



October 2007

# Army Industrial Hygiene News and Regulatory Summary

This information is published by the Industrial Hygiene and Medical Safety Management (IHMSM) for the U.S. Army Center for Health Promotion and Preventive Medicine as a service to the Army Industrial Hygiene Program, Federal agencies, and industrial hygienist throughout the Federal and private sector

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## TOPIC OF THE MONTH

### October Is Eye Injury Prevention Month

The American Academy of Ophthalmology designated October as Eye Injury Prevention Month. Why not take advantage of this opportunity to reinforce your eye safety message and make sure that all your employees are taking proper precautions to protect their valuable eyesight on the job?

#### Why Does It Matter?

- About 2,000 American workers sustain work-related eye injuries every day, according to the organization Prevent Blindness America.
- As many as 10 percent to 20 percent of those employees will suffer a disabling injury, and some will be permanently blinded--at least in one eye.
- Occupational safety experts say that probably 90 percent of all workplace eye injuries can be prevented.

Why do workers suffer eye injuries? Studies show that the two main reasons so many workers suffer eye injuries are:

1. They weren't wearing any eye protection.
2. They were wearing the wrong kind of protection.

Use of trademarked names does not imply endorsement by the U.S. Army but is intended only to assist in identification of a specific product.

"The views expressed in this article are those of the author and do not reflect the official policy of the Department of the Army, Department of Defense, or the U.S. Government."

## TOPIC OF THE MONTH (con't)

How can eye injuries be prevented? To prevent workplace eye injuries, you need to:



- Identify all possible eye hazards in your workplace.
  - *Impact*--from flying chips, particles, sand, and dirt, etc.
  - *Burns*--from sparks, molten metal, or chemical splashes
  - *Irritation*--from chemical vapors or dust
  - *Effects of light radiation*--from welding and similar operations
- Put up signs that warn workers about eye hazards and specify the need for appropriate eye protection.
- Teach workers to select the right eye protection for the job. The wrong kind of eye protection might not be a whole lot better than no eye protection at all, in some cases. So make sure your workers know which safety eyewear protects against which hazards. For example:
  - Safety glasses with side shields or goggles provide good protection against impact hazards.
  - Ventilated safety goggles prevent chemical vapors or dust from getting at delicate eye tissue.
  - A face shield worn over safety eyewear provides extra protection from flying particles and chemical splashes.
  - Goggles worn with a face shield protect against burn hazards.
  - Welding goggles with special lenses protect eye tissue by filtering out harmful light radiation.
- Train employees to use and maintain eye protection properly. Be sure to highlight these precautions in your eye safety training:
  - Obey all warning signs requiring eye protection.
  - Always put on protective eyewear before entering an area where hazards may be present.
  - When there is doubt about the existence of eye hazards, assume they are present.
  - Make sure eye protection fits properly and comfortably.
  - Inspect protective eyewear for damage before each use, and replace it immediately if there is any defect.
  - Store eye protection safely where it won't get scratched or damaged, and keep it clean.
  - If you're not sure which type of eye protection is required in a particular situation, ask your supervisor before you begin to work.
- Strictly enforce eye safety rules, including the use of required eye protection. Make sure your workers are wearing the eye protection they need every day, all day. Provide lots of positive reinforcement when they are, and be right there with corrective feedback when they're not.

Source: *American Academy of Ophthalmology* <http://www.aaopt.org/>

## DoD INDUSTRIAL HYGIENE WORKING GROUP

### DoD IH Forum

The Ninth Annual DoD Industrial Hygiene Forum will be held at the AIHA Conference and Expo in Minneapolis, Minnesota, on Tuesday, 3 June 2008, 1330-1730. For more information and registration please go to: <http://www.dodforums.org/IH2008/>

## DoD ERGONOMIC WORKING GROUP

### Advanced Ergonomics Course

The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) will be offering the Advanced Ergonomics Course 16-17 April 2008, in Edgewood, Maryland. To register go to: <https://usachppm.apgea.army.mil/TrainCon/datePage.aspx>

then, CLICK ON "ADVANCED ERGONOMICS COURSE."

## DEPLOYMENT NEWS

### Approved and Tested Army Personnel Heaters

As cold weather approaches, soldiers in training and deployment look for ways to heat the living and working space in their tents and other enclosures. In addition to fire, personnel heaters can pose a significant risk with exposure to carbon monoxide.

You can't see or smell carbon monoxide, but at high levels it can kill a person in minutes. Carbon monoxide (CO) is produced whenever any fuel such as gas, oil, kerosene, wood, or charcoal is burned. If appliances that burn fuel are maintained and used properly, the amount of CO produced is usually not hazardous. However, if appliances are not working properly or are used incorrectly, dangerous levels of CO can result. Hundreds of people die accidentally every year from CO poisoning caused by malfunctioning or improperly used fuel-burning appliances. Even more die from CO produced by idling cars.

It is important to operate a space heater in a properly ventilated area and use the correct fuel. The following approved and tested Army personnel heaters include:

- H-45 space heater (NSN 4520-01-329-3451): The H-45 replaces the old potbelly M-1941. The H-45 will heat general purpose and TEMPER tents and burns liquid and solid fuels.
- Arctic space heater (NSN 4520-01-444-2375): The Arctic heater replaces the gasoline-burning M-1950 Yukon heater and is a lightweight, portable heater for five- and 10-man arctic tents. The Arctic heater burns liquid and solid fuels.
- Small space heater (NSN 4520-01-478-9207): The small space heater is ideal for use in smaller tents such as the four-man Soldier/crew tent. It burns liquid fuel and has a built-in tank, precluding the need for an external fuel can and stand.

## DEPLOYMENT NEWS (con't)

- Convective space heater (NSN 4520-01-431-8927): The convective space heater provides forced hot air for tents and shelters. This heater generates its own power and recharges its battery.
- Thermoelectric fan (NSN 4520-01-457-2790): The thermoelectric fan is a compact, self-powered unit that fits on top of any military tent heater. The fan uses some of the heat to turn the fan blades, which circulates heated air, improves comfort and saves fuel.

Source: <https://www/army.crc.mil>

## KEY INDUSTRIAL HYGIENE TOPICS


### ERGONOMICS

#### **NIOSH Publishes “Ergonomic Guidelines for Manual Material Handling”**

Manual material handling (MMH) work contributes to a large percentage of the over half a million cases of musculoskeletal disorders reported annually in the United States. Musculoskeletal disorders often involve strains and sprains to the lower back, shoulders, and upper limbs. They can result in protracted pain, disability, medical treatment, and financial stress for those afflicted with them, and employers often find themselves paying the bill, either directly or through workers' compensation insurance. At the same time they must cope with the loss of the full capacity of their workers.

*Ergonomics Guidelines for Manual Material Handling* (NIOSH Publication No. 2007-131) is written for managers and supervisors in industries that involve the manual handling of containers. It offers suggestions to improve the handling of rectangular, square, and cylindrical containers, sacks, and bags. For your free copy: [www.cdc.gov/niosh/docs/2007-131/pdfs/2007-131.pdf](http://www.cdc.gov/niosh/docs/2007-131/pdfs/2007-131.pdf)

#### **Work-Related Musculoskeletal Disorders: Back to Work Report**

Tackling MSDs means taking action in the workplace. Prevention is the best method, but for workers who are already suffering from MSDs, the challenge is to help them stay working and, if necessary, reintegrate them into the workplace. ‘Work-related musculoskeletal disorders: Back to work report’, published by the European Agency for Safety and Health at Work evaluates the effectiveness of taking action in the workplace and gives an overview of European and international policy initiatives to retain, reintegrate and rehabilitate workers with MSDs. **Download the full publication as PDF**  at:

[http://osha.europa.eu/publications/reports/78073001/back\\_to\\_work\\_en.pdf](http://osha.europa.eu/publications/reports/78073001/back_to_work_en.pdf)

## KEY INDUSTRIAL HYGIENE TOPICS (con't)

### HAZARDOUS CHEMICALS

#### *Asbestos*

##### **Asbestos Release from Whole-Building Demolition of Buildings with Asbestos-Containing Material**

The whole-building demolition method, which entails one-or two-story buildings pushed down by heavy equipment, loaded into trucks, and hauled away, is generally the most cost-effective means to remove small buildings. For taller buildings, a crane and wrecking ball may be used initially to reduce the height of the building. Demolitions might release asbestos fibers from friable asbestos-containing material (ACM). Fibers also might be released from nominally nonfriable ACM (Categories I and II nonfriable ACM) if it becomes friable after rough handling throughout the whole-building demolition process. This paper reports on asbestos air monitoring from two demolition projects involving ACM. In one building, Category II nonfriable ACM was present because it could not be removed safely prior to demolition. Both projects had large quantities of gypsum wallboard with ACM joint compound and ACM flooring. One building had large quantities of ACM spray-on ceiling material.

During the demolitions personal air monitoring of the workers and area air monitoring downwind and around the sites were conducted. The monitoring found the concentrations of fibers detected by phase contrast microscopy were generally well below the permissible exposure limits (PEL) of workers. Electron microscopy analysis of samples at or near the PEL indicated most of the fibers were not asbestos, and the actual asbestos exposure was often below the detection limit of the procedure. The buildings were kept wet with fire hoses during the demolition and that required large quantities of water, 20,000-60,000 gal/day (75-225 m<sup>3</sup>/day). Earlier studies found little asbestos release from buildings containing only nonfriable ACM demolished by this method. This project found a negligible release of asbestos fibers, despite the presence of nonfriable materials that might become friable, such as ACM joint compound and spray-on ACM ceiling coating.

Keywords: asbestos; Category II ACM; demolition; nonfriable ACM  
view references (19)

*Source: Journal of Occupational and Environmental Hygiene, Volume 4, Issue 12 December 2007*

##### **Asbestos Legislation**

Sen. Patty Murray (D-Wash.) reintroduced her bill that would prohibit importing, manufacturing, processing or distributing asbestos-containing products in the United States. Since introduction of her bill, two similar bills have been introduced in the House. Murray's bill (S 742) has passed committee scrutiny and is now on the full floor of the Senate. This bill has a better chance of passage than in years past, but still faces serious debate.

## **KEY INDUSTRIAL HYGIENE TOPICS (con't)**

### ***Combustible Dusts***

#### **OSHA Issues Combustible Dust Instruction**

On Oct. 19, OSHA issued a new safety and health instruction that details OSHA policies and procedures for inspecting workplaces that handle combustible dusts and that may have the potential for a dust explosion. Combustible dusts are often either organic or metal dusts that are finely ground into very small particles, fibers, chips, and/or flakes. These dusts can come from metal, wood, plastic, and organic materials such as grain, flour, sugar, paper, soap, and dried blood. Dusts can also come from textile materials. Some of the industries in which combustible dusts are particularly prevalent include agriculture, chemical, textile, forest, and the furniture industry.

The instruction provides detailed information on OSHA's inspection scheduling, resource allocation, inspection resources, and procedures, and can be particularly useful in educating businesses on how to achieve compliance with OSHA requirements in advance of any inspection. The instruction is available electronically at [www.osha.gov/OshDoc/Directive\\_pdf/CPL\\_03-00-006.pdf](http://www.osha.gov/OshDoc/Directive_pdf/CPL_03-00-006.pdf)

### ***Chemical Reactive Hazards***

#### **The U.S. Chemical Safety Board Releases Safety Video on Reactive Hazards**

The U.S. Chemical Safety Board (CSB) released a new safety video concerning the dangers of uncontrolled chemical reactions. The video features computerized animations and descriptions of four major reactive chemistry accidents investigated by the CSB, as well as commentary by two prominent chemical process safety experts. Entitled "Reactive Hazards: Dangers of Uncontrolled Chemical Reactions," the video is being released simultaneously with the CSB's final report on the Synthron accident which killed one worker and injured 14 others in Morganton, North Carolina, on January 31, 2007. Other accidents discussed in the video are MFG (Dalton, Georgia); BP Amoco (Augusta, Georgia); and First Chemical Company (Pascagoula, Mississippi).

The video may be reviewed or ordered for free at [www.csb.gov](http://www.csb.gov)

### ***Lead***

#### **Newly Recognized Pathways of Exposure to Lead in the Middle-Income Home**

Most official childhood lead-poisoning prevention efforts focus on children living in poor neighborhoods in older houses. But a current trend in home decorating that promotes the use of expensive antiques or used artifacts with chipped, chalky, or peeling paint may be exposing a different population of children to lead. The objectives of the research reported here were 1) to assess the extent to which antiques with damaged paint are promoted in the popular home-decorating print media and over the Internet and 2) to gauge whether

## KEY INDUSTRIAL HYGIENE TOPICS (con't)

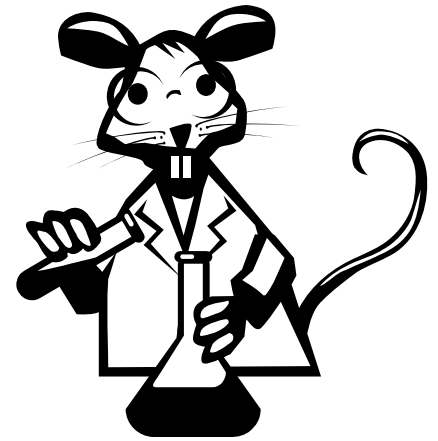
a casual shopper is apt to purchase lead-hazardous antiques in the United States. The study found that antiques that tested positive for lead on a qualitative test were easily purchased from antique stores throughout the United States. Many of the items were toys or other items that would be attractive to children.

Source: *Journal of Environmental Health*; October 2007, Vol. 70 Issue 3

<http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=27088394&loginpage=Login.asp&site=ehost-live&scope=site>

### Research Explains How Lead Exposure Produces Learning Deficits

A study of young adult rats by researchers from the Johns Hopkins Bloomberg School of Public Health provides evidence that explains exactly how exposure to lead during brain development produces learning deficits. The study shows that exposure to levels of lead that are similar to those measured in lead-intoxicated children reduces the birth and survival of new neurons (neurogenesis) in the brain. Lead also alters the normal development of newly born neurons in a part of the brain (the hippocampus) known to be important for learning and memory. Results of the study were published in the March 30, 2007, issue of *Neuroscience* under the title "Environmental Lead Exposure During Early Life Alters Granule Cell Neurogenesis and Morphology in the Hippocampus of Young Adult Rats." The study was supported by a grant from the National Institute of Environmental Health Sciences.



The researchers studied young adult rats, using a group of lead-treated and untreated (control) rats. When they examined the brains of lead-exposed rats, they found that fewer neurons were born and that those neurons that were born survived for a shorter amount of time and had abnormal development.

Newly born neurons extend processes to form new connections with other neurons in the brain — like branches growing off of a tree limb — that allow learning and memory to take place. The neuronal connections, called dendrites, were shorter in lead-exposed rats and more twisted than the long and relatively straight dendrites in neurons found in control rats.

The fewer connections between neurons found in lead-exposed rats mean a decreased ability to communicate, which has a major impact on the rat's ability to learn. Previously, researchers knew that lead impaired cognitive function, but we didn't know exactly how. Now that researchers know that lead decreases neurogenesis in the hippocampus and alters the ability of these new neurons to communicate, in future studies we hope to determine if environmental enrichment can reverse these detrimental effects of lead.

Source: *Journal of Environmental Health*; October 2007, Vol. 70 Issue 3

## KEY INDUSTRIAL HYGIENE TOPICS (con't)

### *Volatile Organic Compounds*

#### **Breathe Easy: Standards Offer Protection from Volatile Organic Compounds**

What do freshly painted walls, cosmetics, desk chairs, and dry cleaning have in common? Each of these items can give off dangerous volatile organic compounds (VOCs) that decrease the air quality in our homes and workplaces. Emitted as gases from both solids and liquids, VOCs are present in a wide array of products from paints and fuels to building materials and furnishings.

Two new American National Standards from the Business and Institutional Furniture Manufacturers Association (BIFMA International) provide users with a basis for characterizing the initial release of VOCs from office furniture systems. ANSI/BIFMA M7.1-2007, Standard Test Method for Determining VOC Emissions from Office Furniture Systems, Components and Seating, and ANSI/BIFMA X7.1-2007, Standard for Formaldehyde and TVOC Emissions of Low-emitting Office Furniture Systems and Seating harmonize VOC emissions testing standards, creating benefits that will also extend into other industries.

Products release VOCs while they are being used, but they also continue to emit these gases during storage. Buying products on an as-needed basis helps to decrease the amount of exposure.

A document from ANSI-accredited standards developer ASTM International provides guidance on air sampling methods, helping users to measure indoor VOC levels. ASTM D6345-98(2004)e1, Standard Guide for Selection of Methods for Active, Integrative Sampling of Volatile Organic Compounds in Air may decrease the effects of sick building syndrome by enabling the identification and mitigation of VOCs in an indoor environment.

Last year, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) announced its receipt of a grant to write an Advanced Indoor Air Quality (IAQ) Design Guide for Non-Residential Buildings. [see related article] An ANSI-accredited standards developer, ASHRAE expects the design guide to improve indoor air quality performance, increase energy efficiency and decrease the environmental impact of exposure to air toxins like VOCs.

Source: <http://www.ansi.org>

### *Welding Fume*

#### **Effects of Voltage and Wire Feed Speed on Weld Fume Characteristics**

Welding generates high concentrations of ultrafine particles, which research suggests may be more toxic than larger particles. Fume characteristics were measured in a controlled apparatus as a function of voltage level and wire feed speed. Particles were sampled close to the welding process on mixed cellulose ester membrane filters and analyzed for iron, manganese, and total particulate matter at an accredited industrial hygiene laboratory. An ultrafine condensation particle counter measured the particle number concentration, and an optical particle counter measured the particle size distribution. Submicrometer particle number concentrations and iron, manganese, and total particle mass concentrations all depended on voltage levels but not on wire



## KEY INDUSTRIAL HYGIENE TOPICS (con't)

feed speed at a constant voltage. Ultrafine particle concentrations were more than three times greater at 23.5 V than at 16 V. Particles 0.5-0.7  $\mu$ m in diameter counted by the optical particle counter increased from 9800 particles/cm<sup>3</sup> at 16 V to 82,800 particles/cm<sup>3</sup> at 23.5 V. Manganese concentration was 1.7 mg/m<sup>3</sup> at 16 V vs. 6.4 mg/m<sup>3</sup> at 23.5 V. The data suggest that welders should use lower voltage levels whenever possible.

Keywords: iron; manganese; particles; voltage; welding; wire feed speed  
view references (29)

*Source: Journal of Occupational and Environmental Hygiene, Volume 4, Issue 12 December 2007*

## Indoor Air Quality

### NSF Launches New Indoor Air Emissions Certification for Office Furniture

NSF International, a not-for-profit organization, announced the launch of a new air emissions certification program, which will initially certify for low volatile organic compound (VOC) emissions of office furniture. VOCs, such as formaldehyde and aldehydes, are chemicals emitted by a wide array of products, including paints, building materials and furnishings, copiers and printers. VOCs may cause eye, nose and throat irritation, headache, nausea and skin problems, but higher concentrations may cause irritation of the lungs, damage to the liver, kidney or central nervous system. This new certification program directly addresses these concerns.

The new certification program is based on a Business and Institutional Furniture Manufacturers Association (BIFMA) standard for Formaldehyde and TVOC Emissions of Low-emitting Office Furniture Systems and Seating -- ANSI/BIFMA M7.1. The standard also:

- Provides requirements for the emissions of VOCs from office furniture.
- Specifies acceptance levels that define low-emitting furniture independent of construction materials, manufacturing processes, mechanical designs, or aesthetic designs.
- Applies only to newly manufactured products.

Annual monitoring through audits will ensure ongoing compliance. In addition to obtaining NSF Certification and the right to use the NSF Mark on products or in literature, certified products can also be used to earn Leadership in Energy and Environmental Design (LEED) credits for building projects that specify the use of low-emitting furniture. LEED Certification is a nationally accepted benchmark for the design, construction and operation of high-performance green buildings.

BIFMA also developed a standard test method (BIFMA X7.1-2007) in conjunction with the standard to determine a long-term (14 days) VOC emission from office furniture. Testing in support of the NSF Certification program will follow this standard test method. The test method identifies VOC emitted and determines the emission rates for individual compounds and total VOC. These data are then used to determine whether the furniture tested meets the acceptance criteria for VOC emissions.

*For more information, contact NSF International at <http://www.nsf.org>*

## KEY INDUSTRIAL HYGIENE TOPICS (con't)

### Nanotechnology

#### US Government Delays Nanotechnology Safety Measures

Want to buy a bag of carbon nanotubes--in quantities from a few grams to hundreds of kilograms (100 kilograms = approximately 220 pounds)? With a credit card and Internet access, you can. But is the U.S. government doing enough to ensure the safety of these materials and the hundreds of other nanotechnology commercial and consumer products currently on the market?

The answer is a resounding "no," says Project on Emerging Nanotechnologies . The materials safety data sheet for carbon nanotubes--which provides workers and safety personnel with information on proper handling procedures--treats these substances as graphite, the material used in pencils. But carbon nanotubes are as similar to pencil lead as the soot on my barbeque grill at home is to diamonds.

This is just one example of the yawning knowledge gap between the nanomaterials entering commerce now and their safety. And this uncertainty over how to develop nanotechnologies safely, hamstring regulators, hinders nanobusiness, and confuses consumers.

Filling this knowledge gap will not be easy, but it is essential and must be done quickly if nanotechnology is to succeed. The following necessary steps are recommended:

1. Establish a clear, top-down risk research strategy with the resources required to ensure its implementation;
2. Create a new federal advisory committee to allow transparent input and review from industry, scientists, labor groups, nongovernmental organizations and other stakeholders;
3. Allocate approximately 10 percent of the U.S. government's nanotechnology research and development budget to goal-oriented nanotechnology environment, health, and safety research--a minimum of \$50 million annually for research directly tied to oversight and regulatory needs and an estimated \$95 million per year for exploratory research that is conducted within the scope of a federal strategic research program; (Previous analysis by Maynard shows that in 2005 the U.S. government spent approximately \$11 million on highly relevant risk research.)
4. Launch a public-private research partnership program, with cost-sharing between industry and government, to address immediate and critical research questions on effective oversight; and
5. Appoint a top-level government leader responsible for the action needed to address the environment, health and safety challenges of nanotechnology.

*Source: Project on Emerging Nanotechnologies (2007, October 31). US Government Delays Nanotechnology Safety Measures, Report States. ScienceDaily.*

<http://www.sciencedaily.com/releases/2007/10/071031103352.htm>

## KEY INDUSTRIAL HYGIENE TOPICS (con't)

### Personal Protective Equipment

#### **The Effect of Gender and Respirator Brand on the Association of Respirator Fit with Facial Dimensions**

This study examined the association of facial dimensions with respirator fit considering the effect of gender and respirator brand. Forty-one subjects (20 white females and 21 white males) participated in the study. Each subject was measured for 12 facial dimensions using anthropometric sliding and spreading calipers and a steel measuring tape. Three quantitative fit tests were conducted with the same subject wearing one size of three different brands of half-mask respirators resulting in a total of nine fit tests. Linear mixed model analysis was used to model respirator fit as a function of gender and respirator brand while controlling for facial dimensions. Results indicated that the gender by respirator brand interaction was not statistically significant ( $p = 0.794$ ), and there was no significant difference in respirator fit between males and females ( $p = 0.356$ ). There was a significant difference in respirator fit among respirator brands ( $p < 0.001$ ). Because correlations between facial dimensions and respirator fit differed across gender and respirator brand, six separate linear mixed models were fit to assess which facial dimensions most strongly relate to respirator fit using a "one variable at a step" backward elimination procedure. None of the 12 facial dimensions were significantly associated with respirator fit in all six models. However, bigonial breadth and menton-nasion length were significantly associated with respirator fit in five of the six models, and biectoorbitale breadth, bizygomatic breadth, and lip width were significantly associated with respirator fit in four of the six models. Although this study resulted in significant findings related to the correlation of respirator fit with menton-nasion length and lip width (the dimensions currently used to define the half-mask respirator test panel), other facial dimensions were also shown to be significantly associated with respirator fit. Based on these findings and findings from previous studies, it is suggested that other facial dimensions including bigonial breadth, biectoorbitale breadth, and bizygomatic breadth be considered when designing half-mask respirators, and that face length and lip width alone may not be appropriate in defining test groups whose fit is intended to be representative of worker populations.

Keywords: facial dimensions; fit factor; fit test panels; half-mask respirator  
view references (16)

*Source: Journal of Occupational and Environmental Hygiene, Volume 4, Issue 12 December 2007*

#### **Personal Protective Equipment Legislation**

HR 1327, a bill that would require OSHA to finalize the PPE standard within 30 days of enactment, is currently on hold. The reason is because OSHA has stated it will finalize the standard by November. There is also a lawsuit pending against OSHA requiring the agency to finalize the rule. The lawsuit is also on hold pending OSHA's action in November.

# PREVENTIVE MEDICINE ISSUES

## MRSA and the Workplace

Staphylococcus aureus, often referred to simply as "staph," is a type of bacteria commonly carried on the skin or in the nose of healthy people. Sometimes, staph can cause an infection. Staph bacteria are one of the most common causes of skin infections in the United States. Most of these skin infections are minor (such as pustules and boils) and can be treated without antibiotics. However, staph bacteria also can cause serious infections (such as surgical wound infections, bloodstream infections, and pneumonia).

Methicillin-resistant Staphylococcus aureus (MRSA) refers to types of staph that are resistant to a type of antibiotic methicillin. MRSA is often resistant to other antibiotics, as well. While 25% to 30% of the population is colonized with staph (meaning that bacteria are present, but not causing an infection with staph), approximately 1% is colonized with MRSA.

Staph infections, including MRSA, occur most frequently among persons in hospitals and healthcare facilities (such as nursing homes and dialysis centers) who have weakened immune systems. These healthcare-associated staph infections include surgical wound infections, urinary tract infections, bloodstream infections, and pneumonia.

Staph and MRSA can also cause illness in persons outside of hospitals and healthcare facilities. MRSA infections that are acquired by persons who have not been recently (within the past year) hospitalized or had a medical procedure (such as dialysis, surgery, catheters) are known as community-associated MRSA infections. Staph or MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people.

### FAQs For the Workplace

NOTE: This information is provided for general workplaces, not healthcare facilities. Healthcare workers should refer to information found at the following link: [http://www.cdc.gov/ncidod/dhqp/ar\\_mrsa.html](http://www.cdc.gov/ncidod/dhqp/ar_mrsa.html)

#### Can I get MRSA from someone at work?

- MRSA is transmitted most frequently by direct skin-to-skin contact or contact with shared items or surfaces that have come into contact with someone else's infection (e.g., towels, used bandages).
- MRSA skin infections can occur anywhere. However, some settings have factors that make it easier for MRSA to be transmitted. These factors, referred to as the 5 C's, are as follows: Crowding, frequent skin-to-skin Contact, Compromised skin (i.e., cuts or abrasions), Contaminated items and surfaces, and lack of Cleanliness. Locations where the 5 C's are common include schools, dormitories, military barracks, households, correctional facilities, and daycare centers.

#### If I have MRSA, can I go to work?

- Unless directed by a healthcare provider, workers with MRSA infections should not be routinely excluded from going to work.
- Exclusion from work should be reserved for those with wound drainage ("pus") that cannot be covered and contained with a clean, dry bandage and for those who cannot maintain good hygiene practices.
- Workers with active infections should be excluded from activities where skin-to-skin contact is likely to occur until their infections are healed.

## PREVENTIVE MEDICINE ISSUES (con't)

### **What should I do if I think I have a staph or MRSA infection?**

- See your healthcare provider and follow your healthcare provider's advice about returning to work.

### **If I have staph, or a MRSA skin infection, what can I do to prevent the spread of MRSA at work and at home?**

- You can prevent spreading staph or MRSA skin infections to others by following these steps:
- Cover your wound. Keep wounds that are draining or have pus covered with clean, dry bandages. Follow your healthcare provider's instructions on proper care of the wound. Pus from infected wounds can contain staph and MRSA, so keeping the infection covered will help prevent the spread to others. Bandages or tape can be discarded with the regular trash.
- Clean your hands. You, your family, and others in close contact should wash their hands frequently with soap and warm water or use an alcohol-based hand sanitizer, especially after changing the bandage or touching the infected wound.
- Do not share personal items. Avoid sharing personal items such as uniforms, personal protective equipment, clothing, towels, washcloths or razors that may have had contact with the infected wound or bandage.
- Talk to your doctor. Tell any healthcare providers who treat you that you have or had a staph or MRSA skin infection.

### **What should I do if my uniform, clothing, personal protective equipment or workstation becomes contaminated with MRSA?**

- Wash uniforms, clothing, sheets and towels that become soiled with water and laundry detergent. Drying clothes in a hot dryer, rather than air-drying, also helps kill bacteria in clothes.
- Clean contaminated equipment and surfaces with detergent-based cleaners or Environmental Protection Agency (EPA)-registered disinfectants is effective at removing MRSA from the environment. It is important to read the instruction labels on all cleaners to make sure they are used safely and appropriately. Environmental cleaners and disinfectants should not be used to treat infections. The EPA provides a list of EPA-registered products effective against MRSA: <http://epa.gov/oppad001/chemregindex.htm>.

### **What can my boss (employers) do to prevent the spread of staph or MRSA at the workplace?**

- Place importance on worker safety and health protection in the workplace
- Ensure the availability of adequate facilities and supplies that encourage workers to practice good hygiene
- Ensure that routine housekeeping in the workplace is followed
- Ensure that contaminated equipment and surfaces are cleaned with detergent-based cleaners or Environmental Protection Agency (EPA)-registered disinfectants

Source: <http://www.cdc.gov/niosh/topics/mrsa/>

## PREVENTIVE MEDICINE ISSUES (con't)

### Infection-Tracking System Now Available to All U.S. Hospitals

CDC has announced that a secure, Web-based reporting network that lets facilities track infections associated with health care is now available to all health care facilities in the United States.

## PREVENTIVE MEDICINE ISSUES (con't)

The National Healthcare Safety Network (NHSN) provides multiple options for data analysis and more flexibility for sharing information both within and outside a facility — including with the general public, if a facility so chooses.

To date, NHSN has more than 600 participants and is used in 45 states. CDC is already partnering with dozens of health care facilities, including Department of Veterans Affairs hospitals, to use NHSN as a tool to track the prevention of a common infection caused by methicillin-resistant *Staphylococcus aureus* (MRSA). Opening the NHSN to all facilities nationwide allows even more hospitals to focus on preventing this potentially deadly infection, as well as other infections.

NHSN has been recently improved to meet the needs of states with mandatory public reporting of health care-associated infections. Public reporting of health care-associated infections is determined on a state-by-state basis by legislatures. The states of California, Colorado, New York, Oklahoma, South Carolina, Tennessee, Vermont, and Virginia have designated NHSN as part of their mechanisms for implementing legislation requiring hospitals to report health care-associated infections.

*For more information on NHSN, visit [www.cdc.gov/ncidod/dhqp/nhsn.html](http://www.cdc.gov/ncidod/dhqp/nhsn.html)*

## SAFETY ISSUES

### ANSI/ASSE Z359-2007: Better Fall Protection

A partnership of standards, ANSI/ASSE Z359-2007 Fall Arrest Code, provides general industry with knowledgeable, practical norms and guidelines essential to a proactive fall protection program.

According to the Bureau of Labor Statistics, falls remain the No. 1 killer in the construction industry and the No. 2 killer in private industry. Many of those deaths occurred even though the supervisor thought he was doing the best he could to protect his employees.

Until now, employers have been left to solve their fall hazards with requirements scattered throughout OSHA and ANSI. However, a new standard, ANSI/ASSE Z359-2007 Fall Arrest Code, addresses the elements of a Managed Fall Protection Program and provides the guidelines to design or strengthen your program.

## **SAFETY ISSUES (con't)**

Initially introduced as Z359.1 – Managed Fall Protection Program (MFPP) – Z359-2007 received final ANSI approval on May 31, and encompasses five standards within the code:

- **Z359.0-2007** – Definitions and Nomenclature Used for Fall Protection and Fall Arrest;
- **Z359.1-2007** – Safety Requirements for Personal Fall Arrest Systems, Subsystems and Components;
- **Z359.2-2007** – Minimum Requirements for a Comprehensive Managed Fall Protection Program;
- **Z359.3-2007** – Safety Requirements for Positioning and Travel Restraint Systems; and
- **Z359.4-2007** – Safety Requirements for Assisted-Rescue and Self-Rescue Systems, Subsystems and Components.

These standards are fall protection-specific, and were developed, discussed and fine tuned by a committee that included engineers, end users, military personnel, representatives from OSHA and ANSI, trainers, fall protection equipment manufacturers, fall protection specialists, rescue experts and academics. Comprehensive in nature, specific in direction, Z359-2007 will give you the confidence to address existing hazards, prevent future hazards and contribute to sustainable safety in your workplace.

*Source: Occupational Hazards, October 1, 2007*

[http://occupationalhazards.com/Issue/Article/75049/ANSIASSE\\_Z3592007\\_Better\\_Fall\\_Protection.aspx](http://occupationalhazards.com/Issue/Article/75049/ANSIASSE_Z3592007_Better_Fall_Protection.aspx)

### **Prevention of Water Jetting Injuries**

The high pressures can cause injuries similar to gunshot wounds but have the added health hazard of involving contaminated water.

While most people think of water blasting as the home version of the pressure washer, where pressures can reach as high as 1,500 psi, industrial versions operate at pressures up to 40,000 psi. Water jetting or water blasting is a process whereby a stream of pressurized water is aimed at undesirable materials adhering to a substrate, such as the inside of a metal tank or paint on steel, concrete, or other material. The water stream is set at the minimum pressure to remove the unwanted material while at the same time prohibit damage to the substrate material.

There are two options to water jetting. The first is to use a high volume of water at lower pressures, and the second is to use a low volume of water at higher pressures. Both have their particular functions and benefits.

Safety hazards specific to the water jetting or water blasting industry include noise, heat/cold injuries, slips/trips/falls, confined space entry, lockout/tagout, eye injuries, cuts, head injuries, and water blasting injuries.

- **Noise**-The equipment used to supply and pressurize the water can exceed 85 dBA. Workers must be enrolled in the hearing conservation program and use hearing protection.
- **Eye Hazards**- A stream of pressurized water is aimed at unwanted materials adhering to a substrate for the purpose of removing it. When the stream of water impacts the material, it becomes loosened from the substrate. Worker should wear eye protection and/or face shields.

## **SAFETY ISSUES (con't)**

- **Head Protection**-Water blasting operations is performed in areas that require the use of head protection in order to prevent employees from hitting their heads on piping systems and to protect against falling objects or debris. Workers should wear hard hats.
- **Hand Protection**-The cut hazards from working in an industrial environment are endless. Workers should wear protective gloves.
- **Environmental Factors (Heat/Cold)**-Water blasting in extremely hot temperatures, have the added factors of moisture/humidity, personal protective equipment, and sometimes radiant heat from the surrounding areas or equipment. It is important to follow the basic principles of heat injury prevention through acclimatization, hydration, physical fitness, and rotation of employees at frequent intervals. In cold temperatures water from water blasting operations can freeze almost immediately, thereby creating additional slip hazards. Slip hazards can be reduced through the use of drainage systems (PVC piping and polyethylene sheeting) to prevent pooling of water, and you can spread rock salt to keep the water from freezing. Proper attire, including slip-resistant safety boots to prevent slips and layered clothing and gloves to prevent cold injuries, is recommended.
- **Confined Spaces**. A good confined space program that adheres to the requirements established in 29 CFR 1910.146 is crucial to ensuring the safety of employees entering a confined space.
- **Water Blasting Injuries**-Water blasting operations involve streams of water under pressure. It is the high pressures that can cause injuries similar to gunshot wounds but have the added health hazard of involving contaminated water.

*Source: Occupational Health and Safety, October 20 <http://www.ohsonline.com/articles/50649>*

## **INDUSTRIAL HYGIENE PROFESSIONAL NEWS**

### **ABIH**

Are you aware that there are certifications in safety and health for people working in technician and technologist positions? Do you know about the certification program for first-line supervisors and managers who have a responsibility for safety of their work group? You may have people in your organization who do not qualify for the CIH or CSP, but would qualify for certifications offered by CCHEST. The Council on Certification of Health, Environmental and Safety Technologists is a joint ABIH/BCSP venture. Beginning in 1985, the Occupational Health and Safety Technologist (OHST) was offered, followed by the Construction Health and Safety Technician (CHST) in 1994 and the Safety Trained Supervisor (STS) in Construction in 1995. The STS program has been expanded to include General Industry and the Petrochemical sector. Over the past few years, the insurance industry has worked with CCHEST to find a way to incorporate the OHST certification into the insurance loss control profession. The result is the new Certified Loss Control Specialist. These certification programs offer recognition among safety and health practitioners, provide a benchmark for employers, increase employee confidence in occupational health and safety programs, help improve company profitability through reduced incidents and losses and can enhance the company image. If you know of practitioners who could benefit from these certifications, please help direct them to CCHEST at [http://http://www.cchest.org/index.php?option=com\\_frontpage&Itemid=1](http://http://www.cchest.org/index.php?option=com_frontpage&Itemid=1)



### **OSHA**

#### **OSHA Won't Update Lead Rule; Will Consult With EPA, HUD**

OSHA has denied industry requests for a rulemaking to make the agency's lead in construction standard more cost effective, instead agreeing to possibly launch a joint training program with the Environmental Protection Agency and U.S. Department of Housing and Urban Development (HUD) and encourage development of less-costly options to meet industrial hygiene requirements.

The National Association of Home Builders, U.S. Chamber of Commerce and U.S. Small Business Administration requested the rulemaking when OSHA began its 10-year review of the standard in 2005.

OSHA's rationale for rejecting the request: "The health studies and exposure information since the standard was issued do not indicate any less need for the standard, and the standard is consistent with other health standards."

The agency argues that "a very large-scale, OSHA resource-intensive rulemaking for lead in construction, which would most likely result in a rule very similar to the rule we have now, does not appear to be a wide use of OSHA's limited rulemaking resources."

The agency said it would review the many requests for the agency to develop a joint training program covering the requirements of OSHA, HUD and EPA. OSHA and HUD regulations tend to be complementary, the agency said, while the relationship with EPA regulations is more complex.

Source: Inside OSHA, October 15, 2007,

<https://www.denix.osd.mil/denix/DOD/News/Pubs/OSHA/15Oct07/06.doc.html>

### **NIOSH**

#### **New NIOSH Publications Available On-Line**

NIOSH Publication No. 2007-122:

Simple Solutions: Ergonomics for Construction Workers

<http://www.cdc.gov/niosh/docs/2007-122/>

NIOSH Publication No. 2007-151:

Waste Anesthetic Gases - Occupational Hazards in Hospitals

<http://www.cdc.gov/niosh/docs/2007-151/>

## GREAT LINKS TO OTHER SITES

### INDUSTRIAL HYGIENE LINKS

<http://www.osha.gov>

**The Occupational Safety and Health Administration (OSHA)** is a Federal agency under the Department of Labor which sets and enforces occupational health and safety regulations, such as the Permissible Exposure Limits (PELs). OSHA's mission is also to provide training, outreach and education; establish partnerships' and encourage continual improvement in workplace safety and health.

<http://www.cdc.gov/niosh/homepage.html>

**The National Institute for Occupational Safety and Health (NIOSH)** is the federal agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. NIOSH is part of the Centers for Disease Control and Prevention (CDC) in the Department of Health and Human Services.

<http://www.aiha.org/>

**The American Industrial Hygiene Association (AIHA)** is a nonprofit organization with more than 75 local sections. AIHA's 12,000 members are highly educated professionals; 96 percent are college graduates, 61 percent hold master's degrees, and 6 percent possess doctoral degrees. AIHA is one of the largest international associations serving the needs of occupational and environmental health professionals practicing industrial hygiene in industry, government, labor, academic institutions, and independent organizations.

<http://www.acgih.org/home.htm>

**The American Conference of Governmental Industrial Hygienists (ACGIH®)**, has been considered a well-respected organization by individuals in the industrial hygiene and occupational health and safety industry for over 65 years. Undoubtedly the best known of ACGIH's activities, the Threshold Limit Values for Chemical Substances (TLV®) Book, list 642 chemical substances and physical agents, as well as 38 Biological Exposure Indices for selected chemicals.

<http://www.abih.org/>

**The American Board of Industrial Hygiene (ABIH®)**, a not-for-profit corporation, was organized to improve the practice and educational standards of the profession of industrial hygiene. The activities presently engaged in for carrying out this purpose are:

1. offering certification examinations to industrial hygienists with the required educational background and professional industrial hygiene experience;
2. acknowledging individuals who successfully complete the examination by issuing a certificate;
3. requiring Diplomats to maintain their certification by submitting evidence of continued professional development; and
4. maintaining records and publishing a roster of certificate holders for the profession and the public.

<http://www.iaqa.org/>

**The Indoor Air Quality Association (IAQA)** was established in 1995 to promote uniform standards, procedures and protocols in the Indoor Air Quality industry. Since its inception, IAQA has become a leader in training and education for IAQ practitioners. The association is committed to education and research, and serves as a forum for the exchange of ideas within the emerging IAQ field.

## SAFETY LINKS

### MACOM Safety Web Sites

Source: <https://cra.army.mil/Contacts/detail.asp?iData=13&iCat=77&iChannel=20&nChannel=Contacts>

AMC	<a href="http://www.amc.army.mil/amc/sf/sfindex.html">http://www.amc.army.mil/amc/sf/sfindex.html</a>
ARCENT	No Safety Web Site
ATEC	Only available on ATEC Intranet
CID/C	No Safety Web Site
DA Staff	<a href="http://www.hqda.army.mil/soho/">http://www.hqda.army.mil/soho/</a>
EUSA	<a href="http://8tharmy.korea.army.mil/safety/default.htm">http://8tharmy.korea.army.mil/safety/default.htm</a>
FORSCOM	<a href="http://www.forscom.army.mil/safety/">http://www.forscom.army.mil/safety/</a>
INSCOM	<a href="http://www.inscom.army.mil/safety/library_safety.asp">http://www.inscom.army.mil/safety/library_safety.asp</a>
MDW	No Safety Web Site
MEDCOM	<a href="http://www.cs.amedd.army.mil/medcomsafety/">http://www.cs.amedd.army.mil/medcomsafety/</a>
NETCOM	No Safety Web Site
NGB	<a href="http://www.arng.army.mil/soldier_resources/safety/">http://www.arng.army.mil/soldier_resources/safety/</a>
SDDC	Under Development
SMDC	<a href="http://www.smdc.army.mil/safety/office.html">http://www.smdc.army.mil/safety/office.html</a>
TRADOC	<a href="http://www.tradoc.army.mil/safe/staff.htm">http://www.tradoc.army.mil/safe/staff.htm</a>
USACE	<a href="http://www.hq.usace.army.mil/soh/hqusace_soh.htm">http://www.hq.usace.army.mil/soh/hqusace_soh.htm</a>
USAIMA IMA-E	<a href="http://www.per.hqusareur.army.mil/services/safetydivision/basops.htm">http://www.per.hqusareur.army.mil/services/safetydivision/basops.htm</a>
USARC	<a href="https://esaiwr.usar.army.mil/AKO/safety/">https://esaiwr.usar.army.mil/AKO/safety/</a>
USAREUR	<a href="http://www.per.hqusareur.army.mil/services/safetydivision/main.htm">http://www.per.hqusareur.army.mil/services/safetydivision/main.htm</a>
USARPAC	Only available on USARPAC Intranet
USARSO	No Safety Web Site
USASOC	Only available on USASOC Intranet

## ARMY RELATED INFORMATION

<https://www.us.army.mil/suite/login/welcome.html>

The Army Portal, *Army Knowledge Online (AKO)*, is a primary component of The Army Knowledge Management (AKM) strategy and The Army Transformation. As the single point of entry into a robust and scalable knowledge management system, AKO is strategically changing the way The Army does business. By enabling greater knowledge sharing among Army communities, AKM fosters improved decision dominance by commanders and business stewards in the battle space, organizations, and Army's mission processes.

## ARMY RELATED INFORMATION (con't)

<https://crc.army.mil/home/>

*The United States Army Combat Readiness Center (CRC)* is the center of gravity where all loss-related areas overlap. It is leading edge, proactive, and focused on the Soldier through investigation and predictive analysis. The raises the level of awareness for the Soldier to help him/her better manage risk and improve combat readiness.

<https://www.denix.osd.mil/denix/denix.html>

*The Defense Environmental Network & Information Exchange (DENIX)* is the central platform and information clearinghouse for environment, safety and occupational health (ESOH) news, information, policy, and guidance. Serving the worldwide greater Department of Defense (DoD) community, DENIX offers ESOH professionals a vast document library, a gateway to web-based environmental compliance tools, an interactive workgroup environment, a variety of groupware tools and an active membership community numbering thousands. DENIX provides ESOH professionals an up-to-date, multi-functional resource to assist in preserving and protecting the natural environment, achieving greater energy efficiency, providing a safer and healthier work environment and meeting readiness and compliance needs of Congressional and DoD ESOH requirements.

