

Job Safety & Health Quarterly

JSHQ

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Ergonomics

Preventing Injury
and Preserving Health

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



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

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From the Editor...

As we publish our first edition of the 21st century, we are continuing to enhance the presentation of *Job Safety & Health Quarterly* through design and artistic improvements. So, you'll see some changes in this and upcoming issues.

Our cover story describes OSHA's ergonomics proposal and how to get more information on the topic. We also feature in this issue an OSHA partnership with a Technical Education facility in New York that has instituted safety and health as part of its curriculum. Our state story looks at California's new needlestick protections for health care workers. See also our regular columns such as *What's Happening?*, *Mark Your Calendar*, and *Q&A* to learn more about OSHA programs and activities.

I would also like to take this opportunity to announce that Kerri Lawrence, our associate editor, has assumed the duties of managing editor of the magazine. Kerri has been with the magazine for 9 years, and her creativity and expertise will continue to be assets in ensuring a professional level product. I have enjoyed the 11 years of working on *Job Safety & Health Quarterly* from its beginning as a two-color product to the more sophisticated four-color version we have now. I will continue to be associated with the magazine in an executive capacity.

As always, the magazine staff appreciate your support and readership and invite you to comment and provide ideas on our response card located in each issue.

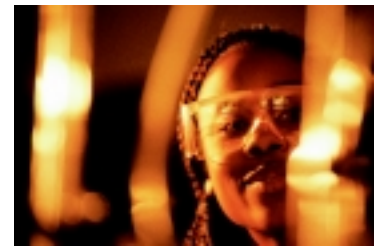
Enjoy the issue.

A handwritten signature in black ink that reads "Anne Crown-Cyr".

Anne Crown-Cyr
Executive Editor

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Assistant Secretary's Message



OSHA's top priority for the Year 2000 is the proposed ergonomics standard. It's one of Labor Secretary Alexis Herman's top priorities, too.

As this issue of *Job Safety & Health Quarterly* reaches you, we are looking forward to the beginning of 8 weeks of hearings on our ergonomics proposal. All told, OSHA will spend more than 200 days receiving public input—comments, testimony, and post-hearing comments—on ergonomics. Publication of the proposal last November follows 2 years of extensive discussions and dialogue with stakeholders and release of a draft ergonomics proposal in February 1999.

The scientific foundations for the standard are substantial. OSHA has entered 1,400 scientific studies in the ergonomics record. The National Institute for Occupational Safety and Health and the National Academy of Sciences have both conducted extensive reviews of the literature and found a link between physical activities at work and musculoskeletal disorders

(MSDs). The Academy also found that interventions in the workplace can reduce risks for workers.

To assure the broadest possible public input, we have significantly increased our outreach to the regulated community. For the first time, we've made a proposed standard, along with detailed health and economic analyses, available on a free CD-ROM. All of these materials, plus numerous fact sheets and links to scientific data, also are posted on OSHA's website.

OSHA's proposal represents a practical approach that mirrors the best practices of those who have been successful in preventing MSDs in their workplaces. As promised, the proposal focuses on jobs where the problems are most severe—production jobs in manufacturing and manual handling jobs, which account for about 60 percent of all MSDs. About 25 percent of general industry employers have jobs in one or both of these categories. We're asking these employers to be pro-active in providing information to employees about musculoskeletal disorders and encouraging them to report problems early. Other general industry employers—fully 75 percent—would not need to take any action unless an employee actually experienced an MSD. This follows the practice of employers that have effective ergonomics programs to address high-risk jobs up front and deal with other problems as they arise. We think it's a sensible approach.

Rulemaking always garners a lot of public attention, and it is a critical part of OSHA's mission. But we have other roles to play as well.

One that I believe deserves increased attention is outreach and training. In 1999, OSHA added 10 new compliance assistance officers to expand our outreach and education, and we'll boost that by another 34 in 2000. President Clinton has asked for an additional 34 for 2001. That would give us a compliance assistance staffer in each of our area offices.

Most employers want to find and fix hazards and protect their employees. But often they need more guidance than they find in OSHA rules. The rules set forth **what** is required, but employers and employees need training in **how** to meet the requirements. The new compliance assistance staffers will help provide that guidance.

Expanded outreach and training is part of OSHA's "New Ways of Working," a sensible and balanced approach to the challenges of the 21st century. We're intent on promulgating practical rules, providing the help employers need, directing our enforcement resources strategically, and pursuing partnerships at every level. These strategies should pay off as the agency works to help employers and employees reduce workplace injuries and illnesses for the 6th straight year and further the downward trend in occupational fatalities. JSHQ

A handwritten signature in black ink that reads "Charles Jeffress". The signature is fluid and cursive.

Charles Jeffress
Assistant Secretary of Labor
for Occupational Safety and Health

QThe monitoring of at-home workers' activities has made headlines recently. Where does OSHA stand on this hot issue?

AIn February, OSHA issued a new compliance directive to formalize agency policy about home-based work. Home offices will NOT be inspected for violations of federal safety and health rules. This directive, which provides guidance to OSHA compliance officers who enforce such rules, also states that employers are not expected to conduct home inspections either.

"OSHA respects the privacy of people's homes, and we expect that employers will too," says Charles Jeffress, Assistant Secretary for Occupational Safety and Health.

Although the agency will not inspect home offices of telecommuters, it will, when asked, follow-up on complaints involving potentially hazardous factory work being performed at home. Examples include assembling electronics, using unguarded crimping machines, or handling potentially hazardous materials without adequate protection.

Under the provisions of the directive, inspections will take place in home manufacturing and similar operations only after the agency "receives a complaint or referral that indicates that a violation of a safety or health standard exists that threatens physical harm, or that an imminent danger exists, including a report of a work-related fatality." In addition, inspections would be limited only to the employee's actual work activities, not the entire dwelling.

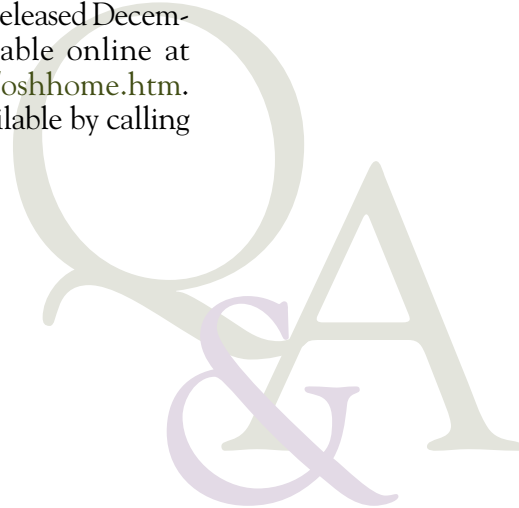
For a copy of this directive and Jeffress' recent Congressional testimony on the issue, see OSHA's homepage at www.osha.gov.

QWhat does the latest data on workplace injuries and illnesses show?

AWorkplace injury and illness rates declined for the 6th year in a row, according to the latest data from the Bureau of Labor Statistics (BLS). The Bureau reported an injury/illness rate of 6.7 cases per 100 equivalent full-time workers in 1998, the latest year for which data are available. Employers reported a 4-percent drop in the number of cases and a 3-percent increase in the hours worked compared with 1997, reducing the case rate in 1998 to 6.7 compared with 7.1 in 1997. The 1998 rate is the lowest since BLS began collecting the data in the 1970s.

"This is good news for American workers and for American employers," says Secretary of Labor Alexis Herman. Since 1973, occupational injury and illness rates decreased 40 percent. Further, there has been a drop in actual injuries too. Employment rose 3 percent in 1998, yet 200,000 fewer workers were hurt or got sick on the job than in 1997.

The report, *Workplace Injuries and Illnesses 1998*—released December 1999—is available online at <http://stats.bls.gov/oshhome.htm>. Hard copies are available by calling (202) 691-6179.



Q What's the latest in OSHA's interactive software designed to help small businesses?

A Following extensive field and public testing, OSHA has released new online advisors covering hazard awareness, fire safety, and lead in construction. The Hazard Awareness Advisor helps employers and employees locate potential hazards in specific

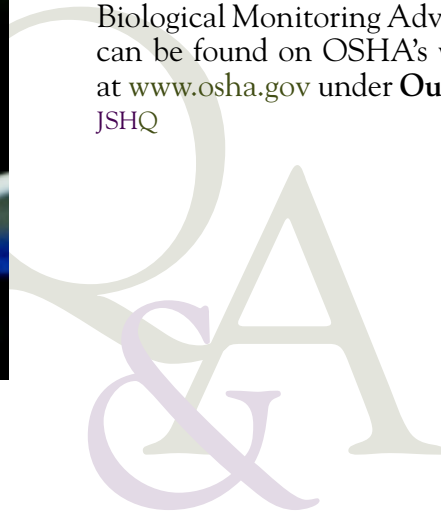
work environments by asking questions about activities, practices, equipment, material, and conditions and policies in the workplace. Based on the responses, the software determines the hazards likely to be present, then prepares a customized report detailing pertinent OSHA standards that address those hazards.

The Fire Safety Advisor addresses the agency's general industry standards for fire safety and emergency evacuation as well as firefighting, fire suppression, and fire detection systems and equipment. The software asks users about their workplaces and workplace policies and practices to determine whether or how OSHA's fire safety standards might apply. Based on responses, the advisor alerts users to fire safety hazards and helps them conduct detailed compliance reviews. The advisor enables users to write a customized "Emergency Action Plan" and "Fire Prevention Plan" for their workplace.

The Lead in Construction Advisor reviews OSHA's lead standard and asks questions about exposures and workplace activities. Based on the responses, the advisor determines how the lead standard might apply to their workplaces and guides users on how to conduct an initial determination of exposure and how to use exposure assessment data.

These and OSHA's other Expert Advisors—including Safety Pays, Asbestos, Confined Spaces, and GOCAD (Cadmium Standard Biological Monitoring Advisor)—can be found on OSHA's website at www.osha.gov under **Outreach**.

JSHQ



What's Happening?

OSHA

ABC Partnership

OSHA and the Associated Building Contractors (ABC) recently joined hands for what promises to become the industry model on how the agency works with ABC member construction contractors with exemplary safety records. Under terms of the partnership, ABC—which represents nearly 22,000 members nationwide—will create a “platinum” level safety designation, the highest in a four-step ABC program recognizing its safest contractors. To achieve platinum status, contractors must meet stringent safety guidelines. ABC estimates that as many as 240 members could meet the criteria for the program. For more information, contact OSHA’s Office of Construction at (202) 693-2020.

Ergonomics Hearings

OSHA has announced the dates and places for informal hearings on the proposed Ergonomics Standard. The agency will begin receiving public comments and testimony from March 13 through April 7 at the Frances Perkins Building (Auditorium), U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, DC. Hearings are then set for the Chicago area at the James R. Thompson Center (Assembly Hall), 100 W. Randolph Street, Chicago, IL, from April 11 through April 21. Additional meetings will convene from April 24 through May 3 at the Mark Hatfield Federal Court House (Courtroom 16), 1000 Southwest 3rd Avenue, Portland, OR. OSHA will return to Washington, DC, to conclude nearly 8 weeks of public hearings from May 8 through 12 at a location to be announced.

Small Business Conference

As part of its continuing outreach efforts, OSHA will host the “New Ways of Working” Small Business Forum on April 5, 2000 at the Crystal City Marriott Gateway in Arlington, VA. Breakout topics will include an “Ergonomics Update,” “Construction Accident Reduction Emphasis (CARE)” Update, “Partnership and the Voluntary Protection Program (VPP),” and “How to Develop a Safety and Health Program for Your Small Business.”

To register or obtain more information, contact OSHA’s Kimberly Hennigan at (202) 693-2000, or visit OSHA’s website under **Events** at www.osha.gov.

NIOSH

Breathing Apparatus Warnings

NIOSH has issued a warning to users of CSE Corporation’s SR-100 self-contained-self-rescuers (SCSRs) of a problem that could prevent the devices from providing effective protection.

The Mine Safety and Health Administration (MSHA) reported to NIOSH last December that a miner, who either donned or attempted to don an SR-100 SCSR during a brief electrical fire in a mine, suffered smoke inhalation requiring medical treatment. MSHA’s investigation determined that a deteriorated breathing tube that the miner had opened on the SR-100 SCSR prevented the unit from adequately protecting him in the smokey atmosphere. Subsequent testing by MSHA identified additional unusable SR-100 SCSR containing breathing tubes.

Users of the CSE SR-100 SCSR devices manufactured before June 7, 1994, should do one of the following as soon as possible:

- have the devices retrofitted by the manufacturer;
- replace each device with a CSE unit manufactured after June 7, 1994; or
- obtain other approved SCSRs.

For more information, contact MSHA at (412) 386-6923 or NIOSH at (800) 35-NIOSH (800-356-4674).

New Website

The National Institute for Occupational Safety and Health (NIOSH) is funding through a grant a new website set to launch this summer. The Electronic Library of Construction Safety and Health, eLCOSH, will provide a wide range of materials on construction safety and health, making information easier than ever to obtain. NIOSH's grant supports the development of eLCOSH by The Center to Protect Workers' Rights (CPWR), the research arm of the Building and Construction Trades Department, AFL-CIO. Workers, contractors, researchers, and others will soon be able to download information from a broad range of sources in English, Spanish, and other languages. For more information, contact eLCOSH c/o CPWR, 111 Massachusetts Ave., N.W., 5th Floor, Washington, DC 20001; telephone: (202) 962-8490; fax: (202) 962-8499; E-mail: cpwr@cpwr.com.

Publications

A NIOSH *Alert* warns of the dangers in operating forklifts. *Preventing Injuries and Deaths of Workers Who Operate or Work Near Forklifts* (DHHS/NIOSH Publication No. 2000-112) focuses on NIOSH investigations of forklift-related deaths and indicates that many workers and employers may not be aware of the risks of operating or working near forklifts nor are many following procedures set forth in OSHA standards, consensus standards, or equipment manufacturers' guidelines.

NIOSH also has issued an *Alert* on *Preventing Needlestick Injuries in Health Care Settings* (DHHS/NIOSH Publication No. 2000-108). The publication provides current scientific information about the risk of needlestick injury and the transmission of bloodborne pathogens to health care workers.

Single copies of these publications are available free from NIOSH—Publications Dissemination, 4676 Columbia Parkway, Cincinnati, OH 45226-1998; telephone: (800) 35-NIOSH (800-356-4674); Fax: (513) 533-8573; Email: pubstaff@cdc.gov.

Symposium

NIOSH, in association with its public and private sector partners, will host the second National Occupational Injury Research Symposium (NOIRS), October 17-19, 2000 in Pittsburgh, PA. NOIRS 2000 is a means of implementing the National Occupational Research Agenda (NORA) for traumatic occupational injuries. For more information, contact the Sheraton Hotel Station Square at 1-800-325-3535 or (412)261-2000; fax (412)261-2932. JSHQ

VPP Update

Motorola Achieves Star Status in Voluntary Protection Program

The Department of Labor's Assistant Secretary for Occupational Safety and Health, Charles Jeffress, presented Motorola's Network Solutions Sector with the prestigious *Star* award, given nationally each year to a handful of companies that demonstrate extraordinary measures taken in preventing illnesses and injuries in the workplace. Bo Hedfors, Motorola's

Executive Vice President, accepted the award on behalf of the thousands of employees at Motorola's Network Solutions Sector's global headquarters in Arlington Heights, IL.

OSHA approves *Star* award recipients only after a thorough review of a written application and an intensive onsite visit to review documentation, interview

employees at all levels, and certify workplace conditions. Approved sites must then adhere to the key components of the *Star* award criteria: management commitment; active and meaningful employee involvement; training; hazard analysis and systems review; and effective preventive or corrective actions for recognize hazards.

Star Program

New

- Akzo Nobel Chemical Co., Pasadena, TX
- Bestfoods Baking Co., Hazelton, PA
- Georgia-Pacific Corp., Gypsum, Newington, NH
- Georgia-Pacific Corp., Hawthorne Plywood Plant, Hawthorne, FL
- International Paper, Cordele Mill, Cordele, GA
- International Paper, Liquid Packaging Division, Plant City, FL
- International Paper, Gordon Chip Mill, Gordon, GA
- International Paper, Prattville Mill, Prattville, AL
- International Paper, Alabama Supertree Nursery, Selma, AL
- International Paper, Madison Chip Mill, Madison, GA
- International Paper, Fordyce Container, Ride Rite Div., Fordyce, AR
- International Paper, Fred C. Gragg SuperTree Nursery, Bluff City, AR
- Lockheed-Martin, Government Electronic Systems, Moorestown, NJ
- Lucent Technologies, Murray Hill, NJ
- Lucent Technologies, Holmdel, NJ
- Motorola Communications Enterprise, Plantation, FL
- Motorola, NSS, Network Systems Group, Arlington Heights, IL
- North Star Steel Texas, Inc., Beaumont, TX
- Pfizer Global Manufacturing, White Hall, IL
- Phillips Chemical Co., Philtex/Ryton Complex, Borger, TX
- Solutia, Inc., Foley Operations, Foley, AL
- Ticona Polymers, Inc. (also known as Celanese), Bishop, TX
- Torcon, Inc., Field Office, Pearl River, NY
- Valspar Corporation, Pittsburgh, PA
- Weyerhaeuser, Tampa, FL

<i>Continuing</i>	<i>Years</i>
• Aristech Chemical Corporation, Ironton, OH	3
• Kerr-McGee Chemical LLC, Madison, IL	3
• Milliken and Company, Elm City Plant, LaGrange, GA	3
• International Paper, Mobile Container Plant, Bay Minette, AL	3
• Milliken and Company, Valway Plant, LaGrange, GA	6
• Milliken and Company, Duncan M. Stewart Plant, LaGrange, GA	6
• Solutia, Inc., Anniston, AL	6
• Russell Corporation, Plant #4, Alexander City, AL	12
• Russell Corporation, Coosa #1 Yarn Plant, Alexander City, AL	12
• Mobil Chemical Company's Business and Research Centre, Macedon, NY (formerly Technical Center)	13
• Mobil Chemical Company's Scale-Up Operations, Macedon, NY (formerly Commercial Films)	15
• Tenneco Packaging Corp, Tenneco Packaging Covington Plant, Covington, GA	15

Advanced from Merit to Star

- CF Industries, Inc., Peru, IL
- General Electric Co., Tungsten Products Plant, Euclid, OH
- General Magnaplate, Linden, NJ
- International Paper's Nacogdoches Composite Panel Facility, Nacogdoches, TX
- Potlatch Corporation, Jaype Plywood Unit, Pierce, ID
- Minolta Advance Technology, Inc., Goshen, NY

Demonstration

- Black & Veatch, Summersville Hydro-Elec. Project, Mt. Nebo, WV
- H.B. Zachary Construction Corp., Equistar Chemicals, Victoria, TX
- Eii, Inc., Infineum Chemical Plant, Linden, NJ
- Eii, Inc., Infineum Linden Technology Center, Linden, NJ

Merit Program

New

- BBA Nonwovens, Inc., Colrain, MA
- Halliburton Energy Services, Explosive Products Center, Alvarado, TX
- Sony Magnetic Products of America, Inc., Dothan, AL
- Temple-Inland Forest Products, Fletcher Wallboard, Fletcher, OK

As of January 31, 2000, Federal VPP sites totalled 471: 399 in *Star*, 52 in *Merit*, and 20 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. JSHQ

Mark Your Calendar

OSHA Training Institute Schedule

101 Safety Hazard Recognition for Industrial Hygienists

Introduces industrial hygienists to safety hazards and standards, including hazard recognition in common industrial processes and criteria for citation or referral to safety compliance officers. Topics include electrical equipment, flammable liquids, compressed gases, welding, machine guarding, walking-working surfaces, materials handling, and construction. Features a mock worksite inspection and evaluation including hazard identification.

Tuition: \$1,200
Dates: 06/13/00 - 06/23/00

121 Introduction to Industrial Hygiene for Safety Personnel

Introduces general concepts of industrial hygiene. Includes 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: 08/22/00 - 09/01/00



121a Introduction to Industrial Hygiene for Safety Personnel

A shortened version of course 121 introducing the student to the general concepts of industrial hygiene. Topics include 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: \$480
Dates: 04/11/00 - 04/14/00

202 Advanced Accident Investigation

Provides advanced information on accident investigation techniques and methods. Includes a review of sources of evidence and developing facts, findings, and conclusions.

Tuition: \$480
Dates: 06/27/00 - 06/30/00



224 Laboratory Safety and Health

Introduces the hazards associated with laboratories and the control of these hazards. Includes laboratory safety codes and standards, radiation hazards, bio-hazards, flammable and electrical hazards, incompatible chemicals, and health effects of chemicals. Includes a discussion of OSHA's laboratory standard and the chemical hygiene plan concept, an evaluation of laboratory hoods, and a discussion of safety and health hazards in selected laboratory operations.

Tuition: \$480
Dates: 06/13/00 - 06/16/00

225 Principles of Ergonomics Applied to Work-Related Musculoskeletal and Nerve Disorders

Describes the use of ergonomic principles to prevent musculoskeletal disorders. Includes work physiology, anthropometry, musculoskeletal disorders, video display terminals, and risk factors such as vibration, temperature, materials handling, repetition, and lifting and transfers in health care.

Tuition: \$480
Dates: 04/25/00 - 04/28/00

206 Maritime Standards

Covers maritime operations, standards, and jurisdictional enforcement. The longshoring segment focuses on vessel and equipment nomenclature and longshoring and marine terminal standards. The shipyard segment covers vessel building, repair and breaking, and the shipyard standards as well as commercial diving and marine construction.

Tuition: \$1,200
Dates: 05/16/00 - 05/26/00

208 Cranes and Materials Handling for General Industry

Discusses overhead cranes, hoists, and powered industrial trucks used in general industry, as well as overhead, crane inspections, and maintenance procedures. Also includes the operation and maintenance of powered industrial trucks.

Tuition: \$480
Dates: 06/06/00 - 06/09/00

220 Industrial Noise

Addresses occupational noise—its 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

222 Respiratory Protection

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

Tuition: \$912
Dates: 05/04/00 - 05/12/00

233 Indoor Air Quality

Helps health and safety professionals determine indoor air quality, including the nature and causes of indoor air problems in office building environments as well as investigative approaches and solutions.

Tuition: \$480
Dates: 06/27/00 - 06/30/00

235 Expanded Health Standards

Provides OSHA compliance personnel with information on risk assessment and compliance programs for expanded health standards. Includes coverage of medical surveillance/toxicology, policy and standards-setting practices, industry practice, and workplace evaluation.

Tuition: \$480
Dates: 06/06/00 - 06/09/00

236 Heating, Ventilating, and Air-Conditioning (HVAC) Systems

Provides information on types of HVAC systems and components, related standards and codes, ventilation measurements, maintenance considerations, system evaluation and troubleshooting, reading plans and specifications, and OSHA compliance issues.

Tuition: \$480
Dates: 06/13/00 - 06/16/00

306 Safety and Health for Grain Handling Operations

Covers the safety and health aspects of the grain handling industry including terminology, processes, equipment, and mechanical/electrical safeguards. Also discusses health hazards common to grain handling such as dusts, pesticides, and fumigants.

Tuition: \$480
Dates: 05/23/00 - 05/26/00

307 Safety and Health in Sawmills and Logging Operations

Introduces the basic components of sawmill operations, from log handling to finished products. Discusses hazards, proper controls, and related OSHA standards for each operation. Covers topics such as materials handling, electrical hazards, machine guarding, and health hazards. Course features a field exercise at an operating sawmill.

Tuition: \$1,200
Dates: 06/13/00 - 06/23/00

308 Principles of Scaffolding

Presents detailed information on the safety aspects of scaffolding and current OSHA requirements. Introduces the student to the basics of scaffolding operations from installation to dismantling. Covers built-up and suspended scaffolds, aerial lifts, and the interpretation of related standards. Demonstrates installing and dismantling methods.

Tuition: \$480
Dates: 05/16/00 - 05/19/00

312 Hazardous Waste Site Inspection and Emergency Response for the Construction Industry

Increases knowledge of hazardous waste site operations, emergency response procedures, safety and health hazards, and enforcement issues for the construction industry. Includes the OSHA hazardous waste site and emergency response standard, site operations such as oil removal and handling, decontamination of heavy equipment, drilling, tank and drum removal, Superfund, RCRA and SARA requirements, personal protective equipment, and construction strategies.

Tuition: \$432

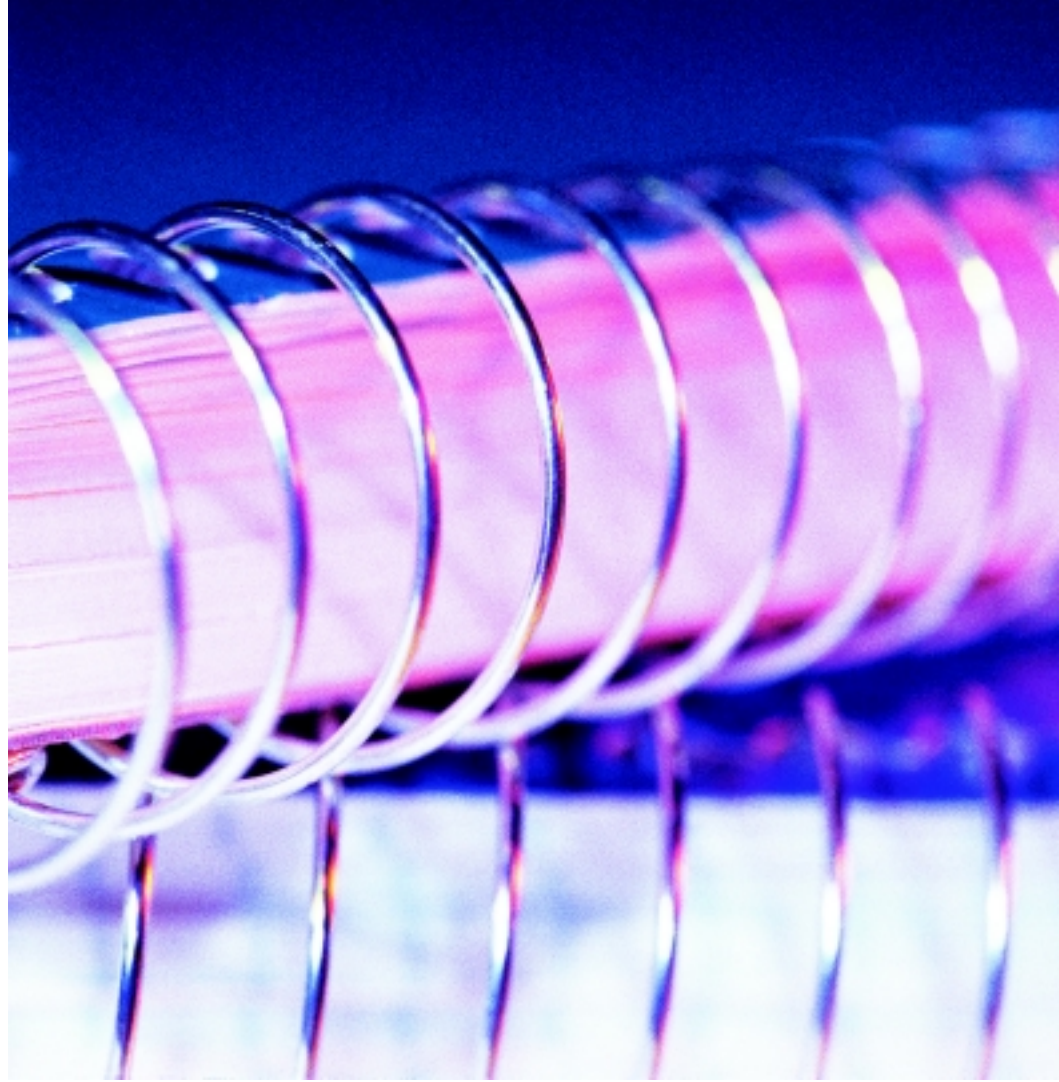
Dates: 06/27/00 - 06/29/00

322 Applied Welding Principles

Introduces the processes and hazards associated with welding operations, such as oxyacetylene and open arc, proper use of each process, personal protective equipment, safety and health hazard recognition and control, and OSHA requirements.

Tuition: \$480

Dates: 06/06/00 - 06/09/00



326 Health Hazards in the Construction Industry for Safety Personnel

Focuses on recognizing and evaluating health hazards in the construction industry. Includes health hazards associated with abrasive blasting, asbestos, confined spaces, demolition, painting, roofing, silica, lead, and welding.

Tuition: \$480

Dates: 05/02/00 - 05/05/00

330a Safety and Health in the Chemical Processing Industries

A shortened version of course 330 provides the student with a survey of Title 29 Code of Federal Regulations Part 1910.119, *Process Safety Management of Highly Hazardous Chemicals*. Includes an overview of processes, equipment, and materials commonly found in the chemical processing industries, safety and health hazard recognition, and effective hazard control techniques.

Tuition: \$624

Dates: 04/10/00 - 04/14/00



501 Trainer Course in Occupational Safety and Health Standards for General 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: 05/15/00 - 05/19/00

502 Update for Construction Industry Outreach Trainers

Provides an update on such topics as OSHA construction standards, policies, and regulations. Designed for personnel in the private sector who have completed #500 Trainer Course in Occupational Safety and Health Standards for the Construction Industry and who are active trainers in the outreach program.

Tuition: \$432
Dates: 05/09/00 - 05/11/00

335 Emergency Response to Hazardous Substance Releases

Focuses on emergency response procedures for facilities that must meet the requirements of either *Title 29 Code of Federal Regulations Part 1910.120(q)* or *29 CFR 1926.65(q)*. Includes elements of an emergency response plan, training requirements, the incident command system, medical surveillance, and post-emergency response.

Tuition: \$480
Dates: 08/01/00 - 08/04/00

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: 06/19/00 - 06/23/00

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	Dates: 06/05/00 - 06/08/00
Location: Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 04/24/00 - 04/27/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 06/19/00 - 06/22/00
Location: National Safety Education Center (Itasca, IL)	Dates: 05/08/00 - 05/12/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/01/00 - 05/04/00
Location: University of Washington	Dates: 04/24/00 - 04/27/00

204a Machinery and Machine Guarding Standards

Location: Eastern Michigan United Auto Workers	Dates: 04/10/00 - 04/13/00
Location: National Safety Education Center	Dates: 05/22/00 - 05/26/00
Location: Niagara County Community College	Dates: 05/15/00 - 05/18/00
Location: Texas Engineering Extension Service	Dates: 04/17/00 - 04/20/00

222a Respiratory Protection

Location: Georgia Technological Research Institute	Dates: 04/25/00 - 04/27/00
Location: Keene State College	Dates: 06/12/00 - 06/16/00



Location: Metropolitan Community Colleges Business and Technology Center	Dates: 06/12/00 - 06/15/00
Location: National Resource Center for OSHA Training (Morgantown, WV)	Dates: 04/25/00 - 04/28/00
Location: National Safety Education Center (Elgin, IL)	Dates: 06/06/00 - 06/08/00
Location: Niagara County Community College	Dates: 05/22/00 - 05/25/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 04/25/00 - 04/28/00
Location: Texas Engineering Extension Service	Dates: 04/17/00 - 04/21/00
Location: University of California San Diego	Dates: 06/19/00 - 06/22/00

*225 Principles of Ergonomics Applied to Work-Related
Musculoskeletal and Nerve Disorders*

Location: Eastern Michigan United Auto Workers	Dates: 04/17/00 - 04/19/00
Location: Keene State College	Dates: 04/24/00 - 04/27/00

Location: Metropolitan Community Colleges Business and Technology Center	Dates: 05/22/00 - 05/25/00
Location: National Safety Education Center	Dates: 05/23/00 - 05/25/00
Location: Niagara County Community College	Dates: 06/26/00 - 06/29/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/10/00 - 05/12/00
Location: Texas Engineering Extension Service (San Antonio, TX)	Dates: 06/12/00 - 06/14/00
Location: University of California San Diego	Dates: 04/24/00 - 04/27/00

226 Permit-Required Confined Space Entry

Location: Georgia Technological Research Institute	Dates: 06/13/00 - 06/16/00
Location: Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 04/26/00 - 04/28/00
Location: Niagara County Community College	Dates: 05/22/00 - 05/25/00
Location: Texas Engineering Extension Service (San Antonio, TX)	Dates: 06/19/00 - 06/21/00
Location: University of California San Diego	Dates: 06/12/00 - 06/14/00
Location: University of Washington	Dates: 04/10/00 - 04/12/00

309a Electrical Standards

Location: Georgia Technological Research Institute	Dates: 06/05/00 - 06/09/00
Location: Keene State College	Dates: 05/22/00 - 05/26/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 05/01/00 - 05/04/00
Location: National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 05/22/00 - 05/25/00
Location: National Safety Education Center (Itasca, IL)	Dates: 06/05/00 - 06/09/00
Location: Niagara County Community College	Dates: 06/19/00 - 06/22/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/02/00 - 05/05/00

Location: Texas Engineering Extension Service
Dates: 06/12/00 - 06/16/00

Location: University of Washington (Portland, OR)
Dates: 05/22/00 - 05/25/00

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

Location: Georgia Technological Research Institute
Dates: 04/17/00 - 04/21/00

Location: Keene State College
Dates: 05/01/00 - 05/05/00

Location: Metropolitan Community Colleges Business and Technology Center
Dates: 05/08/00 - 05/11/00

Location: National Resource Center for OSHA Training (Morgantown, WV)
Dates: 05/02/00 - 05/05/00

Location: National Safety Education Center (Hillside, IL)
Dates: 04/10/00 - 04/14/00

Location: Niagara County Community College
Dates: 05/08/00 - 05/11/00

Location: Red Rocks Community College/Trinidad State Junior College
Dates: 04/03/00 - 04/06/00

Location: Texas Engineering Extension Service
Dates: 04/10/00 - 04/14/00

Location: University of California San Diego (Los Angeles, CA)
Dates: 04/24/00 - 04/27/00

Location: University of Washington
Dates: 05/15/00 - 05/18/00

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

Location: Eastern Michigan United Auto Workers (Findlay, OH)
Dates: 04/10/00 - 04/13/00

Location: Georgia Technological Research Institute (Jacksonville, FL)
Dates: 04/10/00 - 04/14/00

Location: Keene State College
Dates: 04/17/00 - 04/21/00

Location: Metropolitan Community Colleges Business and Technology Center
Dates: 04/17/00 - 04/20/00

Location: National Resource Center for OSHA Training (Charleston, WV)
Dates: 05/23/00 - 05/26/00





Location: National Safety Education Center (Appleton, WI)	Dates: 04/03/00 - 04/07/00
Location: Niagara County Community College	Dates: 04/03/00 - 04/06/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/08/00 - 05/11/00
Location: Texas Engineering Extension Service (Houston, TX)	Dates: 04/03/00 - 04/07/00
Location: University of California San Diego	Dates: 04/10/00 - 04/13/00
Location: University of Washington	Dates: 06/05/00 - 06/08/00

502 Update for Construction Industry Outreach Trainers

Location: Eastern Michigan United Auto Workers (Findlay, OH)	Dates: 05/09/00 - 05/11/00
Location: Keene State College	Dates: 05/22/00 - 05/24/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 04/24/00 - 04/26/00
Location: National Resource Center for OSHA Training (Morgantown, WV)	Dates: 04/05/00 - 04/07/00
Location: National Safety Education Center (Hillside, IL)	Dates: 05/09/00 - 05/11/00
Location: Niagara County Community College	Dates: 04/12/00 - 04/14/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/22/00 - 05/24/00
Location: Texas Engineering Extension Service (Houston, TX)	Dates: 05/08/00 - 05/10/00
Location: University of California San Diego	Dates: 05/15/00 - 05/17/00

503 Update for General Industry Outreach Trainers

Location: Eastern Michigan United Auto Workers (Findlay, OH)	Dates: 06/20/00 - 06/22/00
Location: Georgia Technological Research Institute	Dates: 06/20/00 - 06/22/00
Location: Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 05/10/00 - 05/12/00

Location: Keene State College (Groton, CT)	Dates: 05/08/00 - 05/10/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 05/15/00 - 05/17/00
Location: National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 05/15/00 - 05/17/00
Location: Niagara County Community College	Dates: 06/14/00 - 06/16/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 05/24/00 - 05/26/00
Location: Texas Engineering Extension Service	Dates: 04/10/00 - 04/12/00

510 Occupational Safety and Health Standards for the Construction Industry

Location: Georgia Technological Research Institute	Dates: 04/03/00 - 04/07/00
Location: Great Lakes OSHA Training Consortium (Cincinnati, OH)	Dates: 05/30/00 - 06/02/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 04/10/00 - 04/13/00
Location: National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 05/08/00 - 05/11/00
Location: Niagara County Community College	Dates: 04/10/00 - 04/13/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 04/24/00 - 04/27/00
Location: Texas Engineering Extension Service	Dates: 04/03/00 - 04/06/00
Location: University of California San Diego	Dates: 06/12/00 - 06/15/00
Location: University of Washington	Dates: 05/08/00 - 05/11/00

521 OSHA Guide to Industrial Hygiene

Location: Eastern Michigan United Auto Workers (Findlay, OH)	Dates: 05/15/00 - 05/18/00
Location: Keene State College	Dates: 06/26/00 - 06/30/00
Location: Metropolitan Community Colleges Business and Technology Center	Dates: 04/24/00 - 04/27/00



Location: National Resource Center for OSHA Training (Morgantown, WV)	Dates: 04/18/00 - 04/21/00
Location: Red Rocks Community College/Trinidad State Junior College	Dates: 06/26/00 - 06/29/00
Location: Texas Engineering Extension Service (Corpus Christi, TX)	Dates: 06/19/00 - 06/22/00
Location: University of Washington (Portland, OR)	Dates: 06/19/00 - 06/22/00

600 Collateral Duty Course for Other Federal Agencies

Location: Keene State College	Dates: 04/10/00 - 04/13/00
Location: National Resource Center for OSHA Training (Silver Spring, MD)	Dates: 04/17/00 - 04/20/00
Location: National Safety Education Center (Hoffman Estates, IL)	Dates: 04/17/00 - 04/21/00
Location: Niagara County Community College	Dates: 04/17/00 - 04/20/00
Location: Texas Engineering Extension Service	Dates: 06/05/00 - 06/09/00
Location: University of California San Diego JSHQ	Dates: 05/15/00 - 05/18/00



Ergonomics

Preventing Injury and Preserving Health

by Susan Hall Fleming

Every year enough workers to populate Vermont have to miss work. But they're not on vacation. They're sidelined by painful muscles, tendons, and ligaments. And the pain can hit the pocketbook, too, when the paycheck doesn't come.

Recuperating from work-related injuries caused by overexertion or repetitive motion costs about 600,000 workers time away from the job each year.¹ "Work-related musculoskeletal disorders such as back injuries and carpal tunnel syndrome are the most prevalent, most expensive, and most preventable workplace injuries in the country," said Labor Secretary Alexis M. Herman in announcing

¹These and other statistics presented here appear in OSHA's ergonomics proposed standard and supporting documents, including the preamble. These materials are online at OSHA's website at www.osha.gov.

OSHA's ergonomics proposal on November 22, 1999.

The proposed ergonomics standard would prevent an average of 300,000 painful, potentially disabling musculoskeletal disorders (MSDs) each year while generating \$9 billion in savings annually.

Preventing just one MSD saves an average of \$22,500.

Ergonomics is the science of fitting the work to the worker. It's the solution to the problem of a mismatch between the physical capacity of the worker and the task.

What Is a Covered MSD?

OSHA's proposed ergonomics standard does not cover every musculoskeletal injury. The proposal covers only injuries that are

- OSHA recordables—serious enough to require days away from work, medical treatment, or assignment to light duty work, and
- Directly related to the physical tasks an employee performs, and
- Specifically connected to the physical work activities that form a core or significant part of the employee's job.

At a Glance Full Ergonomics Program

Management Leadership and Employee Participation

- Name someone to be responsible for ergonomics and supply resources and training for the program.
- Be sure company policies do not discourage employees from reporting problems and let employees know how they can be involved in the ergonomics program.

Hazard Information and Reporting

- Inform employees periodically on the following:
 - Ergonomic risk factors (force, repetition, awkward postures, static postures, contract stress, vibration, cold temperatures);
 - Signs and symptoms of musculoskeletal disorders;
 - Importance of reporting signs and symptoms early to prevent damage and how to make reports; and
 - Requirements of this standard.
- Set up a system for employees to report signs and symptoms of MSDs and respond promptly to reports.

Job Hazard Analysis and Control

- Analyze problem jobs for ergonomic risk factors.
- Work with employees to eliminate or materially reduce MSD hazards using engineering, administrative, and/or work practice controls.
- Use personal protective equipment to supplement other controls.
- Track progress, and when jobs change, identify and evaluate MSD hazards.

Training

- Train employees in jobs with covered MSDs, their supervisors, and staff responsible for the ergonomics program.
- Teach recognition of MSD hazards, the ergonomics program at the site, and control measures used to reduce hazards.
- Conduct training initially, periodically, and at least every 3 years at no cost to employees and in a language they understand (e.g., Spanish).

MSD Management—For Workers Who Have Covered MSDs

- Respond promptly to an injured employee and provide access to a health care professional, if needed, for evaluation, management, and followup at no cost to the employee.
 - Inform the health care professional about the job, the MSD hazards, and the ergonomics standard.
 - Obtain a written opinion from the health care professional on how to manage the employee's recovery and ensure that the health care professional shares it with the worker.
- Provide necessary work restrictions and work restriction protection (WRP) during the recovery period (100 percent pay and benefits for employees put on light duty; 90 percent pay and 100 percent benefits for employees who must be removed from work). WRP benefits last until the employee can return to work **or** the MSD hazards are fixed **or** 6 months have passed, **whichever comes first**. WRP can be offset by workers' compensation or similar benefits.

One Size Doesn't Fit All

One of OSHA's goals in developing its ergonomics proposal is to offer flexibility for employers of different sizes in a wide variety of industries. Simply put, OSHA wants to mandate effective protection for workers while minimizing requirements and maximizing flexibility for employers. To do that, OSHA's proposal incorporates several special features, including:

- A grandfather clause—to enable employers to continue current effective ergonomics programs.
- Quick Fix—an option to fix a problem job within 90 days in lieu of implementing a full ergonomics program for that job.
- Use of any combination of engineering, work practice, and administrative controls to reduce hazards causing musculoskeletal disorders (MSDs) rather than relying solely on engineering controls.
- Incremental abatement process—trying one control to reduce the hazard, then adding others one by one, if necessary, to fix the problem.
- Option for employers to discontinue major parts of their ergonomics programs if no MSDs are reported in a problem job within 3 years after it is fixed.



amputations or fractures. Yet fewer than 30 percent of employers have developed effective ergonomics programs to address problems involved with awkward postures, excessive force, heavy lifting, or repetitive motions on the job.

“This is a critical workplace safety and health problem that we must address if we want to make serious progress in further reducing workplace injuries and illnesses,” notes OSHA administrator Charles N. Jeffress. “Solutions are available that can make a tremendous difference for workers. Often they are inexpensive and easy to implement.”

OSHA's proposal would protect 27 million workers at 1.9 million general industry worksites. The proposal does not cover construction, maritime, or farming operations. The emphasis is on protecting workers most at risk—those involved in manual handling or working in production jobs in manufacturing. Although these workers represent only about 25 percent of employees in general industry, they experience about 60 percent of the musculoskeletal disorders. The 1.6 million worksites that employ these workers would need to implement a basic ergonomics program, primarily

Ergonomics is about working smarter and improving productivity while eliminating pain and reducing the risk of injury.

Every year about 1.8 million American workers experience one of more than 100 recognized work-related musculoskeletal disorders. An MSD is an injury or disorder of the muscles, tendons, ligaments, joints, cartilage, or spinal discs. MSDs account for one-third of all lost-work time injuries in the U.S. As Secretary Herman put it, “Real people are suffering real injuries that can disable their bodies and destroy their lives.”

It's not just the numbers that are significant. Because these injuries can involve lengthy recovery periods, they cost employers from \$15 to \$18 billion in workers' compensation costs with \$30 to \$40 billion more in other direct costs each year. Carpal tunnel cases, for example, require an average of 25 days away from work for recuperation—more than time off for



an information effort to alert employees to potential problems. Employers would need to assign someone responsible for ergonomics; inform employees about the risk of injuries, the signs and symptoms to watch for, and the importance of reporting problems early; and set up a system for employees to report signs and symptoms.

OSHA would require full ergonomics programs only if an employee actually experiences a covered MSD. That means that 75 percent of general industry employers would have no responsibilities under the standard unless one of their employees was injured. OSHA anticipates that about 300,000 employers would need to adopt full programs each year to fix problem jobs. The average fix would cost about \$150 annually.

OSHA's proposal is job-based rather than facility-based. In other words, employers do not have to institute a worksitewide ergonomics program, but only need to address ergonomics for jobs where injuries occur and other identical jobs within the facility.

The proposal includes four special provisions to increase flexibility for employers: a grandfather clause, Quick Fix, incremental abatement, and an option to discontinue an ergonomics program when it is no longer needed. Under the grandfather clause, employers who have already developed ergonomics programs will not need to begin again as long as their ergonomics programs meet the basic obligations and recordkeeping requirements of the standard and eliminate or materially reduce MSD hazards. Employ-

ers also must implement and evaluate their ergonomics program before the standard becomes effective.

Quick Fix is for problem jobs that can be fixed right away. If employers can correct the problems that led to an injury within 90 days and evaluate the fix within another 30 days, they don't need to institute a full ergonomics program.

Incremental abatement permits a step-by-step approach to fixing a job where an injury has occurred. An employer need not implement every possible control when trying to resolve the problem. For example, if there are five possible strategies for fixing a problem job, the employer need only put in place the one most likely to work. If that solution proves satisfactory, no further action is necessary. If it is insufficient, the employer may add another control, continuing this process until the job is fixed or all five controls are in place. Further, employers can choose from any combination of engineering, work practice, and administrative controls.

What's a Quick Fix?

Quick Fix is a unique feature of OSHA's ergonomics proposal. It's an alternative to a full ergonomics program for problems that can be fixed in 90 days and double-checked for effectiveness within 30 days after that.

Because OSHA's proposal is **job-based** rather than **facility-based**, if an employer can promptly fix the one job that has resulted in a musculoskeletal disorder, there's no need to take further action. Often Quick Fix solutions are inexpensive, and sometimes they cost nothing at all. Some possible Quick Fix interventions might include substituting a better tool for the job, providing mechanical lifting equipment, adjusting the height of working surfaces, or repositioning tools or equipment.

Snapshots of Success

- Eliminating piecework, forming manufacturing teams, and rotating working activities as well as adding engineering controls enabled two Maine New Balance shoe manufacturing facilities to cut workers' compensation costs from \$1.2 million to \$89,000 per year and reduce lost and restricted workdays from 11,000 to 549 during a 3-year period.
- In 2 years, an ergonomics program at Lovely Hill Nursing Home in Pawling, NY, led to a 75-percent decline in the lost-time injury and illness rate and a reduction in days lost to musculoskeletal disorders from 287 to 37.
- Haldex Brake Systems in Pratt, AL, cut lost workday injuries and illnesses by 50 percent in the 2 years following implementation of its ergonomics program.
- At Frito-Lay in Kathleen, GA, the ergonomics program reduced lost workdays associated with back injuries by two-thirds and cut the rate of upper extremity musculoskeletal disorders and lost workdays by more than 50 percent.
- Ultra Tool & Plastics in Amherst, NY, implemented an ergonomics program that cut back injuries by 70 percent and reduced associated lost workdays by 80 percent. Some solutions included ergonomic chairs, pallet jacks, robot presses, and back safety training.
- Sunnyrest Health Care Facility in Colorado Springs, CO, implemented an ergonomics program in 1996 that 2 years later reduced the rate of lost-work time injuries by 75 percent and lost workdays by two-thirds. The program included employee training on safe lifting techniques and adding mechanical lifts.
- Hearne, TX, ceramic fixture manufacturer CR/PL Limited Partnership improved ergonomics by adding mechanical lift assists and changing the heights of some work stations to reduce lost workdays associated with musculoskeletal disorders by 60 percent in 2 years.
- Premium Standard Foods in Milan, MO, strengthened the ergonomics program in its meatpacking plant by analyzing jobs for risk factors, improving employee training, and adding conveyors and hoists. After 1 year, the company reduced overall injuries by 40 percent, cumulative trauma disorders by nearly one-third, and days away from work by more than 70 percent.
- From 1996 to 1998, Citation Castings in Bessemer, AL, cut its injury and illness rate by 60 percent in its foundry and musculoskeletal disorders even more through an ergonomic awareness program, safe back training, and purchase of anti-vibration gloves.
- Enid Memorial Hospital in Enid, OK, cut the rate of workplace injuries by 75 percent from 1996 to 1998 and reduced lost workdays by more than 85 percent through its ergonomics program that stressed safe biomechanical lifting of patients.
- In less than 1 year, Checks-in-the-Mail, a New Braunfels, TX, commercial printing and data services provider, cut days lost to work-related musculoskeletal disorders by more than 60 percent. Their strategy included mandatory breaks and exercises and automation of some processes.
- Hayden Beverage Company, in Boise, ID, implemented an ergonomics program that cut back injuries in half in only 1 year. The soft drink bottler modified equipment for new employees and increased employee training and awareness.
- From 1992 to 1996, General Electric Corporation's turbine generator manufacturing plants in Auburn and Bangor, ME, cut lost-time injuries by more than 70 percent through a comprehensive safety and health program that included a strong ergonomics component. The sites added power lifting equipment and changed work station designs.
- West Allis Health Care in West Allis, WI, focused on reducing back injuries in 1997, cutting the severity of injuries by more than 90 percent through training, team lifts, and mechanical lifting devices.
- Over 3 years, Pratt & Whitney Division of United Technologies Corporation in Berwick, ME, reduced lost-time injuries from 112 to 10 and workers' compensation costs from \$280,000 to \$54,000 through a stronger ergonomics training program and process improvements to remove or reduce physical stresses.

What Is Work Restriction Protection?

Workers can recover from many musculoskeletal disorders (MSDs) in a matter of days if they are able to rest the injured area. Often restricting work activity or putting the injured employee on light duty allows the employee to rest the injured area while continuing to be productive during the recovery period. The key is to find tasks that match the employee's capabilities during recovery and that do not expose the worker to the physical stresses that led to the injury. Sometimes, particularly if no light duty jobs exist, an injured employee may have to be completely removed from work during part of the recovery period.

Work restriction protection (WRP) is the maintenance of take-home pay and benefits of injured employees who go on light duty or must be removed from the workplace during recovery from a covered MSD. The purpose of WRP is to get employees to report MSDs early to prevent permanent damage and to avoid injury to other employees in the same job. Workers on light duty receive 100 percent of pay and benefits, and workers removed from the workplace receive 90 percent of pay and 100 percent of benefits. WRP continues until the employee is able to return to work **or** the MSD hazards are eliminated **or** 6 months have passed—**whichever comes first**. If employees receive other income, such as workers' compensation payments, insurance payments, or wages from other employment made possible because the employee can't work at his or her regular job, the employer can offset WRP payments against these other payments.

Employers can discontinue most provisions of an ergonomics program if MSD hazards are eliminated or materially reduced and no covered MSD is reported for 3 years in that job. Employers need only maintain controls and training related to controls. Those with manufacturing or manual handling jobs also need to continue providing hazard information to employees and maintain their MSD reporting system.

Under the proposal, a full ergonomics program includes management leadership and employee participation, hazard information and reporting, job hazard analysis and control, training, MSD management, and program evaluation. The standard would be phased in over 3 years.

A critical component of the proposal is MSD management. This involves a prompt response to reports of injury, evaluation of the

injury, and follow-up by a health care professional, if necessary. During recovery, workers would receive work restriction protection (WRP) while on light duty or while recuperating at home. Under WRP, employees given light duty would receive full take-home pay and benefits. Those who must be removed from the workplace would get 90 percent of pay and 100 percent of benefits to limit economic loss as a result of their injuries. WRP encourages early reporting to catch problems before they result in injuries. Strong evidence shows that employees are reluctant to report symptoms if doing so might cause them to miss work and reduce their paycheck.

OSHA developed its proposal following 2 years of meetings with stakeholders and careful review of the scientific evidence. Among that evidence is a 1997 National Institute for Occupational Safety



and Health (NIOSH) evaluation of 600 epidemiologic studies.² Twenty-seven peer reviewers confirmed NIOSH's finding linking physical stress on the job to MSDs. Another study is the 1998 review of scientific literature completed by the National Academy of Sciences. NAS concluded that MSDs are directly related to work; that the higher the physical stress on the job, the greater the rate of MSDs; that most people face their greatest exposure to physical stress at work; and that interventions that reduce physical stress on the job

reduce the risk of injury. In addition, more than 90 case studies examined by OSHA demonstrated that implementing ergonomics programs resulted in average declines in MSD rates of 70 percent.

Copies of the proposal, economic and health analyses, and other materials are available on OSHA's website at www.osha.gov. OSHA has also placed these materials on a free CD-ROM. To receive a copy, call OSHA Publications at (202) 693-1888.

The agency will receive public input on the proposal for about 260 days including a comment period extended from 70 to 100 days and ending March 2, 2000. Hearings are scheduled for March 13 through May 12 in Chicago, IL, Portland, OR, and Washington DC. For detailed information on these hearings, see "What's Happening" on page 5 of this issue. The post-hearing comment period is expected to run several months. The agency intends to publish a final standard by the end of the year. JSHQ

²Bruce P. Bernard, ed., *Musculoskeletal Disorders (MSDs) and Workplace Factors—A Critical Review of Epidemiologic Evidence for Work-Related Musculoskeletal Disorders of the Neck, Upper Extremity and Low Back*, U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention (Cincinnati, OH; National Institute for Occupational Safety and Health), July 1997.

Women and Ergonomics

Work-related musculoskeletal disorders (MSDs) are of particular concern to women. Each year almost 230,000 women miss work due to these injuries.

American women experience a high number of the most severe and most costly MSDs. They suffer 62 percent of work-related tendonitis and 70 percent of carpal tunnel syndrome cases. In 1996, they also lost 500,000 days of work to 100,000 back injuries.

OSHA's proposed ergonomics standard would protect up to 12 million women who face the risk of developing MSDs related to their jobs. Once effective, an OSHA ergonomics standard could prevent as many as 1 million MSDs among women over 10 years.

Fleming is a Public Affairs Specialist in OSHA's Office of Public Affairs, Washington, DC.

An Education in Safety and Health

by Joan McMahon, RN

The old adage, “An ounce of prevention is worth a pound of cure,” still rings true today. As in many areas, prevention is key. In worker protection, it can be critical. In workplace safety and health, training and education play vital roles in preventing worker injuries and illnesses. And one OSHA partnership really gets it. For the last 3 decades, a technical education center in Poughkeepsie, NY, has worked with OSHA and local businesses to instill safety and health values and practices among their students. This forward-thinking program brings safety and health into the classroom, making it part of the curriculum and part of the students’ everyday experience.

The Beginning

The Dutchess County Board of Cooperative Educational Services (BOCES) Technical Education Center provides instruction to 800 secondary students from 14 school

districts within Dutchess County. Currently, these mostly junior and senior high-school students have career options in Arts/Communications, Business Information Systems, Engineering Technology, Health Services, Human and Public Service, Natural and Agricultural Sciences, Math, English, and Social Studies. Open 7 days a week, the educational center also serves 7,000 adults through evening study in various programs offered onsite and at satellite locations.

The partnership with OSHA and local businesses began in the early 1970s, not long after the passage of the *Occupational Safety and Health Act of 1970*. John Fiore, then Curriculum and Placement Coordinator at the Tech Center, believed safety and health was an important responsibility for both the staff and students. He realized the opportunity was there to provide safety education for a population still in their formative years and to make safety a habit for the students preparing for the world of work.

Fiore responded to a notice in the local newspaper announcing that federal representatives were meeting at Vassar College to inform local businesses and industries about OSHA, its new safety regulations, methods of inspection, and enforcement, as well as plant and personal safety, employer and employee responsibilities, compliance regulations, and fines. Fiore and School Nurse teacher, Ellie Clark, attended the meeting, approached the two guest speakers, and voiced concern that they were missing a very important group of people—the students in high schools and colleges who were preparing for the world of work. All agreed on the importance



Culinary Arts Teacher, Carol Strazza (right), instructs student Joseph Adamo (left) on the necessary safety precautions when operating a slicer.

of targeting this group and discussed the need to create a safety program at the Tech Center. That was just the beginning.

George Harrison, the Director of Occupational Education, approved an initial plan that staff would develop and implement. We were then on our way!

To develop a program that would mirror the safety requirements of the new OSHA regulations, the center staff knew that it needed the commitment of its three major groups: administrative staff, students, and teachers. They also needed the support of local businesses and industries—the future employers of their students. As a result, the technical education center developed three committees to implement and manage its safety and health program: an Industrial Safety Advisory Committee, a Faculty Safety Committee, and a Student Safety and Health Committee. The collaborative efforts of these promote and maintain safety in our school, each contributing ideas and suggestions from their individual, unique perspective.

The Industrial Safety Advisory Committee grew out of the positive response from the local business community that initially included representatives from IBM, Shatz Federal Bearing, Texaco Research, Central Hudson Gas and Electric, and Western Publishing Company, followed by OSHA's Area Office in Albany, NY. Today, the committee members include John Tomich, OSHA Area Director, as well as OSHA staffers Terry Harding and Carol Couser. Local members include Ron Beck (IBM retired), Richard Carroll (IBM), Frank Doherty, Jr. (Red Wing Properties), Doug Jackson (IBM), Donna Janowicz (Package Pavement), Francis "Butch" Reilly (Axiom Realities), Sue Thompson (Pawling Corporation), Bob Thomas (Central Hudson Gas & Electric), Vincent Veltre (Vassar Brothers Hospital), and De Witt Sagendorph (Dutchess County Department of Emergency Response). These safety advisors are only a phone call or fax away when we need their guidance in properly managing a safety issue.

From the outset, the Faculty Safety Committee included administrators, teachers, teaching assistants, building and grounds personnel, and BOCES-employed safety and risk specialists. This committee created building regulations to promote personal and environmental safety for each program taught. Our present Faculty committee has 25 members.

Our student safety committee representatives helped maintain a safe working environment—their school and classrooms. They met with the School Nurse Teacher monthly for safety and health instruction. Student representatives were responsible for returning to their individual classes and presenting what they had learned to their classmates. They were the teachers' second pair of eyes.

From the beginning of our safety and health program, our objective has been to create an accident- and injury-free work environment. Based on OSHA standards and regulations, we implemented the following Safety and Health Policy:

- Provide mechanical and physical safeguards in all areas to the maximum extent possible.
- Conduct regular safety and health inspections to find and eliminate unsafe working conditions or practices; to control health hazards; and to comply fully with the safety and health standards for each area.
- Include instruction on safety and health practices in all curriculums.
- Provide necessary personal protective equipment and instructions for its use and maintenance in all programs.
- Enforce safety and health regulations, requiring students to cooperate with these rules as a condition of enrollment.

- Promptly and thoroughly investigate all accidents for causative factors to correct the problem and prevent recurrence.
- Set up a system of recognition and awards for outstanding safety service for performance.

The success and effectiveness of the safety program require a shared commitment by three groups within the educational center—administrators, faculty, and students. The administrative staff lead the program and provide monetary support for the purchase of safeguards and safety equipment to meet required standards. The teachers develop and instill proper attitudes toward safety and health in their students, which helps ensure that they perform all operations with the utmost regard for everyone's safety. The students are responsible for wholehearted cooperation with all aspects of the program, including complying with all rules and regulations. In

addition, they are expected to continually practice safety in all of their occupational experiences and to incorporate safety into every aspect of their lives.

The Program

Our longevity and ability to function depends totally on the cooperation and effective interaction of all involved. Here's how our program works.

The Faculty Safety Committee meets monthly to discuss progress made with safety and health issues that have been brought to our attention. At this time, the status of any ongoing concerns also are discussed. New concerns are brought up, discussed, and a plan of action put into effect to make necessary corrections. Responsibility for follow-through is delegated to a committee member, with an update expected at the next meeting. All urgent concerns are brought to my attention as they are found and are promptly corrected.

From the beginning of our safety and health program, our objective has been to create an accident- and injury-free work environment.

Some items may need to be evaluated by our Safety and Risk Department and, at times, we may ask our industrial safety advisory members for input and recommendations.

As School Nurse/Safety Chairperson and a faculty safety committee member, I meet with our Student Safety Committee approximately four times per year. Teachers recommend students for membership based on demonstrated maturity, good communication skills, good attendance, and a desire to help promote safety guidelines in the classroom and work area. If a teacher has a class with a large enrollment and a lot of hands-on activity, he or she often will select two safety representatives. All classes have an alternate to take over in the event of absence.

I have an introductory meeting with the students in the beginning of October, giving the teachers enough time to get to know their

The students remarked on the parallel between a large industrial safety program and the programs they are personally involved in at the Tech Center.

students and enabling them to select students with the desired attributes. At this meeting, we review a list of responsibilities for which the students will be accountable and for which they will be eligible for recognition at the end of the school year. At this time, we also discuss the Safety Program Agenda—the safety events for the upcoming year—the Safety Walk, Follow-Up Safety Walk, and student recognition breakfast and luncheon.

Additional meetings help to prepare students for our Safety Walks, to report on the findings of the audits made during those walks, and to determine what measures are needed to correct identified concerns. When possible, field trips are arranged with the help of our advisory members. Last spring, Bob Thomas, Special Services Representative from Central Hudson Gas & Electric, invited the student safety reps to visit the Roseton, NY, generating station for an overview of a safety program at work. After an interesting session on how electrical energy is made, we toured the plant. We also received comprehensive information in the areas of personal and



Terry Harding, OSHA Safety Advisor (center), assists student safety reps with the safety audit of the auto mechanics shop area. Left to right—Patrick Ledrich, Robert Wyant, Terry Harding, Matt Gittere, and Ed Clark.



DeWitt Sagendorph, Safety Advisor, Dutchess County Department of Emergency Response (left), gives safety suggestions to Culinary Arts students Keith Blaszk and Joe Adamo.

environmental safety and learned by seeing safety in action in the real world. The students remarked on the parallel between a large industrial safety program and the programs they are personally involved in at the Tech Center.

To keep our original commitment of holding regular safety and health inspections, we schedule two safety audits each school year. The first audit takes place in late November or early December. We refer to this event as our “Safety Walk.” It is the major safety event of the year. We assign eight groups to perform a safety audit on all occupational work areas. The ideal composition of each audit group includes one or two Industrial Safety Advisory members, a member from our Faculty Safety Committee, and several Student Safety Representatives—each doing an audit of their own classroom/work area. Our audit sheet is designed to ensure that all of our equipment, machinery, and work areas comply with OSHA standards. We focus on general safety, chemical/hazardous materials, fire protection, machine guarding, welding, and emergency and evacuation procedures.

The Safety Walk begins with an introductory “meet and greet” session with our outside Safety Advisory guests, faculty members, and morning student safety representatives. Our Safety Advisory members speak to the students about their individual industries and businesses and give a brief description of their job responsibilities. They also instill in our students the importance of their appointed positions. Some of our members have been with us for more than 20 years and have seen our accomplishments first hand over that time. We are very proud of the praise they give to our program.

The actual room-to-room inspection takes about 1 hour. After each group has audited its assigned areas, we reassemble for a post-discussion. Each student presents a verbal report on the audit they have completed on their classroom/work area, discussing problem areas with the input of specialists in various areas of industrial safety. Interestingly, some of them have faced the same problems in their work experience and can guide us with solutions.

OSHA Area Director, John Tomich, and his staff have always attended these events and have been very resourceful over the years in helping us to attain our goals. If needed, they provide additional information on OSHA standards and regulatory information required to make improvements via fax the next day or by mail within a week. Occasionally, we also may confer with other government agencies for direction and assistance. It’s important to note that most of the comments and guidance presented at these sessions are positive rather than negative and focus generally on what we have accomplished not what we need to. Our outside guests never fail to mention how impressed they are by the dedication and safety knowledge of our student safety representatives as well as the students’ keen observations. As Tomich points out, “It has been my pleasure to help create an environment of trust between all involved and specifically by showing both students and faculty that OSHA can be a valued partner in making the educational arena safer and healthier for everyone.”



Graphic Communications Teacher, Jim Robisaw (right), shows students Sarah Brown and Kevin Thomas how to apply press wash to cleaning rollers.

It is my job to review each audit sheet, make a list of items to be corrected in each area, and then meet with our building maintenance supervisor. Together, we identify and designate areas of responsibility for correcting identified problems—student/teacher, maintenance, and administration. Our building coordinator/principal and I then review all of our concerns.

At this point, our work is really cut out for us. We hold a Follow-Up Safety Walk in March to evaluate how well we have complied with the necessary corrections identified during our preliminary audit. Often, when a different team member with a different area of expertise inspects the same area, we are able to find new safety concerns. The purpose of the follow-up is to make sure that any problems identified dur-

ing our first walkthrough have been or are in the process of being corrected. We have an excellent record of accomplishment in this area. The follow-up is carried out the same way as the first event—with a walkthrough of the various work areas. The follow-up session held later that afternoon allows afternoon student safety representatives to participate. Even though this is a follow-up, we encourage our auditors to give each area an overall safety check.

Following the follow-up walk, I submit an end of the year status report to the Administration, Safety and Risk Department, Buildings and Grounds, and individual teachers. We are usually in good shape by this time. At no time do we permit an unsafe area to exist while waiting for completion of necessary correction. Our Safety and Risk Department

determines whether equipment or work areas will be shut down or modified until the time they comply with OSHA standards of operation. Safety is the first priority, and an area or program can be shut down until deemed safe. If necessary, outside safety engineers are brought in to remedy concerns.

To augment our program this school year, our Security and Law teachers, Roberto Bonfont and Mike Kelly, helped enhance the safety and security of our building. The curriculum of their second-year students now includes student patrols. Students man the main lobby and direct all visitors to the Main Office for proper identification before entering the building. Once all of the busses have arrived and all students are in the building, a student on patrol locks all outside entrances to the building, leaving the main entrance as the

only way of gaining access. Other students perform safety sweeps, including reporting on items that require attention, such as water on the floors, obstructed emergency exits, emergency exit lights that are out, and missing or expired inspection dates of fire extinguishers. Most concerns are corrected when found by notifying the individual(s) responsible for that area. Findings that do not pose an immediate threat and might need further discussion are brought up at our faculty safety meeting. Our Safety and Risk personnel respond to problems needing immediate attention.

Regardless of how safe we try to be, however, accidents can happen. When they do occur, I see the injured party in the Health Office. In addition to attending to the well-being of the injured party, the focus of this visit is safety education and accident prevention. I gather information from students and teachers about the events surrounding the incident, any safety violations, and what measures, if any, can be taken to prevent a recurrence. I also send a monthly accident report to all staff. Each incident is listed and includes the area of injury, any safety violations that may have been present, and if there is a need for follow-up medical attention (e.g., sutures, tetanus shot, or doctor or emergency room visit). Patients remain anonymous. I do not include classroom or student names in this report. I encourage each teacher to use this report as a teaching tool by presenting each injury to their students and discussing possible ways it could have been prevented.

At the end of the school year, student safety representatives receive performance evaluations. If they have carried out their re-

“It has been my pleasure to help create an environment of trust between all involved and specifically by showing both students and faculty that OSHA can be a valued partner in making the educational arena safer and healthier for everyone.”

—John Tomich, OSHA Area Director

sponsibilities at a satisfactory level, they are honored with a breakfast or luncheon, depending on which session they attend. Our Culinary Arts students prepare and serve the breakfast and luncheon. Students also receive a certificate of participation in our safety program. This year, the Faculty Safety Committee instituted a new “outstanding” award and presented two of these \$50 awards to exemplary student safety representatives. Our Industrial Safety Advisory group makes every attempt to attend these functions to present the certificates. I encourage each student to place their certificate and their list of student responsibilities in a work portfolio. Their dedication to and accomplishments in the promotion of a safe work environment are benefits to a prospective employer. Colleges also look favorably upon this certificate in a student’s resume and application.

The Rewards

Our efforts have reaped many benefits over the years. Staff and students have the privilege of working in an atmosphere where their safety is the major concern. We also receive a 10-percent discount on our Regional Affinity Group insurance for implementing this particular program. We have created and fostered a bond



Security and Law Enforcement Teacher, Mike Kelly (left), reviews a building safety check with his Student Safety Rep, Letoria Chambers.

Our OSHA representatives have relayed the message to us that we are helping them by creating an atmosphere of safety first for those entering the work force in areas that may some day be under OSHA jurisdiction.

between an educational institution responsible for preparing students for the work force and the local businesses and industries who are potential employers. Our OSHA representatives have relayed the message to us that we are helping them by creating an atmosphere of safety first for those entering the work force in areas that may some day be under OSHA jurisdiction. Our Safety Advisory members enjoy the visits and active participation in our annual events. They comment on the expeditious follow-up we have always had in response to their recommendations and share a mutual sense of pride in our accomplishments. They believe that coming together as a group throughout the year has provided valuable networking experiences with others sharing similar professions and interests. Working as a team has allowed everyone to emerge a winner.

Under our current director, Clare Garvey, and principal/coordinator, Francis McCabe—along with the combined efforts of the three committees, administrators, teachers and support staff—we continue to make safety our number one priority at the Dutchess County BOCES Tech Center. Safety violations are taken seriously. Students who do not adhere to established rules and regulations risk losing the privilege of attending classes. At no time is one person's unsafe behavior allowed to jeopardize the well-being of others.

We have come a long way and think that we excel in promoting safety and health in an educational setting. We also realize that this is an ongoing effort requiring dedication and commitment from everyone involved. We, at Dutchess County BOCES, continue to work as a team to preserve the standards and achievements in safety and health. JSHQ

McMahon is School Nurse and Safety Chairperson, Dutchess County BOCES Technical Education Center, Poughkeepsie, NY.

California Protects Health Care Workers from Needlestick Injuries

by Vernita Davidson



San Francisco General Hospital—In July 1987, a young nurse was finishing the 11th hour of a 12-hour shift in the AIDS unit at San Francisco General Hospital. As she withdrew an unsheathed needle from an intravenous line connected to a patient, the needle went through the bag and into her finger. Six weeks later, she tested positive for the AIDS virus¹ and became the first documented case of a medical worker at the hospital to be infected with HIV² through a needle injury. She was the 13th confirmed case in the nation. By 1999, the Centers for Disease Control and Prevention (CDC) confirmed 55 similar cases of HIV transmission through occupational exposure. Additionally, cases of Hepatitis B and C continue to present occupational risks to health care workers.

Today, San Francisco General has an exposure control program that is regarded by health care union officials as a model that could be used by other hospitals. Frontline workers have an equal voice on the hospital's safety and health committee and have an equal say in the selection of devices to be used at the hospital. New technology now provides needleless systems.

California's Protections Against Needlesticks

On July 1, 1999, Cal/OSHA³ adopted major revisions to the bloodborne pathogens standard to strengthen protection of health care workers from the transmission of bloodborne pathogens, particularly Hepatitis B, Hepatitis C, and HIV. California is *first in the nation* to place stronger requirements on employers to use needles and other

¹ Auto-Immundeficiency Syndrome.

² Human Immunodeficiency Virus that causes AIDS.

³ California operates its own OSHA-approved safety and health program known as Cal/OSHA.

History of Federal Regulation

In September 1986, various unions representing health care workers petitioned Federal OSHA to develop an emergency standard to protect employees from occupational exposure to bloodborne diseases. The agency denied the petition but determined that employees faced a significant health risk as a result of exposure to blood and other potentially infectious materials. OSHA issued instructions to its compliance officers on bloodborne pathogens in 1988, and published a proposed rule in 1989. In 1991, Federal OSHA published its bloodborne pathogens standard designed to reduce the incidence of workplace transmission of diseases caused by bloodborne pathogens.⁴ The standard became effective in 1992, and OSHA issued a new compliance directive.

In 1998, in response to growing concern about needlestick injuries, OSHA published a Request for Information⁵ to collect data on current injuries and prevention practices. In May 1999, OSHA published a summary report of its findings and announced its approach to help minimize risks in this area.⁶ OSHA's approach includes revising its recordkeeping rule to include records of needlestick injuries, updating its Bloodborne Pathogens compliance directive, and taking steps to amend its bloodborne pathogens standard. On November 5, 1999, Federal OSHA issued a revised compliance directive to assist OSHA compliance officers in enforcing the bloodborne pathogens standard. The revised directive takes into account new data on needlesticks and guidelines and medical information from the Centers for Disease Control on post-exposure prophylaxis. The federal directive does not place new requirements on employers, but reminds them that they must use the most appropriate medical technology available in their safety and health programs.

⁴ See various articles in the entire issue of *Job Safety & Health Quarterly*, Summer 1992. OSHA's bloodborne pathogens standard can be found in *Title 29 of the Code of Federal Regulations (CFR), Part 1910.1030*. See also OSHA's website at www.osha.gov.

⁵ *Federal Register*, 63:48250-48252, September 9, 1998.

⁶ U.S. Department of Labor, Office of Public Affairs, OSHA National News Release, USDL 99-145, *Labor Secretary Announces Plans to Combat Needlestick Injuries Among Health Care Workers*, May 20, 1999.

sharps devices engineered to reduce the chances of inadvertent needlestick injuries.

Many factors came together to prompt the revised standard, including legislation passed by the California Legislature requiring amendments to the existing standard, an advisory committee convened by Cal/OSHA, demands by unions representing health care workers for action to protect workers, intensive media coverage, and industry input. The concerted action by all parties involved helped ensure that health care workers not continue to incur needlestick injuries despite the availability of new technology.

Although Cal/OSHA had already been making plans for an advisory meeting by the time

newspaper articles appeared, media coverage added impetus to the effort to develop a standard. Recognizing the threat of exposure to bloodborne pathogens to health care and other workers, the California legislature passed a bill requiring Cal/OSHA to revise the bloodborne pathogen standard.

In addition, nationwide interest has focused on the need to incorporate new technology of sharps devices into OSHA requirements. Since California's efforts, at least four other states—Maryland, New Jersey, Tennessee, and Texas—have passed legislation regarding changes to their bloodborne standards. In addition, 25 states, including some federal enforcement states and the District of Columbia, have legislation pending.⁷

⁷ In states with federal OSHA coverage, legislative changes would affect public sector employees only.

Development of a Cal/OSHA Consensus Standard

In amending its state blood-borne pathogens standard, Cal/OSHA used an advisory committee process where the health care industry, labor representatives, and government agencies worked together to develop a consensus standard that both labor and industry considers reasonable and protective. Kaiser Permanente played a leadership role in advocating a strong yet balanced standard among the employer community. According to Dan Fritz, Senior Legal Counsel, Kaiser Permanente, “Kaiser’s support for a strong yet balanced standard is consistent with Kaiser’s continued priority to promote a safe environment for health care workers.”

Approximately 700,000 health care workers in California are at risk of occupational exposure to life-threatening bloodborne pathogens.⁸ The vast majority of these exposures are from needlestick injuries. At least 100,000 California health care workers are injured by accidental needlesticks each year.⁹ Many workers do not report these injuries, so the actual number of injuries may be far greater. Although the risk of disease transmission is low for most types of needlesticks, all needlestick injuries have the potential for transmitting bloodborne pathogens such as HIV, and Hepatitis B and C viruses. And health care workers, in particular, are at risk for occupationally acquired HIV infection as well as hepatitis.

Unions representing health care workers view the adoption of the

“Kaiser’s support for a strong yet balanced standard is consistent with Kaiser’s continued priority to promote a safe environment for health care workers.”

*—Dan Fritz, Senior Legal Counsel,
Kaiser Permanente*

California requirements and issuance of the new Federal compliance directive as an important milestone in their effort to obtain protection for health care workers from potentially life-threatening exposures to bloodborne pathogens. Many issues, however, remain to be resolved, such as training for employees, including frontline workers in decisionmaking, and in ensuring that employers select the best and safest devices available. Sal Roselli, President, Health Care Workers Union Local 250-SEIU¹⁰ notes, “While the new law marks an historic moment for health care workers, we will not be satisfied until the best and safest devices are implemented throughout the health care industry.”

⁸ California Legislature, Senate Bill 2005, Communicable disease, chaptered, September 23, 1996.

⁹ Ibid.

¹⁰ Service Employees International Union.



Sharps Injuries in Health Care Settings

The revisions to the bloodborne pathogens standard focus on needlesticks and other “sharps injuries” resulting in potentially life-threatening exposure incidents. Sharps injuries in health care delivery settings typically occur when a health care worker inadvertently punctures his or her skin with a hypodermic syringe or other sharp device—hence the term “sharps”—that has been used on a patient and has become contaminated with the patient’s blood or other body fluids. Sharps injuries are the primary mode of transmission of bloodborne pathogens in the workplace.

In recent years, needle devices specially designed to minimize the risk of needlestick injuries have entered the market. Some of these needle devices are of a design that can be described as “self-sheathing,” but others employ different design strategies to protect against needlesticks. The specific medical procedure for which a device is used has an impact on the device’s effectiveness in preventing

needlesticks as well as its appropriateness for medical efficacy. Systems without needles (needle-less systems) designed to fully or partially replace needle systems also are available for some medical procedures.

Major Elements of the Revisions

The Cal/OSHA standard, as adopted, has two major components: (1) where a choice is available, a needleless system must be used; (2) if a needleless system is not available, needles or other sharps with anti-stick features must be used. Other revisions include the following:

- New requirements for using needleless systems and sharps devices with anti-stick features, including some exceptions. Additional requirements for workers actually involved in providing health care to be actively involved in developing a program to evaluate and select needleless systems and sharps devices with anti-stick features appropriate for the procedures conducted.

- A requirement to keep a sharps injury log that records the date and time of each sharps injury resulting in an exposure incident. Employers must record the type and brand of device involved in the exposure incident and the details of the incident that will be useful in taking preventive action in the future. The requirement to maintain a sharps log is unique to Cal/OSHA. The log should serve as a tool for the employer, occupational health researchers, and Cal/OSHA in evaluating the effectiveness of devices.
- Addition of Hepatitis C as a specifically named bloodborne pathogen.
- A series of new requirements, which improve the effectiveness of the exposure control plan. The exposure control plan must include a procedure for evaluating the circumstances surrounding exposure incidents. For example, violent situations that may be encountered by prison personnel and police and in emergency rooms or psychiatric wards need to be taken into consideration.

Employers Affected by These Changes

Health care providers continue to be the primary focus of the revised standard. The new requirements focus on employees conducting the following medical procedures:

- Withdrawing body fluids.
- Accessing a vein or artery.
- Administering medications or fluids.
- Any other procedure with potential for a sharps injury exposure incident.

The revised standard covers all employers whose employees may be reasonably anticipated to have contact with blood or other potentially infectious material. This includes emergency and public safety services, correctional and custodial care facilities, and providers of services to any of these covered employers—such as plumbers and launderers—whose employees could be exposed to bloodborne pathogens.

The Sharps Injury Control Program

The California Legislature established the Sharps Injury Control Program (SHARPS) to study sharps injuries in California hospitals, skilled nursing facilities, and home health agencies.¹¹ SHARPS is sponsored by the following agencies:

- California Department of Health Services, Occupational Health Branch.
- California Department of Industrial Relations, Division of Occupational Safety and Health.
- University of California, San Francisco, School of Nursing.

The goals of the program include the following:

- Conducting a sharps injury surveillance study to identify the degree of risk associated with various types and brands of medical devices and procedures and using the findings to make recommendations about the relative safety of sharps devices.
- Reducing bloodborne disease risk by encouraging the development and use of medical devices designed to maximize worker and patient safety.
- Serving as a clearinghouse for evaluations of safety-enhanced devices for preventing sharps injuries.

As a result, California hospitals, skilled nursing facilities, and home health agencies are being asked to collect and provide data to the SHARPS Program on

- The incidence of sharps injuries.
- Circumstances surrounding the injuries.
- The types and brands of the sharps devices involved in each reported injury.
- The use of safety-enhanced devices.

“While the new law marks an historic moment for health care workers, we will not be satisfied until the best and safest devices are implemented throughout the health care industry.”

—Sal Roselli, President, Health Care Workers Union Local 250-SEIU

¹¹ California Code of Regulations, Title 8, Section 5193, *Bloodborne Pathogens*, July 30, 1999.

The revisions to the bloodborne pathogens standard focus on needlesticks and other “sharps injuries” resulting in potentially life-threatening exposure incidents.

This surveillance study will enable health care institutions to benefit from each other’s experiences in reducing sharps injuries.

The SHARPS Program provides the following services to participants:

- Providing risk management consultations and recommendations to minimize exposures to bloodborne pathogens.
- Assessing adherence to Cal/OSHA’s Bloodborne Pathogens regulation and recognized best practices.
- Assisting in preparing for Joint Commission surveys and quality improvement audits.
- Assisting in developing sharps injury database and providing software.

Other Sources of Information and Assistance

The following sources can provide additional information and assistance in understanding and complying with the revised Cal/OSHA standard for bloodborne pathogens:

- At the Cal/OSHA website you can access a regulatory update which links to the new regulation: www.dir.ca.gov/dosh.
- Safety and health fact sheet: *Safety Needles & Needleless Systems*. This fact sheet includes a summary of new requirements, suggested approaches for coming into compliance, frequently asked questions, and a list of additional resources. Copies of the fact sheet are available from the Cal/OSHA Consultation Service at (800) 963-9424 or online at www.dir.ca.gov/DOSH/dosh1.html.
- At the California Department of Health Services Sharps Program website—www.ohb.org/sharps.htm—you can see a list of needleless systems and sharps devices with engineered sharps injury protection (e.s.i.p.) and their manufacturers, and download a sample Sharps Injury Log.
- Federal OSHA’s website at www.osha.gov has a variety of technical information. Click on the **Subject Index** box on the home page and choose “bloodborne pathogens” and also “needlestick injuries” for a range of information on needle devices, and hazards in particular health care settings.

- At the Centers for Disease Control (CDC) website—www.cdc.gov—you can subscribe to *Morbidity and Mortality Weekly Report* by e-mail, and automatically receive recommendations of CDC, including postexposure procedures.
- The International Health Care Worker Safety Center (EPINET) website—www.med.virginia.edu/medcntr/centers/epinet/—has a wealth of information and resources, including a list of needleless systems and sharps devices with e.s.i.p. as well as detailed aggregate data on needlestick injuries recorded by the 70 institutions cooperating in its reporting network.
- The TDICT (Training for Development of Innovative Control Technologies Project) website—www.tdict.org—contains safety measure evaluation forms and other information to help with the process of evaluating and selecting safer devices.
- The Medical Waste Management Program in the California Department of Health Services has information on California requirements for management of medical waste. Phone 916-327-6904. [JSHQ](#)

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Ladder Extends 3 Feet Above Landings

1926.1053(b)(1)

Rank in Frequency Cited #21

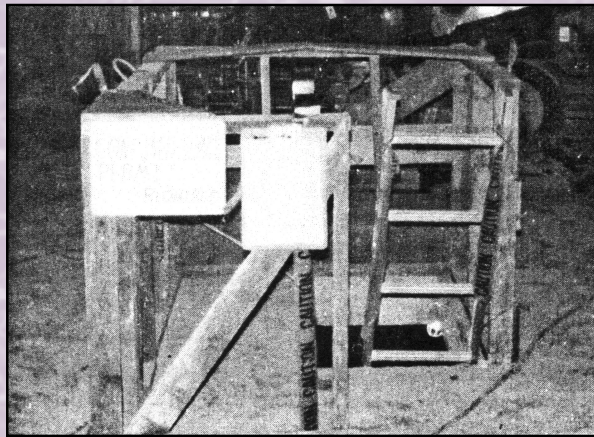
Rule

When using portable ladders to access an upper landing surface, the ladder side rails must extend at least 3 feet (.9 m) above the landing surface where the ladder is being used; or when such an extension is not possible because of the ladder's length, the ladder must be secured at its top to a rigid support that will not deflect, and a grasping device—such as a grabrail—must be provided to assist employees in mounting and dismounting the ladder. The extension must never be such that ladder deflection under a load would, by itself, cause the ladder to slip off its support.

Intent

The rule protects employees during two critical phases of ladder climbing:

- When employees are on the ladder and their movement may affect the ladder and its support points, making it slip or fall; and
- When the employee is either getting on or off the ladder. If nothing is available to grab and provide support, the employee will be in a bent-over position and his or her center of gravity may be outside the vertical line of normal body position, making the employee vulnerable to a fall.



VIOLATION

IN COMPLIANCE

The portable ladder extends 3 feet above the opening (landing) of the confined space.

Note: The guarding of the floor hole except at the entrance for the ladder is acceptable.

The rule specifies: Side rails must extend 3 feet above the landing. Or when this is not possible, secure side rails at the top to a rigid support—e.g., by tying with rope or boxing in with lumber—and provide a grab device. The grasping device can be made of metal or lumber and can be part of the structure, providing its location does not create a hazard in itself and it can be easily grasped. In addition, secure ladders to prevent them from deflecting and slipping while in use.

Hazards

- Slip and fall from elevation.
- Probable injuries range from death to broken bones and sprains/strains.

(Among Other) Suggested Abatements

- Abatement is obvious. Construct/use ladders according to specification requirements.
- Instruct employees and supervisors to inspect ladders during each shift in their work area.

Selected Case Histories

An employee climbing a 10-foot ladder to access a landing 9 feet above the adjacent floor fell when the ladder slid down. He sustained fatal injuries. Although the ladder had slip-resistant feet, it was not secured, and the railings did not extend 3 feet above the landing.

Comments

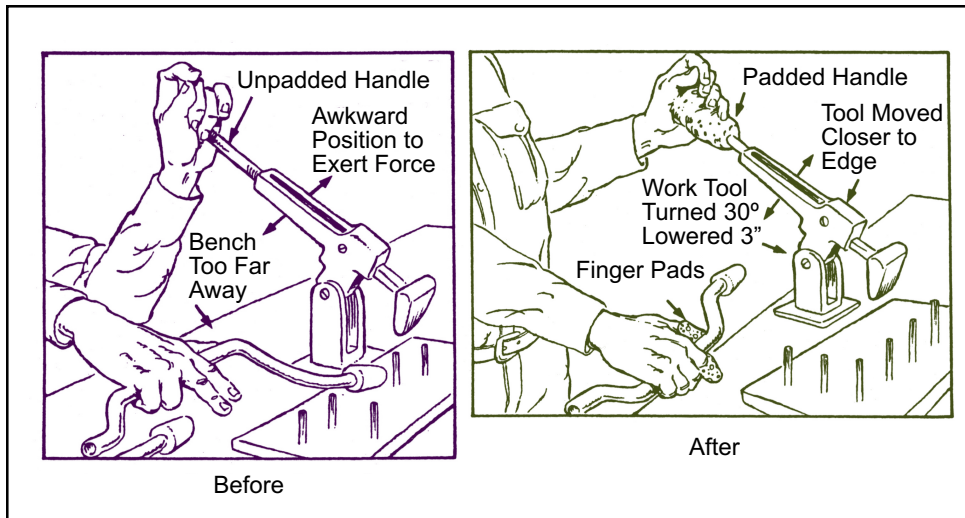
- This standard covers only portable ladders. A similar requirement for fixed ladders is outlined in *Title 29 Code of Federal Regulations (CFR) 1926.1053(a) (24)*.
- This is a specification standard that is easily identified and substantiated as a violation—as evidenced by its high ranking on the 100 Most Cited Physical List. Therefore, the contractor must continually audit the site to ensure compliance with this rule.

Additional Documents to Aid in Compliance

- 29 CFR Subpart X. JSHQ

Tube Bending Operations Create Undue Ergonomic Stress on Hands

From the U.S. Department of Labor
Occupational Safety and Health Administration
ErgoFacts No.3



The Problem

Tubes used in air conditioning need to be bent to a special configuration. Previously, this job required a series of steps. First, the operator manually inserted the tube into the fixture and then secured the tube using two clamps. Second, the operator applied a one-handed upward push on the lever arm of a crimping tool used to bend the tube. Third, the operator used both hands to bend the other tube around the post and back over the tube unit. This final task required the operator to use his or her left hand to press the end of the tube into the fixture while using the right hand to press the tube against the lower part of the fixture.

Workers involved in this process complained of stress on fingers, hands, and wrists. A thorough ergonomics job task analysis revealed these stresses:

- Awkward posture and bending of the wrist joint;
- Forced pinch grips with the fingers used to bend the tube;
- Mechanical stress on the palm of the hand used to operate the crimping tool;
- Forceful exertion of the thumb to clamp and hold the tube in place; and
- Awkward position of the elbows and shoulders to operate the crimping tool.

The Solution

The work was repositioned to reduce postural stress on the operator's hands. The fixture was placed closer to the edge and to the operator. This eliminated the long reach required during both the initial bending and the final, tighter bending of the tube against the fixture.

To reduce the force exerted by the thumb, the plate with bending pegs was rotated 30 degrees clockwise on the work surface.

The fixture was lowered approximately 3 to 4 inches from its original height to lower the operator's working elbow height. The fixture also was tilted 30 degrees toward the operator to minimize awkward posture and bending the wrist.

Foot rails were installed to support the operator's feet while seated.

Finally, foam padding was added to the handle of the crimping tool's lever arm to reduce the amount of mechanical stress that the handle placed on the operator's palm.

The Benefits

Employees have suffered less postural and mechanical stress on fingers, hands, and wrists. Complaints and workers' compensation costs have been reduced. 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.



OSHA

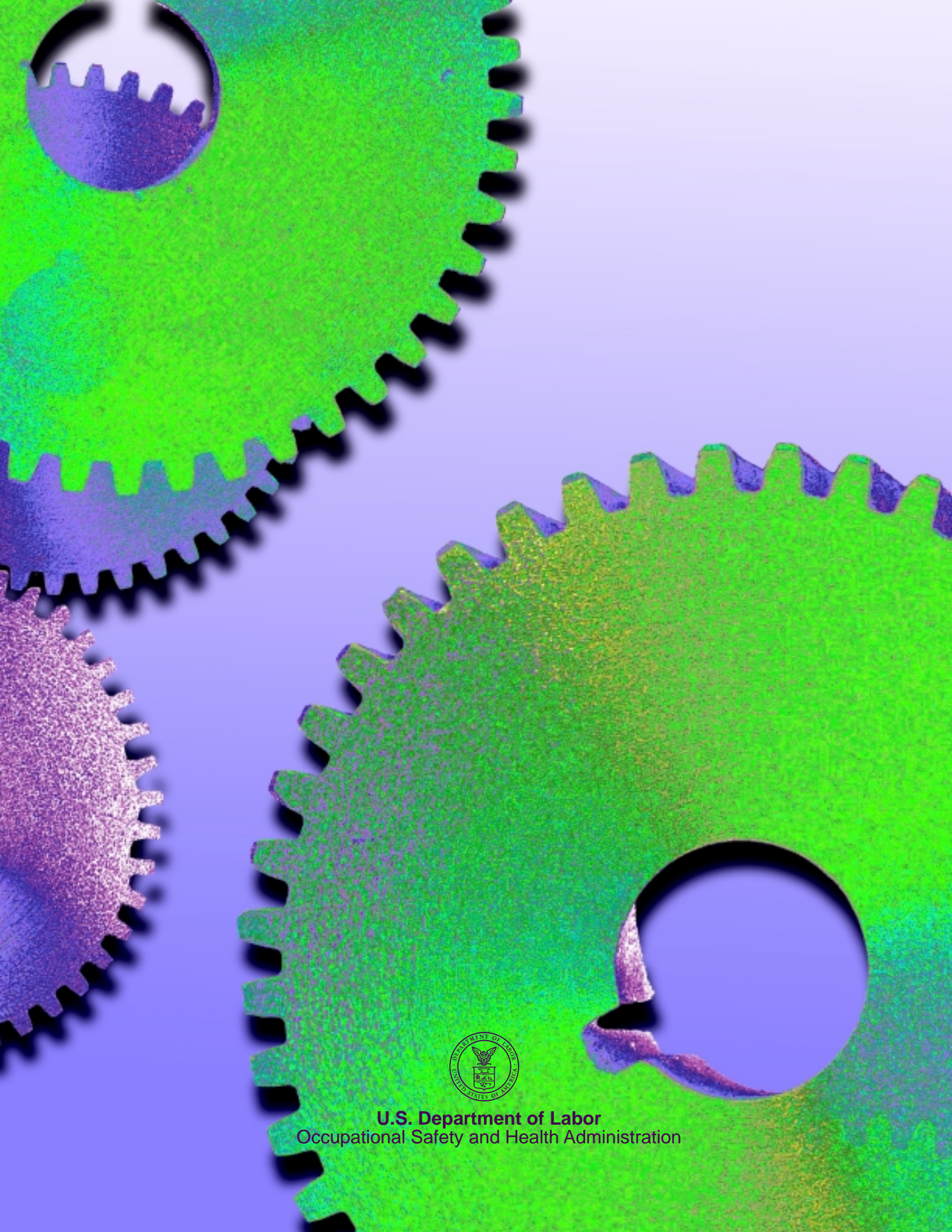
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