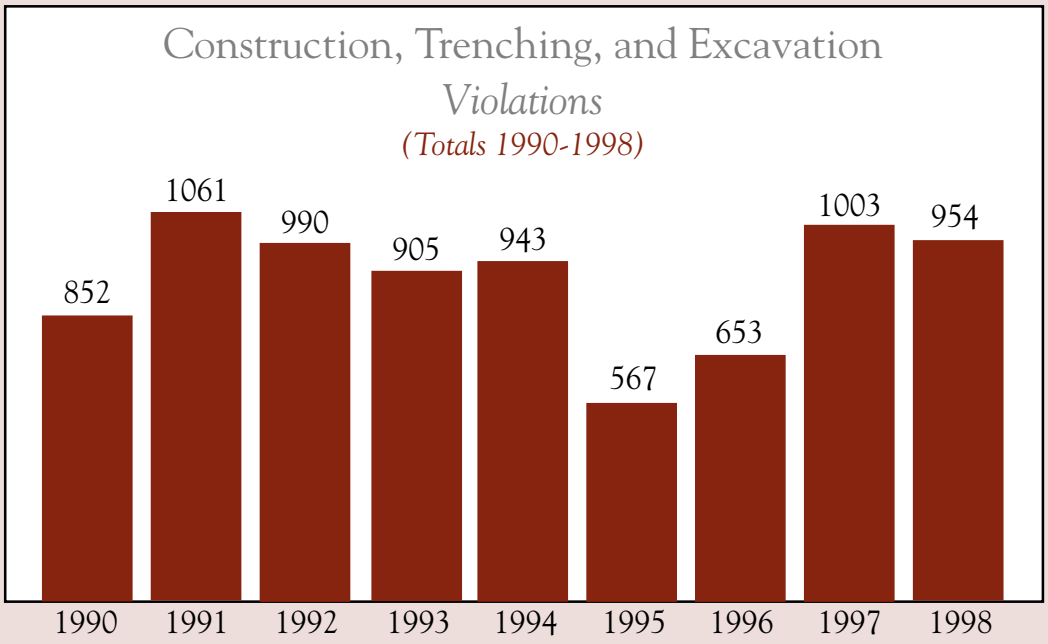
[3] Special Emphasis Programs allow programmed inspections where there is a potential for high hazards resulting in injuries or illnessess. A programmed inspection targets a specific industry and related safety and health hazards. In the case of trenching, OSHA inspectors focus on trenching and excavating activities and their associated hazards to help prevent accidents and injuries. See also OSHA Compliance Directive CPL 2.69, *Special Emphasis: Trenching and Excavation*, September 19, 1985. Available on OSHA's website at www.osha.gov under *Compliance Directives* and **Regulations and Compliance.**

[4] OSHA IMIS data base Fiscal Year 1998 (Federal Only).

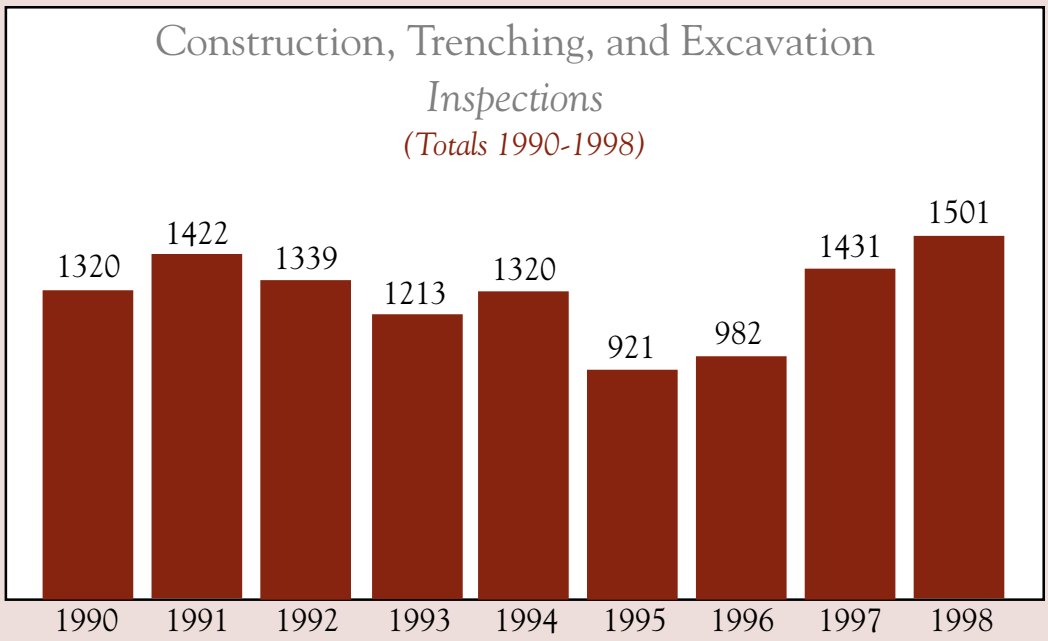
[5] Ibid.

[6] Ibid.

[7] See OSHA's *Strategic Plan* for 1997-2002, dated September 18, 1998, under **About OSHA** at www.osha.gov.



Source: OSHA's Integrated Management Information System (IMIS) data base for Fiscal Year 1998 (Federal Only).



Source: OSHA's Integrated Management Information System (IMIS) data base for Fiscal Year 1998 (Federal Only).

This construction site has inadequate sloping, no shoring or trench shield, no safe egress, improper use of ladders, and cluttered walking and working surfaces. These hazards expose employees to potential broken bones and severe lacerations from slips, trips, and falls and to serious injuries or death from being crushed or suffocated from a cave-in.

Preventing Accidents in Excavations

What can be done to help prevent these tragic accidents? Key to prevention is the employer's leadership and commitment to a good safety and health program. Moreover, a crucial player in excavation safety is the company's designated competent person. "Competent person" is more than a title. OSHA defines a competent person as one who is capable of identifying existing and predictable hazards or working conditions that are hazardous, unsanitary, or dangerous to employees, and who also has authorization to take prompt corrective measures to eliminate or control these hazards and conditions. A designated person who is unfamiliar with the excavation requirements, who is unable to recognize hazards, or who doesn't have the authority to make corrective measures may miss a life-threatening condition.

A "competent person" knows the requirements of the excavation standard and his or her safety role. The competent person is responsible for analyzing and classifying soil; selecting and installing appropriate protective systems; placing spoil piles; providing safe egress; determining the appropriate proximity of equipment or traffic that could cause vibrations to excavation walls; being aware of changes in weather, water, or other conditions that may increase the risk of cave-in; and assessing dangerous atmospheres, water seepage, underground utilities, adjacent structures, dangerous work practices, deficiencies in protective systems, and much more.

How Much Dirt Is Too Much?

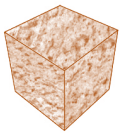
Training employees to recognize excavation hazards is very important. When OSHA compliance officers inspect unprotected trenches, they often find that employees who are exposed to the danger of cave-ins have not been adequately trained to recognize the hazards in their work environment. Sometimes workers don't realize how much dirt weighs and that a small amount of soil sloughing off in an unprotected trench can injure them.

During Fiscal Year 1999, OSHA's Directorate of Construction reviewed more than 70 construction inspection cases each with proposed monetary penalties in excess of $100,000.

Weight of Volkswagen

2,785 pounds

Weight of 1 Cubic Yard Soil



2,700 pounds

One cubic yard of soil can weigh 2,700 pounds or more. That's only 85 pounds lighter than a new Volkswagen Beetle.

As a training exercise, one can stress the weight of soil by comparing it to things people can relate to. For example, 1 cubic foot of soil can weigh 100 pounds or more. Compare the weight of a cubic foot bag of concrete mix to a cubic foot of soil. The concrete mix usually weighs about 60 pounds. A chunk of earth the size of a washing machine can weigh 1,500 pounds or more. One cubic yard of soil can weigh 2,700 pounds or more. That's only 85 pounds lighter than a new Volkswagen Beetle.

The world weightlifting record for the "press" is still held by the Russian Vasily Alexeyev at 521.5 pounds. The world record for the "clean-and-jerk" is 573 pounds, held by another Russian, Andrey Chemerkin. How many people do you know who can even press a third of that weight? One cubic yard of soil weighs nearly five times the world weightlifting records. Could you push back 500 pounds of soil with your arms or legs or, more importantly, could you breathe or even survive under the weight?

Plain old dirt is so heavy that when you get caught under it, you do not have the strength to move or breathe as the dirt presses against your chest. Think about it! That's why trenching work needs special protective systems—so workers can go home safe and healthy at the end of the day.

Protective Systems

OSHA's excavation standard requires employers to provide **s**loping (or benching), **s**horing, or **s**hielding to protect employees in excavations 5 feet or more in depth. The only exception is for a trench dug in stable rock, where there is no loose soil or likelihood of a cave-in. Excavations less than 5 feet deep need not be protected unless a competent person has determined there is a cave-in hazard.

At a minimum, companies should remember the three s's—sloping, shoring, or shielding—when protecting employees and follow the guidance given in the

A fire department rescue team helps a worker to safety after a trench cave-in.

OSHA excavation standard's[8] appendices for sloping, shoring, and shielding.

Despite OSHA's ongoing efforts in outreach, voluntary compliance, training, and rigorous enforcement of the excavation standard, some contractors still choose to ignore excavation safety. Contractors willing to take risks to save time and money at the expense of protecting employees should consider the potential consequences. The ultimate consequences are the loss of lives or disabling injuries. Taking short cuts could also lead to damaged equipment, property or structure damage, loss of insurance or increased insurance premiums, law suits, public scrutiny from bad press, or an OSHA inspection resulting in monetary penalty or other legal or criminal consequences.

[8] *Title 29 of the Code of Federal Regulations* (*CFR*) Part 1926.650-652.

For those contractors who continue to take the "low road" in excavation safety, who believe that "it's such a short job, shoring or sloping is not worth the trouble," a word of advice—be aware of the public's heightened awareness of trenching and excavation hazards before you violate the law. More and more referrals for trenching inspections are from citizens, fire and rescue personnel, local and state police, consulting engineers, building officials, and others.

Contractors wishing to take the "high road," who want to learn more about protecting employees in excavations, and who believe that avoiding the risk of cave-in is always worth the trouble have many resources available to them, including OSHA's webpage at http://www.osha.gov. This Internet site includes topics such as safety standards, safety training centers, available courses,

materials and publications, and listings of non-OSHA resources nationally and worldwide. The site also has a **trenching** information page dealing with site evaluations, hazard recognition and control, compliance, training, and more.

Another electronic resource is the OSHA *Technical Manual* (TED 1-0.15A) Section V: Chapter 2, which summarizes the excavation standard and can assist safety and health consultants, OSHA field staff, and others in recognizing and preventing trenching and excavation hazards.

Employers also can contact their designated OSHA state or territory consultation office for guidance. Under Section 7(c)(1) of the *Occupational Safety and Health Act*,[9] this program provides free onsite consultation to small employers. The program helps employers in evaluating their worksites for existing and potential hazards and in complying with OSHA regulations. Additionally, regional offices have designated compliance staff who are proficient in various disciplines such as trenching and excavation.

Partnerships

In addition to its strong enforcement, OSHA continues to stress the importance of outreach and partnership as a way to improve worker safety and health. One of OSHA's most recent initiatives is the Construction Accident Emphasis Program (CARE) in Florida. OSHA staff are building cooperative relationships with employers, educators, national and local trade groups, unions, insurance groups, state consultation staff, and others to focus on small employers within the state to help reduce the number of fatalities in the construction industry.

CARE focuses on the top four hazards in construction: falls, struck-by (e.g., equipment or machinery), electrocution, and caught-in or between (e.g., equipment, buildings, and materials). This cooperative effort seeks innovative ways to prevent construction accidents through media, advocacy groups, religious organizations, Internet, town hall meetings, and special outreach materials. Similarly, OSHA's Philadelphia region is considering a special outreach effort with business and unions to heighten the awareness of the dangers of trenching work.

What's more, OSHA has its own Training Institute in Des Plaines, IL, which offers a variety of safety and health courses for federal and private sector employers and employees. A schedule of classes is available under **Outreach** on OSHA's website at www.osha.gov.

As statistics show, employers and contractors must do more to protect their employees working in excavations. OSHA is willing to help employers who need guidance, training, or information on trenching issues.

For more information on these and other available services, visit OSHA's website or contact your nearest OSHA Area Office or the Directorate of Construction in OSHA's National Office at (202) 693-2020. JSHQ

Boom is an occupational safety and health specialist in OSHA's Office of Construction Services, Directorate of Construction, in Washington, DC.

The workers shown here could suffer severe injuries or death from a potential cave-in. The trench has no sloping, shoring, shielding, or safe exit; the workers have no hard hats or personal protective equipment.

[9] Public Law 91-596, December 29, 1970. As amended by P.L. 101-552, 3101, November 5, 1990; and P.L. 105-241, September 29, 1998.

Reminders for Trenching and Excavations

Competent Person

The designated competent person must have the authority to take prompt corrective measures to eliminate existing and predictable hazards and to stop work when required, and be able to demonstrate the following:

- Training, experience, and knowledge of:
  - Soil analysis;
  - Use of protective systems; and
  - Requirements of *Title 29 Code of Federal Regulations* (*CFR*) Part 1926 Subpart P.

- Ability to detect:
  - Conditions that could result in cave-ins;
  - Failures in protective systems;
  - Hazardous atmospheres, understand utilities, and other hazards as noted below.

Surface Crossing of Trenches

Surface crossing of trenches should be discouraged; however, if trenches must be crossed, such crossings are permitted only under the following condition:

- Vehicle crossings must be designed by and installed under the supervision of a registered professional engineer.

Walkways or bridges must be provided for foot traffic. These structures shall:

- Have a safety factor of 4;
- Have a minimum clear width of 20 inches (0.51 meters);
- Be fitted with standard guard rails; and
- Extend a minimum of 24 inches (.61 meters) past the surface edge of the trench.

Access and Egress

Access to and exit from the trench require the following conditions:

- Trenches 4 feet or more in depth must have a safe means of egress.
- Spacing between ladders or other means of egress must be such that a worker will not have to travel more than 25 feet laterally to the nearest means of egress.
- Ladders must be secured and extend a minimum of 36 inches (0.9 meters) above the landing.
- Metal ladders must not be used when working around utilities where inadvertent contact could cause electrical shock or electrocution.

Exposure to Vehicles

Procedures to protect employees from being injured or killed by vehicle traffic include:

- Providing employees with and requiring them to wear warning vests or other suitable garments marked with or made of reflectorized or high-visibility materials.
- Requiring a designated, trained flagperson as well as signs, signals, and barricades when necessary.
- Back up alarms where necessary.

Exposure to Falling Loads

Employees must be protected from loads or objects falling from lifting or digging equipment. Some procedures designed to ensure their protection include:

- Employees may not work under raised loads.
- Employees must stand away from equipment that is being loaded or unloaded.
- Equipment operators or truck drivers may only stay in their equipment during loading and unloading if the equipment is properly equipped with a cab shield or adequate canopy.
- Head protection.

Warning Systems for Mobile Equipment

One or more of the following steps must be taken to prevent vehicles from accidentally falling into the trench:

- Install barricades where necessary.
- Use hand or mechanical signals as required.
- Install stop logs if there is a danger of vehicles falling into the trench.
- Grade soil away from the excavation; this will assist in vehicle control and channeling of run-off water.

Hazardous Atmospheres

Employees shall not be permitted to work in hazardous and/or toxic atmospheres. Such atmospheres include those with:

- Less than 19.5 percent or more than 23.5 percent oxygen;
- A combustible gas concentration greater than 20 percent of the lower flammable limit; and
- Concentrations of hazardous substances that exceed those specified in the Threshold Limit Values for Airborne Contaminants established by the American Conference of Governmental Industrial Hygienists.

All operations involving such atmospheres must be conducted in accordance with OSHA requirements for occupational health and environmental controls (see Subpart D of 29 *CFR* 1926) for personal protective equipment and for lifesaving equipment (see Subpart E, 29 *CFR* 1926). Engineering controls (e.g., ventilation) and respiratory protection may be required.

When testing for atmospheric contaminants, the following should be considered:

- Testing should be conducted before employees enter the trench and should be done regularly to ensure that the trench remains safe.
- The frequency of testing should be increased if equipment is operating in the trench.
- Testing frequency also should be increased if welding, cutting, or burning is done in the trench.

Employees required to wear respiratory protection must be trained, fit-tested, and enrolled in a respiratory protection program.

Emergency Rescue Equipment

Emergency rescue equipment is required when a hazardous atmosphere exists or can reasonably be expected to exist. Requirements are as follows:

- Respirators must be of the type suitable for the exposure. Employees must be trained in their use and a respirator program must be instituted.
- Lifelines must be provided and attended at all times when employees enter bell-bottom pier holes or other similar hazards.

Standing Water and Water Accumulation

Methods for controlling standing water and water accumulation must be provided and consist of one or more of the following if employees are permitted to work in the excavation:

- Use of special support or shield systems designed for additional loading.
- Water removal equipment, i.e. well pointing, used, and monitored by a competent person.
- Safety harnesses and lifelines used in conformance with 29 *CFR* 1926.104.
- Surface water diverted away from the trench.
- Employees removed from the trench during rainstorms.
- Trenches carefully inspected by a competent person after each rain and before employees are permitted to re-enter the trench.

Inspections

Inspections must be made by a competent person and should be documented. The following guide specifies the frequency and conditions requiring inspections:

- Daily and before the start of each shift;
- As dictated by the work being done in the trench;
- After every rainstorm;
- After other events that could increase hazards, e.g. snowstorm, windstorm, freeze/thaw, earthquake;
- When fissures, tension cracks, sloughing, undercutting, water seepage, bulging at the bottom, or other similar conditions occur;
- When there is a change in the size, location, or placement of the spoil pile; and
- When there is any indication of change or movement in adjacent structures.

Source: U.S. Department of Labor, Occupational Safety and Health Administration, *OSHA Technical Manual*, Section V, Chapter 2, *Excavations: Hazard Recognition in Trenching and Shoring*, "X. Special Health and Safety Considerations" (Washington, DC). See also *Subject Index* at www.osha.gov.

Demonstrating Partnership: OSHA Nurse Interns

by Mickie Opfar

Did you know that OSHA has a nurse internship program for graduate students specializing in occupational and environmental health? During the past decade, more than 60 nursing students from 22 states have participated in OSHA's Nurse Internship Program.

Begun in the Washington, DC, National Office in the early 1990s, the program has expanded to include the agency's field offices. "The nurse intern program increases OSHA's resources and is an innovative approach to achieving the agency's mission," explains Elise Handelman, Director of the Office of Occupational Health Nursing.

The Nurse Internship Program

Here's how the program works. Occupational health nursing students from graduate programs across the country apply to OSHA for selection into the Nurse Internship Program. These students are specializing in occupational and environmental health and safety and have completed course work in areas such as biostatistics, epidemiology, pathophysiology, toxicology, ergonomics, and health and safety program management.

Nurse Susan Elliott participated in the internship program in Washington, DC.

Occupational health nurses focus on the promotion, protection, and restoration of workers' health within the context of a safe and healthful work environment. Based upon specific selection criteria, OSHA's Office of Occupational Health Nursing selects interns and matches their expertise with specific OSHA activities. The Nurse Internship Program gives nursing students with this specialized education the opportunity to blend their academic experience with the real world. In the process, these interns produce products that benefit workers and contribute toward achieving OSHA's strategic plan goals.

The Interns' Field Experience

In 1996, OSHA expanded its nurse internship program to its field offices through a pilot program. These field experiences allow the students to participate in a hands-on, interdisciplinary educational experience at the local level. Since that time, six nurses interned at OSHA offices in Philadelphia, PA; Parsippany, NJ; and Tampa, FL. The programs have reported outstanding results.

Phillis Kyner, Director of the Philadelphia Area Office, says "The interns gave the department access to unique technical expertise that is not normally available locally." Former students at these sites described their experience as "invaluable" and "eye opening." Christine Bouchard, former intern in the Tampa Area Office, recommends the experience for every occupational health nursing student to obtain a better understanding of workplace safety.

The Nurse Internship Program at the field office allows the nurse to play a vital role in the activities of the agency. For example, one former intern developed a data base to identify facilities storing large quantities of hazardous chemicals.

OSHA Occupational health nursing staff enjoy lunch break. From left to right: Butch deCastro, Trese Louie, Elaine Papp, Carolyn Porta (intern), and Amy Miller.

The project provided a research opportunity and educational experience for the student that was beneficial to the OSHA office. "The completed project allowed OSHA to successfully implement a local emphasis program," reports David Ippolito, Director of the Parsippany Area Office.

An occupational health nurse is a valuable partner for OSHA's field office. An experienced nurse intern understands specific health effects of the various hazards at the workplace. In the workplace, occupational health nurses are frequently the only health care professional on site and, therefore, have an inside view of the realities of the workplace.

Karen Emmerling, former intern in the Philadelphia Area Office, used her experience and education to design a flow sheet to help compliance officers (CSHOs) evaluate bloodborne pathogens exposure among private emergency services personnel. She also prepared presentations on topics of interest to the CSHOs, such as reproductive hazards. "The experience has made me realize the great amount of teaching and education that takes place at the work site by the compliance inspectors," states Emmerling. Emmerling remains in contact with the Philadelphia Area Office and plans to return to do future presentations upon request.

Experienced nurse interns can bring industry-specific information from their own work background. For example, Susan Elliott, a former intern at the Tampa Area Office, had extensive experience as an administrator at a nursing home. She had a research background in back injuries and was familiar with lifting devices. She was able to offer valuable information to compliance officers during a nursing home inspection and give suggestions of ways to track information on the computer. Elliott reports that the experience made her more aware of the role of the compliance officer and how much knowledge they must possess.

Occupational health nurses focus on the promotion, protection, and restoration of workers' health within the context of a safe and healthful work environment.

OSHA's Nurse Intern Program

Description

The OSHA Office of Occupational Health Nursing offers a competitive internship program to promote and explore areas of occupational health nursing practice. The program emphasizes the development of a project that contributes to federal or state level activities that support OSHA's mission. Occupational Health Nursing Interns apply their skills and knowledge while learning about OSHA's goals, objectives, programs, and policies.

Program Objectives

- To integrate the student's learning needs with specific OSHA activities.
- To analyze occupational health and safety issues in collaboration with OSHA professionals.
- To construct an innovative nursing approach to an occupational health and safety concern.
- To explore the role of an occupational health nurse in OSHA activities.

Eligibility Requirements

Applicants *must*:

- Be a registered nurse with current licensure.
- Be a graduate student in good standing in an occupational health program or public health program with an occupational health focus.
- Have at least 6 months experience (preferred) in occupational health or a related field, or in a field related to the proposed project.
- Present clearly defined educational and personal objectives compatible with contemporary OSHA activities.

The Tampa Area Office is new to the intern program and is experiencing some growing pains. The staff members at this site believe that the short rotational times have limited the success of the program. For example, graduate students at this field office average a total of only 20 hours of rotation compared with 120 plus hours at other sites. This short rotation time has made it difficult for participants to complete a specific project and for OSHA staff to identify specific results. "Sporadic student rotations can be frustrating for the student as well as for the staff," explains Larry Falck, Director of the Tampa Area Office. Hopefully, longer-term assignments will be a component of future internships.

Program Improvements

To provide more consistency and improve future nursing internships at the field office level, the Office of Occupational Health Nursing standardized the program and developed an informational field packet for field offices interested in having a nurse intern. The student receives a general orientation to OSHA, including introduction to various field office staff, and observes compliance activities through worksite visits with experienced OSHA inspectors. A designated preceptor from the local OSHA office collaborates with the intern and faculty advisor. The student completes a project and presents the results at the end of the rotation.

For more information on OSHA's Nurse Internship Program, either in the National Office or one of OSHA's field offices, contact the Office of Occupational Health Nursing, 200 Constitution Avenue, N.W., Room N4618, Washington, DC 20210; (202) 693-2120. See also "Nursing in Occupational Health" under the **Subject Index** on OSHA's website at www.osha.gov. JSHQ

Opfar, a former nurse intern in OSHA's National Office, Washington, DC, is a graduate nursing student in the Occupational Health Nurse Practitioner Program at the University of Utah.

Ergonomics—Fitting the Job to the Worker

The fourth in a series of articles on how state safety and health programs protect American workers. Adapted, with permission, from the Grassroots Worker Protection 1999 annual report of the Occupational Safety and Health State Plan Association (OSHSPA).

In case you haven't noticed, ergonomics is a pretty hot issue these days—from Capitol Hill to the workplace. And why shouldn't it be? More than one-third of all serious occupational injuries and illnesses stem from overexertion or repetitive motion. That's more than 600,000 each year. These injuries cost businesses $15-$20 billion annually in workers' compensation costs alone. With other costs, the total mounts to as high as $60 billion.[1]

Some states with their own OSHA-approved occupational safety and health programs, or state plans, have long recognized the need to develop standards to help prevent ergonomic injuries and illnesses.

So, what is ergonomics and why is it necessary? Ergonomics is the scientific study of human work—of fitting the job to the worker. Ergonomics considers the physical capabilities and limits of the worker as he or she interacts with tools, equipment, work methods, tasks, and the work environment.

[1] U.S. Department of Labor, OSHA, Directorate of Policy, Office of Regulatory Analysis, Washington, DC.

More than one-third of all serious occupational injuries and illnesses stem from overexertion or repetitive motion. That's more than 600,000 each year.

The goal of ergonomics is to reduce the incidence of work-related musculoskeletal disorders (MSDs), which result in staggering costs due to pain, suffering, and lost productivity. MSDs are among the most common and costly occupational injuries and illnesses in the United States. Some states have cited ergonomic hazards under general safety standards known as "general duty" or "safe place" standards, but more specific requirements, along with training and outreach programs, will help to effectively control these types of hazards.

California's workplace repetitive motion injury (RMI) standard, which took effect in July 1997, is the first in the nation to specifically address musculoskeletal injuries caused by a repetitive job, process, or operation. The Cal/OSHA ergonomics standard contains three independent requirements:

- Workplace evaluation of each

type of job, process or operation such as word processing, assembly or loading;
- Control measures to correct exposures causing RMIs in a timely manner; and
- Employee training.

The standard is enforced only when a licensed physician diagnoses RMIs for at least two employees performing the same type of job, process, or operation within a 12-month period. California has issued citations for violations of the standard.

Supplementing compliance activity, Cal/OSHA's Consultation Service gives presentations and provides publications on workplace ergonomics, back injury prevention, and MSDs to help employers and employees understand the scope of the problem and to establish preventive measures minimizing the occurrence of RMIs.

State Plans

States and territories may elect to develop their own unique occupational safety and health program. These "state plans" are approved and monitored by the federal Occupational Safety and Health Administration (OSHA), which provides up to 50 percent of an approved plan's operating costs. A state plan program, including the job safety and health standards which employers are required to meet, must be "at least as effective" as OSHA. Benefits of a state plan include coverage for public sector employees, and the opportunity to promulgate unique standards or to develop innovative programs which address the types of hazards specific to each state's workplaces. Representatives from the 25 state plans make up the Occupational Safety and Health State Plan Association (OSHSPA), which helps provide a link for sharing information among the states, federal agencies with occupational safety and health jurisdiction, and the Congress. OSHSPA also provides information to states or territories considering application for state plan status. OSHSPA representatives have appeared before congressional committees and other bodies to report on job safety and health issues.

The **North Carolina** Department of Labor issued a draft ergonomics standard in November 1998 and held a series of public hearings on the proposal throughout the state in May 1999. The proposed standard contains the following requirements:
- Reduction or elimination of reported employee exposure to MSDs,
- Medical management of MSDs,
- Employee training and education, and
- A "safe harbor" for employers who voluntarily sponsor employee involvement programs and enter into agreements with the labor department to correct potential violations.

In 1999, the North Carolina General Assembly, added a provision to the budget bill that would have barred development of an ergonomics standard. The bill was later amended to limit implementation and enforcement of a standard through the end of Fiscal Year 2000. North Carolina submitted a revised proposal to the Rules Review Commission of the State General Assembly. If the commission approves the standard and there are no objections by the General Assembly, the rule would be implemented in July 2001. A copy of the proposal and educational information for employers and employees is available on North Carolina's website at http://www.dol.state.nc.us/ergo/erg_main.htm.

The state implemented a Cooperative Assessment Program for Ergonomics after conducting 40 inspections based on ergonomics-related complaints. Under the program, the employer provides regular reports to the North Carolina state plan which, in turn,

Mechanical lifts help reduce back injuries for health care workers.

conducts regular monitoring visits at the covered worksites. The program gives employers the opportunity to negotiate agreements with the state plan to help resolve ergonomic hazards in their workplaces before receiving citations for violations. The agreement precludes the need for lengthy inspections, yet provides the same assurance of abatement that would be achieved through citations.

North Carolina also has taken a giant step toward reducing the incidence of MSDs through the creation of an Ergonomics Resource Center (NCERC). The center's primary goal is to act as a bridge for technology transfer and information exchange between universities, state agencies, and industry. The North Carolina Department of Labor joined with North Carolina State University as founding partners, establishing the center for the benefit of workers and employers. The state provides some financial support and publication services, and North Carolina's public and private universities participate in research projects and program delivery. NCERC uses applied research to identify, analyze, and correct workplace ergonomic deficiencies. The center provides onsite consultations and program development assistance, as well as workshops and classes, a quarterly newsletter, and a vendor showcase. Members receive reduced rates for all NCERC programs and services.

For more information, visit their website at http://www2.ncsu.edu/ncsu/CIL/NCERC/. In 1996, the Ford Foundation and the John F. Kennedy School of Government at Harvard University recognized the NCERC as a finalist in the "Innovations in American Government Awards" program.

The **Washington** Department of Labor and Industries (L&I) issued a proposed ergonomics standard on November 15, 1999,[2] and will hold 14 public hearings on the proposal in January. The proposed standard

[2] The full text of the proposed rule and related documents are available on L&I's ergonomics website at http://www.lni.wa.gov/wisha/ergo.

is designed to identify and prevent hazardous exposures in jobs with physical risk factors, rather than taking effect only after injuries occur:

- The rule will apply only to employers with "caution zone jobs" where typical work includes physical risk factors specified in the rule. "Caution zone jobs" are not prohibited, and they may not be hazardous.
- Employers with "caution zone jobs" must ensure that employees working in or supervising these jobs receive ergonomics awareness education and must analyze these jobs to determine if they have hazards.
- If jobs have work-related musculoskeletal disorder (WMSD) hazards, the employer must reduce exposures below hazardous levels or to the degree feasible.
- Employers may choose their own method and criteria for identifying and reducing WMSD hazards, or may use L&I's specified criteria.
- Employers must provide for and encourage employee participation in activities required by the rule.
- An extended implementation schedule based on industry type and employer size allows employers, especially small businesses, ample time to prepare for compliance (from 3 to 6 years).
- Employers may continue to use methods of reducing WMSD hazards that were in place before the rule adoption date as long as the methods, taken as a whole, are as effective as the rule requirements.

Washington concluded in mid-1998 that a comprehensive strategy for reducing WMSDs would require an ergonomics rule. For more than a decade, L&I has provided free technical assistance and education on ergonomics. Although these voluntary efforts have made some impact, thousands of employees continue to suffer preventable WMSD injuries.

Before issuing a proposed rule, L&I held nine public meetings in October 1998 to identify issues and hear concerns from the public, then met with two advisory committees for 5 months in 1999. The committees focused on the major areas of concern raised at the public meetings and helped L&I identify the most promising ideas for an ergonomics rule. Completing the steps in the rulemaking process, including formal public hearings, will be a priority for the department in 2000.

L&I also plans to hire additional ergonomists, and the department will work with volunteers from business, labor and health care to create "ergonomics toolboxes." These resources will provide practical help on topics such as analyzing jobs for WMSD hazards and ergonomics education for employees and supervisors.

As part of the Hazard Impact Partnership (HIP) project initiated in 1998, Washington continues to work with the nursing home industry to reduce back and shoulder injuries. The project coordinates the resources of L&I's industrial insurance, WISHA,[3] and risk management programs. WISHA's 2000 performance plan includes a goal of reducing the number of back and shoulder injuries by 5 percent

[3] The *Washington Industrial Safety and Health Act* authorized the Washington State Department of Labor and Industries' safety and health program, known as WISHA.

Federal OSHA and Ergonomics

On Monday, November 22, 1999, the federal Occupational Safety and Health Administration (OSHA) announced its ergonomics proposal. The proposal—estimated to prevent 300,000 injuries and save $9 billion a year in workers' compensation and other costs—relies on a practical, flexible approach reflecting industry best practices. The proposal focuses on jobs where problems are severe and solutions well understood. It would require general industry employers to address ergonomics—the science of fitting the job to the worker—for manual handling or manufacturing production jobs. Employers would also need to fix other jobs where employees experience work-related musculoskeletal disorders. About one-third of general industry worksites, or 1.9 million, would be affected and more than 27 million workers would be protected by the standard. Fewer than 30 percent of general industry employers have effective ergonomics programs in place.

OSHA has been working on ergonomics issues for almost two decades—beginning with its ergonomics training courses to developing ergonomics guidelines for the red meat industry. The agency began work on its current proposal in 1997. Intended to be flexible, the proposed ergonomics standard offers employers a "Quick-Fix" option in lieu of developing a full ergonomics program. Also, it includes a grandfather clause to give credit to employers who have already put ergonomics programs in place.

Comments on the proposal are due to OSHA on February 1, 2000. OSHA will hold informal public hearings in Washington, DC, beginning February 22, 2000. Hearings in Portland, OR, and Chicago, IL, will follow. The agency plans to issue a final ergonomics standard by the end of 2000. For more information on ergonomics, visit OSHA's website at www.osha.gov.

in nursing homes participating in HIP. Activities include the following:

- Offering premium reductions for nursing homes that develop "zero-lift" programs to eliminate lifting hazards in resident handling. To date, 34 nursing homes have signed up for the program. Participants have reported reductions in lost workdays and improved resident comfort during transfers.
- Performing job modifications for injured nursing home workers. L&I provides funds for modifications which may include assistive devices such as resident lifts, slip sheets and transfer boards. The modifications can help workers return to work and may prevent further injury.
- Developing best practices and sharing the information through booklets, paycheck stuffers, and posters. Two new publications produced by L&I are available on the department's website at http://www.wa.gov/lni/hip/nursing.htm. They are *Frequently Asked Questions About Portable Total Body Patient/Resident Lifts* and *Frequently Asked Questions About Sit-to-Stand Patient/Resident Devices*.
- Evaluating the interventions to determine their effectiveness and to see which can be modified and replicated in other industries. L&I's Safety & Health Assessment & Research for Prevention (SHARP) program has received a grant from the National Institute for Occupational Safety and Health (NIOSH) to complete the evaluation during the next 3 years.

Although **Minnesota** does not have an ergonomics standard, it was one of the first states to examine and cite ergonomic problems in the workplace. Minnesota established an ergonomics team to conduct comprehensive inspections of selected facilities

including a thorough review of injury and illness records, a complete walkaround inspection of the facility, and abatement recommendations. Minnesota's current ergonomics special emphasis program focuses on nursing homes to help identify and reduce occupational hazards common to nursing homes through education, outreach, and inspection.

The ergonomics team developed written *Guidelines for Resident Handling in Long-Term Care Facilities*[4] to assist health care employers in preventing and reducing the risk of musculoskeletal injuries and conducted outreach sessions for the industry. In 1998, the team began conducting random nursing home inspections to assess compliance with standards and the employers' efforts to reduce the risk of musculoskeletal injuries.

In 1995, **Oregon** established a unique worksite redesign program providing grants from workers' compensation funding sources to conduct research and development in public and private sector workplaces. This joint effort of the Workers' Compensation Division and OR-OSHA[5] uses the ergonomic technical and prevention skills in OR-OSHA to assist employers in solving real workplace injury and illness problems, in ways that can be shared with other employers in the same or related industries. Grants are awarded to develop and implement solutions to workplace ergonomics problems that can't be solved with readily available equipment and technology. Examples of funded projects include semiautomation of a process, redesign of a self-adjusting loader/stacker in the wood products industry, and redesign of a manual material handling process in the metals industry.

[4] Contact MNOSHA through their website at www.doli.state.mn.us/wvp_fact/pdf, or call (651) 296-2116.

[5] Oregon's state plan is known as OR-OSHA.

Ergonomics can protect employees from injuries such as carpal tunnel syndrome from repetitive motion, and low-back injuries caused by frequent, heavy, or awkward lifting.

In summary, scientific evidence links back injuries, carpal tunnel syndrome, and other MSDs to work. Ergonomics can protect employees from injuries such as carpal tunnel syndrome from repetitive motion, and low-back injuries caused by frequent, heavy, or awkward lifting. Ergonomics is about working smarter and safer. It's the solution to musculoskeletal disorders.

There are real people in the workplace who need protection. They suffer real problems—sometimes very painful and disabling conditions. Their employers suffer real problems, too—billions in workers' compensation costs and lost productivity. And there are real solutions, often easy and inexpensive to implement. Several state plans have stepped up their efforts to reduce these painful and sometimes debilitating workplace injuries. JSHQ

The editors of *Job Safety & Health Quarterly* wish to thank Janet Kenney, WISHA management analyst and editor of the report, for her assistance in preparing this article.

Note: The OSHSPA report is produced by the Washington State Department of Labor and Industries' WISHA Services Division under the direction of Steve Cant, CIH, former OSHSPA Chair and member of the Board of Directors. Copies of the full report are available online at WISHA's website at www.lni.wa.gov/wisha/ and under **Outreach**, "State Plans" on OSHA's website at www.osha.gov.

A Globally Harmonized System for Hazard Communication

by Jennifer Silk

From rubber cement to paint thinner, as consumers we use thousands of chemical products in our daily lives. In the U.S., we are lucky. Consumers and workers alike have access to information about these products through extensive labeling requirements that provide information about potential hazards. We read labels—lots of them. In fact, we probably take them for granted because we know they are there. Moreover, we most likely never thought about labels on chemical products that are produced abroad and imported here. Are they the same? No, they are not; standards differ worldwide.

For workers, knowing about potential chemical hazards is crucial. There are an estimated 650,000 unique hazardous chemical products in American workplaces, and more than 30 million workers are exposed to them.[1] The Occupational Safety and Health Administration's (OSHA) Hazard Communication Standard (HCS),[2] in part, recognizes that traditional chemical-by-chemical rulemaking will never address all of the hazards workers face in their workplaces. The standard requires chemical manufacturers and importers to share information about the hazards of their products and ways to prevent adverse effects from occurring, by labeling containers and distributing material safety data sheets (MSDSs) with more information. Employers must then give this information to their employees who are potentially exposed.

From left to right: Ingrid Petersson, Sweden; Edmund Plattner, Austria; Hermann Gotsch, Austria; and Solvar Hardeng, Norway, represent European member states in discussions on implementation.

The premise of the standard is that if employers have complete information, they are better able to design and implement appropriate protective programs. And when workers have such information, they are better able to help ensure their own protection. Together, these actions help reduce the incidence of chemical source illnesses and injuries.

OSHA's 1983 final standard on Hazard Communication included in the preamble a commitment to adopt any globally harmonized standard in this area that may be developed. The agency has been at the forefront of the international harmonization process as a result of this commitment and has taken a lead role in the international development of a harmonized approach.

[1] 59 FR 6126; February 9, 1994.

[2] *Title 29 of the Code of Federal Regulations* (*CFR*), Part 1910.1200. See OSHA's website for the complete regulatory text; see **Regulations** at www.osha.gov.

Hazard Communication Requirements: Domestic and International

Other U.S. agencies also recognize the value of providing information and empowering people to use it to protect those exposed. For example, the U.S. Department of Transportation (DOT) requires labeling for the transport of dangerous goods. You may have seen placards on trucks with symbols for the hazardous material being transported. The Consumer Product Safety Commission (CPSC) requires labels on products for home use that contain hazardous chemicals, such as those for home cleaning, repair, or maintenance. The Environmental Protection Agency (EPA) also requires labels on pesticides to inform users about hazards and proper protection and disposal.

Canada and the member states of the European Union have adopted similar labeling approaches. In Canada, the Workplace Hazardous Materials Information System (WHMIS) has requirements for labels, MSDSs, and training. In Europe, there are directives that cover labels and MSDSs for dangerous substances. Many other countries have requirements in these areas as well, although these are the major existing systems.

Although these systems are similar, they are not identical, and the differences are enough to require different labels and MSDSs for the same products. These differences may relate to the underlying criteria for defining hazards covered by the system as well as the means used to communicate the hazards. For example, all of the major existing systems use flashpoint cutoffs to characterize the flammability hazard of a chemical. The flashpoint used is different, however, and a chemical may be considered flammable in one country but not another. Because these cutoffs are scientifically based but arbitrarily drawn, the distinctions are not readily apparent to the uninformed user. A product coming from another country into the U.S. may be seen as providing the appropriate information because it indicates that it is "flammable" on the workplace label. On closer examination, however, it may be that the product would not be considered flammable based on U.S. criteria.

There are an estimated 650,000 unique hazardous chemical products in American workplaces, and more than 30 million workers are exposed to them.

Because the United States is a major importer and exporter of chemicals, differences in hazard classification and labeling requirements around the world can have a major impact in two areas of concern. First, Americans are exposed to a large number of imported chemicals. This is particularly true in the workplace. To ensure the protection of workers, American employers need to receive appropriate label and MSDS information from foreign suppliers. With differing requirements worldwide, including many countries with no requirements for classifying and labeling chemicals, this is often difficult and the information may be inadequate to protect workers. The United States would like to level the playing field regarding the inconsistencies in the chemical information transmitted to protect our citizens exposed to these products.

Second, differing requirements for information transmittal can adversely impact chemical trade. To ship to a worldwide market, chemical companies must be aware of these differing requirements and prepare labels and MSDSs that comply with them. This is a significant compliance burden and creates a situation where only large chemical companies with significant resources can afford to be actively involved in international chemical trade. Having a harmonized approach to classifying and

labeling chemicals would reduce overall compliance burdens and make chemical trade more attractive for a broader range of companies.

International Mandate

The U.S. Government recognized the benefits of international harmonization of chemical classification and labeling requirements many years ago and adopted an interagency trade policy supporting the process in 1984. For some time, there has been an internationally harmonized system for classifying and placarding related to the transport of dangerous goods, but it was not consistent with systems for other sectors of interest such as the workplace. This inconsistency may result in different hazard information appearing on the shipping container, such as a truck, than on the container that is used in the workplace, such as a 55-gallon drum.

International recognition of the benefits for and establishment of an international process to achieve harmonization did not take place until 1992. That year, at the United Nations Conference on Environment and Development (UNCED), or "Earth Summit," in Rio de Janeiro, the United States and other countries agreed to pursue the development of a globally harmonized approach, as follows:

> *Globally harmonized hazard classification and labelling systems are not yet available to promote the safe use of chemicals, inter alia, at the workplace or in the home. Classification of chemicals can be made for different purposes and is a particularly important tool in establishing labelling systems. There is a need to develop harmonized hazard classification and labelling systems, building on ongoing work.*
>
> *A globally harmonized hazard classification and compatible labelling system, including material safety data sheets and easily understandable symbols, should be available, if feasible, by the year 2000.*[3]

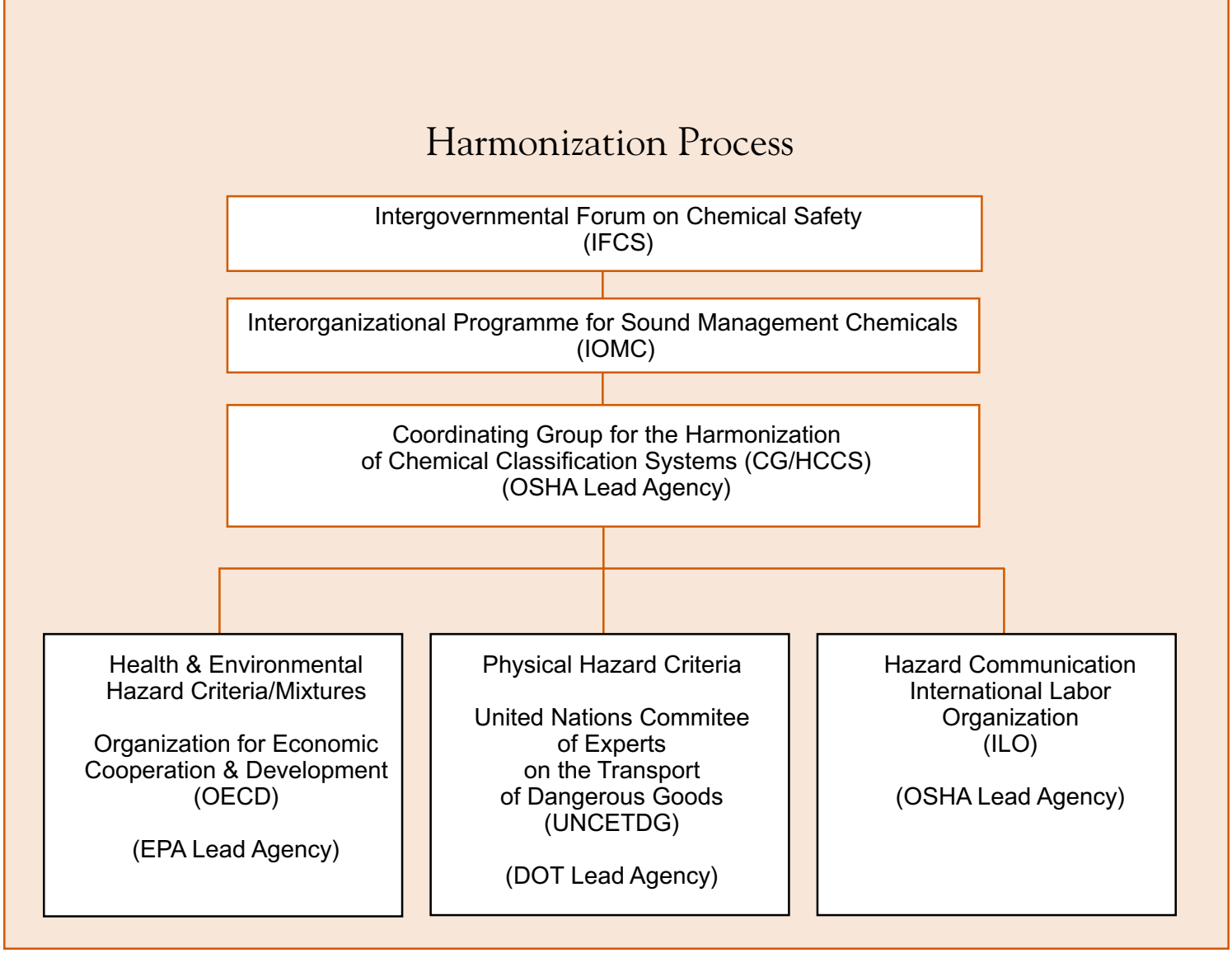
From left to right: Isaac Obadia, International Labor Organization, Secretariat; Jennifer Silk, US/OSHA, Chair; and Anna-Liisa Sundquist, Finland, Vice Chair; lead a discussion on the implementation of the globally harmonized system when completed.

Although all agreed this is a laudable goal, accomplishing it has been a complicated and difficult process that involves numerous domestic and international organizations.

The Process

The Intergovernmental Forum on Chemical Safety (IFCS) is an informal international organization set up to oversee the implementation of all agreements made at the Earth Summit. The United States and other countries interested in chemical safety issues take part in the IFCS monitoring and reporting activities. Although the IFCS is the umbrella organization for all the UNCED agreements, many other international organizations are taking part in implementing the agreements. The chart describing the harmonization

[3] Agenda 21, Chapter 19, Area B.



process indicates what international organizations are involved in this particular activity, as well as the lead U.S. agencies for each one.

Under the IFCS, the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) comprises international organizations that have some responsibility to implement the agreements. These include, for example, the International Labor Organization (ILO) and the Organization for Economic Cooperation and Development (OECD). The IOMC consists of international civil servants from each of the involved organizations.

Under the IOMC is the Coordinating Group for the Harmonization of Chemical Classification Systems (CG/HCCS), which is responsible for managing the process of harmonizing chemical classification and labeling systems. It is an informal group as well, and the ILO operates as the Secretariat or the international organization that staffs the group. Members include representatives from all of the major existing systems, including the U.S., Canada, the European Commission, and various European countries. In addition, as with any ILO group, it includes employer and worker representatives. Other countries with an interest in the work, such as Japan and Australia, also attend, as do representatives of other international organizations involved, such as the OECD. OSHA has been the lead agency in the Coordinating Group, and currently chairs it.

The Coordinating Group has identified what needs to be done to have a complete globally harmonized system: develop classification criteria to define health and environmental hazards and to classify mixtures, develop classification criteria to define physical hazards, and determine the hazard communication elements to be included in the system. These areas of technical work subsequently have been divided among several international organizations.

The Coordinating Group assigned responsibility for the classification criteria for health and environmental hazards and mixtures to the OECD, an organization of developed countries with a long-term work program involving consideration of chemical safety issues. The experience of OECD countries working on issues such as the development of test guidelines

for chemicals, risk assessment, and risk management made it an obvious choice because of the organization's expertise.

Similarly, the United Nations Committee of Experts on the Transport of Dangerous Goods (UNCETDG) has developed physical hazard criteria for its existing system of classifying and labeling hazardous materials for transport. UNCETDG, therefore, is considered the best international organization to develop harmonized criteria for a globally harmonized system.

In terms of communicating hazards, the International Labor Organization (ILO) has long been involved in issues related to labeling and other types of hazard communication and is the lead international organization for the global harmonization effort.

In the U.S., a number of federal agencies have a stake in the harmonization process. In addition to OSHA, these include EPA, DOT, and CPSC as the primary regulatory agencies potentially affected. The State Department also convenes an interagency committee on harmonization to coordinate the input of the agencies involved in, or affected by, the harmonization process. Different federal agencies have the lead in the work in the various international organizations, but the U.S. needs to have a coordinated position regardless of which agency is representing the country.

OSHA has been an active participant in the interagency and international discussions related to harmonization. In fact, OSHA is the only U.S. federal agency with a public commitment to adopt such a system when it is developed. OSHA views the prospect of a globally harmonized system as beneficial for U.S. workers as well as for international chemical trade. In addition, our involvement is an opportunity to help develop a system that can be applied worldwide and, thus, has the potential to provide protection for many millions of workers who do not yet have access to information about the chemicals they work with on a daily basis.

Status of the Work

As the year 2000 approaches, significant progress has been made in developing the globally harmonized system. The OECD has completed eight health and environmental criteria, including definitions for acute toxicity, irritation, corrosion, sensitization, carcinogenicity, germ cell mutagenicity, reproductive toxicity, and aquatic toxicity. Work remains on target organ toxicity and the criteria for classifying mixtures.

The UNCETDG also has completed most of its work, including definitions for flammable, reactive, and explosive materials. Some work still remains in the area of flammability.

The ILO work group has just started its work on how to communicate the chemical hazard information. The group is summarizing current systems, identifying issues that will have to be resolved to have a harmonized approach, and beginning to develop options for harmonization. This work is in many ways the most complicated. There are difficult concepts to consider, such as comprehensibility, factors affecting the effectiveness of a label or MSDS, and cultural or legal differences in approaches.

Other Factors to Consider

In addition to the purely technical work on the criteria and the hazard communication elements, the completed system must be packaged so that many different

The successful completion of the global harmonization system….has the ability to increase worker protection and decrease compliance burdens….

Kim Headrick, Health Canada, Chair of the work in the Organization for Economic Cooperation and Development on classification of mixtures, gives the group an update on recent progress.

countries can understand it and implement it appropriately. This involves developing guidance to help ensure a common understanding of the various elements of the system and to share lessons learned from countries that have already implemented such requirements. There also is some discussion about what types of materials would be useful to assist countries, such as training modules, website support, or available experts to help countries without experience. The work will only have the anticipated impact if the globally harmonized system is adopted worldwide.

The timing for adopting the system and any legal impacts in countries with existing systems are under consideration as well. In some ways, countries like the U.S. that have complicated regulatory approaches to these issues will have a more difficult time adopting the new system than countries that have no existing requirements. When the system is completed, the U.S. will have to decide whether to adopt it. Consequently, interested parties in the United States are working hard to make sure that the system meets the Nation's needs, so it will be adopted. This includes, for example, ensuring that the system maintains or enhances the current level of protection in our existing requirements.

If the U.S. adopts the system, this might mean that regulatory agencies either could independently or jointly publish changes to their regulatory requirements, or the changes could be made by a legislative initiative modifying all applicable statutes of the agencies involved. In either case, the support and assistance of affected representatives of both industry and labor will be necessary to make the transition successful. Nevertheless, until the system is completed, it is hard to predict what the outcome will be here at home.

Conclusion

OSHA's involvement in the global harmonization of hazard communication requirements has been a unique and interesting process for the agency. The successful completion of the globally harmonized system not only has the ability to increase worker protection and decrease compliance burdens, but also to give the agency an opportunity to participate in a process that will ultimately provide protections for many workers around the world who don't currently have access to information about their workplace chemicals. As the move towards a global marketplace continues, OSHA may find that this is the first of many such initiatives to increase protections worldwide while creating a uniform approach to safety and health issues that have benefits for employers and employees as well.

For more information on global harmonization, see the following websites: ILO—Globally Harmonized Systems—www.ilo.org/public/english/90travai/sechyg/ghs/index.htm; EPA—OECD harmonization activities, including the criteria agreed to date—www.epa.gov/oppfead1/harmonization; DOT—harmonization of physical hazard—hazmat.dot.gov/globharm.htm; OSHA—Hazard Communication standard and the globally harmonized system—under **Index** on OSHA's website at www.osha.gov. JSHQ

Silk is Director of the Office of Technical Programs and Coordination Activities in the OSHA Directorate of Technical Support, Washington, DC

Trench/Excavation
1926.651(C)(2)

Rank in Frequency Cited #22

Rule

Means of egress from trench excavations. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet (1.22meters) or more in depth so as to require no more than 25 feet (7.62meters) of lateral travel for employees.

Intent

When conditions begin to deteriorate in a trench, such as soil beginning to sluff off the face of the trench, the risk of a cave-in increases and emergency exit may be required. This standard requires a means of egress. The intent of this rule is to specify the following:

- maximum lateral distances an employee can travel (25 feet) to exit a trench;
- maximum depth of the trench (4 feet) when egress must be provided; and
- means to exit the trench —i.e., stairway, ladder, ramp, or other safe means.

Note: It is not intended that this rule apply to large excavations, but a safe means of entering and exiting from large excavations must be provided as per *Title 29 Code of Federal Regulations (CFR) 1926.1051(a)*. That standard requires a stairway or ladder be provided at personnel points of entry where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.

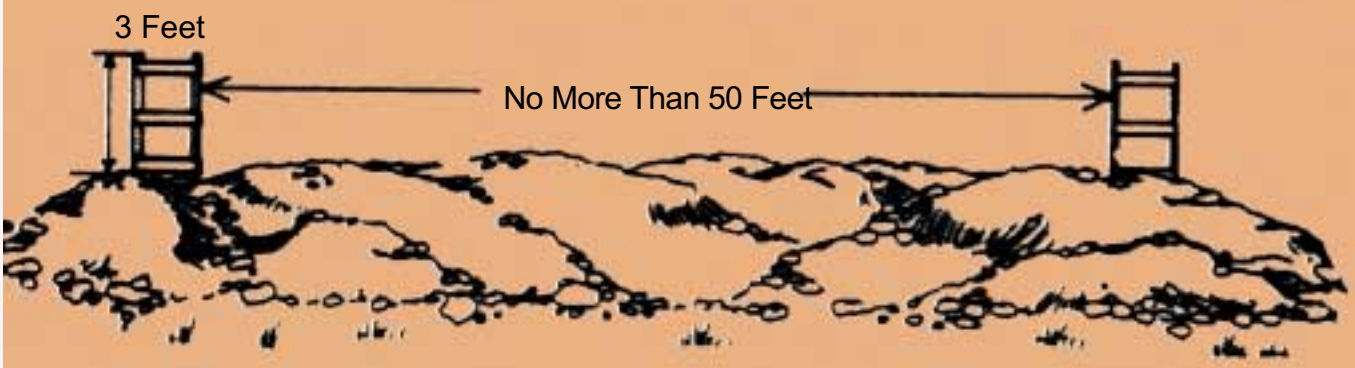
Detach Here

☑ **VIOLATION**

☐ IN COMPLIANCE

No means of exit provided. Employee is riding backhoe bucket out of trench. Other violations include improper sloping, spoil pile placement, and no shoring or protective shield.

Quick Exits—Approved Ladders



☐ VIOLATION

☑ **IN COMPLIANCE**

Required for trench/excavations equal to or larger than 4 feet deep.

Hazards

- Cave-in. Probable injury is death.
- Hazardous atmospheres caused by broken utility lines or toxic materials in the soil. Injuries from inhalation of toxic materials may range from minor irritations to death.
- Water from a burst waterline could cause drowning.

(Among Other) Suggested Abatements

Provide properly constructed and maintained means of exit at predetermined points.

Selected Case Histories

- Two employees were in a 12-foot deep trench laying pipe. One of the employees saw the bottom face of the trench move and jumped out of the way along the length of the trench as the wall caved-in and killed the other employee. The walls of the trench were vertical, and there was no means of emergency exit.
- Two employees laying sewer pipe were in a 15-foot deep trench that was not shored or sloped properly. The employees had to exit the trench by climbing the backfill. While exiting the trench, the first worker was trapped by a small cave-in. The second employee tried to extricate him, but a second cave-in trapped the employee at the waist. The second cave-in actually caused the death of the first employee; the second employee sustained a hip injury.

Comments

- Only one means of exit is required in the middle of a trench 50-feet long to meet the requirements of this standard.
- Earthen ramps may be used as a suitable means of egress only if employees can walk the ramp in an upright position when entering and exiting. The earthen ramp must be evaluated as acceptable by the competent person.

Additional Documents to Aid in Compliance

- *Excavations* (OSHA 2226). For sale by the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA, 15250-7954, (202) 512-1800; or visit GPO's website at www.gpo.gov/su_docs/. Order no. 029-016-00167-1; cost $1.50. Also available online at OSHA's website at www.osha.gov; see **Publications**.
- 29 *CFR* Part 1926.650-652, Subpart P—Excavations. JSHQ

Detach Here

Accident Report

From the U.S. Department of Labor
Occupational Safety and Health Administration
FatalFacts *No.31*

Accident Summary

Accident Type	Cave-in
Weather	Cloudy and dry
Type of Operation	Trenching and excavation
Crew Size	4
Collective Bargaining?	No
Competent Safety Monitor Onsite?	Yes
Safety and Health Program in Effect?	Yes
Was the Worksite Inspected Regularly by the Employer?	Yes
Training and Education Provided?	No
Employee Job Title	Pipe layer
Age/Sex	32/M
Experience at this Type of Work	9 Months
Time on Project	2 Weeks

Detach Here

Brief Description of Accident

Employees were laying sewer pipe in an unshored trench 15 feet deep. The trench was 4 feet wide at the bottom and 15 feet wide at the top. Soil conditions ranged from mostly sand and gravel in the lower half to clay and loam in the top half. The trench was subject to vibration from local vehicle traffic and had no ladders or other means of exit.

An accident occurred while employees were climbing out of the trench. A small cave-in occurred, covering one employee's feet and ankles. While attempting to assist the trapped employee, a coworker was caught by a second cave-in and covered up to his waist. The first employee died from a ruptured right ventricle to his heart, and the other employee suffered a hip injury.

Accident Prevention Recommendations

- Employers must ensure that employees are trained to recognize hazards and safe work practices associated with excavations.
- An adequate protective system must protect each employee in an excavation from cave-ins. The utility trench should have been either properly sloped or shored, or a trench box installed to protect employees.
- Daily inspections of the trench should be conducted by a competent person who has authority to take prompt corrective actions to eliminate hazards.
- A stairway, ladder, ramp, or other safe means of exit must be located in trench excavations that require no more than 25 feet of lateral travel for employees.
- In type "b" soil,* the trench should have been at least 34 feet wide at the top.

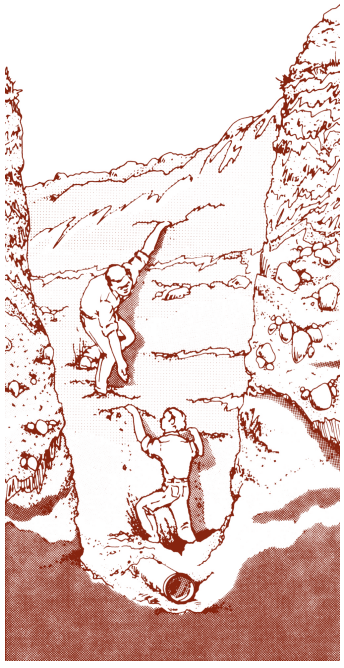
Sources of Help

- OSHA Construction Standards (*Title 29 of the Code of Federal Regulations (CFR)*, Part 1926, Subpart P) deal with trenching and excavations.
- OSHA Training Institute. Courses on trenching and excavation and other related construction topics are available for employers and employees.
- OSHA-funded free Consultation Services.
- *Excavation and Trenching Operations* (OSHA 2226), a 20-page booklet describing in detail OSHA's accepted safe practices.

For more information on these and other topics, visit OSHA's website at www.osha.gov. JSHQ

*See Appendix A —"Soil Classificiation"— of 29 CFR 1926, Subpart P.

Note: The case described is representative of fatalities caused by improper work practices. No special emphasis or priority is implied nor is the case necessarily a recent occurrence. The legal aspects of the incident have been resolved, and the case is now closed.



Lifting Operations Create Ergonomic Stress on the Back

From the U.S. Department of Labor
Occupational Safety and Health Administration
Ergo Facts *No.4*

Lifting heat exchangers, part of residential boiler units, from the floor to a conveyor line resulted in low back pain and back injuries to employees working on an assembly line.

The Problem

The job involved one employee who placed the heat exchangers on a conveyor from a pallet on the floor for assembly of residential boilers. The employee brought out the heat exchargers in batches, ten at a time, with about 30 being handled each day.

The employee placed the cabinets and insulation for the boilers on the conveyor and then lifted and positioned the heat exchangers manually.

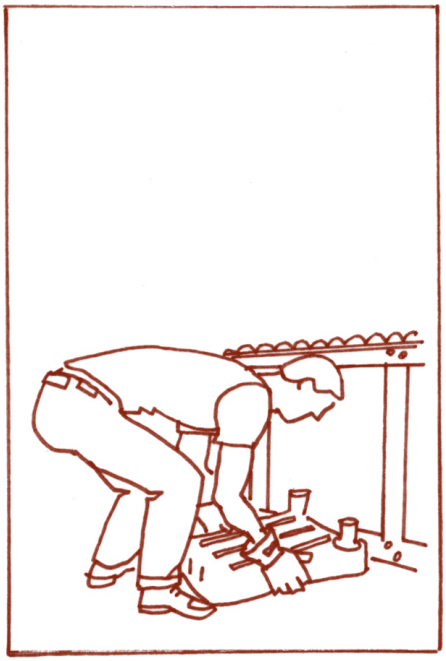
It took three moves to position the unit after the heat exchangers were brought to the work area on pallets. First, the employee lifted the unit from the pallet and placed it on the floor near the conveyor. Second, the employee lifted the unit from the floor to the conveyor. Third, the worker then had to place one hand under the unit and lift to shift the unit into its final position.

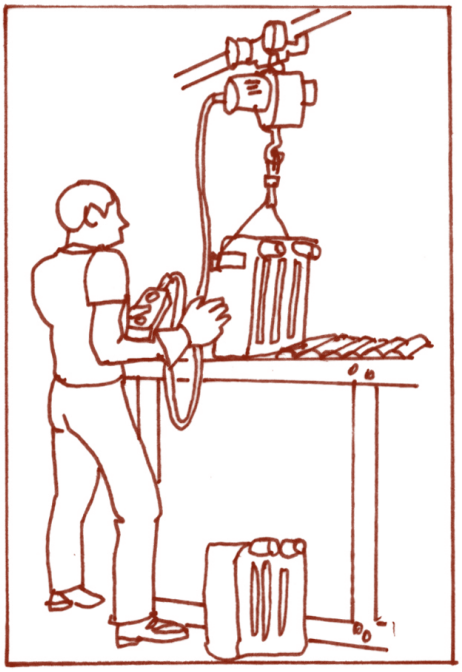
The job was evaluated using the National Institute for Occupational Safety and Health (NIOSH) lift guide, *Work Practices Guide for Manual Lifting*, Department of Health and Human Services, NIOSH, 1981. The first and third lifts were outside the parameters of the NIOSH lifting guidelines, so only the second lift was evaluated.

The units weighed from 61 to 84 pounds. After the variables of the second lift were measured and entered into the NIOSH lifting equation, the action of lifting the heat exchangers from the floor to the conveyor line fell between the Action Limit (28 pounds) and the Maximum Permissible Limit (85 pounds) which, under the guidelines, calls for engineering (mechanical) or administrative (work practice) controls.

The Solution

For this situation, the company installed a hoist that eliminated the three manual lifts of the heat exchanger, and instead, mechanically lifted exchangers off the pallets and positioned them along the assembly line.





The Benefits

The workers in this job are no longer exposed to hazards of overexertion injuries with the three stressful lifts eliminated. The employees welcomed having this easy-to-handle lifting aid installed.

JSHQ

ErgoFacts provides a brief summary of the results of an employer's recognition of the need for workplace safety and health assistance. In some instances, enforcement officials recognized these situations during an inspection. Such assistance can identify and help the employer correct workplace hazards, develop, or improve an effective safety and health management system, or both. Contact the OSHA office in your area for additional information on the consultation program or visit OSHA's website at www.osha.gov.

Detach Here


OSHA
is on the
World Wide Web
at
www.osha.gov
Meet us in cyberspace to view
Compliance Assistance • Directives • Fact Sheets • Frequently Asked Questions • Most Frequently Violated Standards • News Releases • OSHA/Consultation Office Directory • Publications • Speeches • Standards • What's New • and more.

U.S. Department of Labor
Occupational Safety and Health Administration