

April 2016,
Issue 56

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Special Interest Articles:

- [Confined Space](#)
- [DEET](#)
- [Safety Stand Down](#)
- [Lab Safety](#)
- [OSHA Standards](#)

DOEHRS Super Star

Workers' Memorial Day — April 28, 2016

Workers' Memorial Day is observed every year on April 28. It is a day to honor those workers who have died on the job, to acknowledge the grievous suffering experienced by families and communities, and to recommit ourselves to the fight for safe and healthful workplaces for all workers. It is also the day OSHA was established in 1971. Under the Occupational Safety and Health Act of 1970, employers are responsible for providing safe and healthful workplaces for their workers. OSHA's role is to ensure these conditions for America's working men and women by setting and enforcing standards, and providing training, education and assistance.

Every year, events are held across the country to remember workers who have died on the job and honor them by continuing to fight for improved worker safety. Please click on the map below to find one near you. All events listed are free and open to the public.

Read more:

<https://www.osha.gov/workersmemorialday/index.html>



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Development of the Chemical Exposure Monitor With Indoor Positioning (CEMWIP) for Workplace VOC Surveys



The purpose of this article was to research and develop a direct-reading exposure assessment method that combined a real-time location system with a wireless direct-reading personal chemical sensor. The personal chemical sensor was a photoionization device for detecting volatile organic compounds. The combined system was calibrated and tested against the same four standard gas concentrations and calibrated at one standard location and tested at four locations that included the standard locations. Data were wirelessly collected from the chemical sensor every 1.4 sec, for volatile organic

location, temperature, humidity, and time. Regression analysis of the photo-ionization device voltage response against calibration gases showed the chemical sensor had a limit of detection of 0.2 ppm. The real-time location system was accurate to $13 \text{ cm} \pm 6 \text{ cm}$ (standard deviation) in an open area and to $57 \text{ cm} \pm 31 \text{ cm}$ in a closed room where the radio frequency has to penetrate drywall-finished walls. The streaming data were collected and graphically displayed as a three-dimensional hazard map for assessment of peak exposure with location. A real-time personal exposure assessment device with indoor positioning was practical and provided new knowledge on direct reading exposure assessment methods.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership).



6 Tips to Ensure GHS Compliance for Smaller, Down-Packed Chemical Container Labels

In the United States, OSHA set a June 1 deadline for end users to update their workplace chemical labels. If compliance is lacking, industrial end users must be prepared to document for OSHA their good faith efforts to become compliant, including an expected timeline for achieving it.

The Globally Harmonized System (GHS) was established by the United Nations to create a unified system for identifying and communicating hazardous chemicals. According to OSHA, the new standard covers over 43 million workers who produce or handle hazardous chemicals in more than 5 million workplaces across the country.

Read more: <http://ehstoday.com/industrial-hygiene/6-tips-ensure-ghs-compliance->



[smaller-down-packed-chemical-container-labels](#)

Studies Need More than a Spot Sample: Variability of Urinary Metal Levels over Time



Within the field of environmental epidemiology, researchers often measure biomarkers in urine to estimate how much an individual has been exposed to a particular substance and whether that

exposure is associated with a specific health outcome.^{1,2} However, several studies have indicated that one-time specimens may not provide an accurate basis for characterizing long-term exposures.^{1,3,4} A new study in EHP reports on the variation of urinary levels of seven metals within a small group of healthy adult Chinese men and demonstrates the value of accounting for variations both among and within

individuals to avoid exposure misclassifications.⁵

Urine is the most frequently used specimen type because collection is noninvasive, poses no risk to study participants, and requires little in the way of equipment or expertise. In addition, compared with other specimen types (e.g., blood), relatively large volumes can be collected from a high

number of participants; one-time urine samples, known as spot collections, are typically obtained from studies with hundreds or thousands of participants.^{1,2}

Read more: <http://ehp.niehs.nih.gov/124-A77/>

Assessment of Exposure to Pesticides during Mixing/Loading and Spraying of Tomatoes in the Open Field

Some evidence of exposure-response of metolachlor and pendimethalin for lung cancer and an association of metribuzin with risk of glioma have been reported. The primary objectives in this study were to evaluate exposure and occupational risk during mixing/loading of pesticides and during their application to tomatoes cultivated in open fields.

Sixteen farmers were sampled. Respiratory exposure was estimated by personal air sampling using fiberglass filters in a IOM device. Dermal exposure was assessed using skin pads and hand washing. Absorbed doses were estimated assuming 100% lung retention, and 50% or 10% skin absorption for metribuzin, and pendimethalin and metolachlor, respectively. The three pesticides were quantified by gas chromatography tandem mass spectrometry in all matrices. Metolachlor was used as a tracer of contamination of clothes and tractors unrelated to the exposure monitored.



Respiratory exposure to metribuzin, used in granular form, was on average more than one order of magnitude higher than exposure to pendimethalin, used in the form of microencapsulated liquid. The actual doses were 0.067–8.08 $\mu\text{g}/\text{kg}$ bw, 0.420–12.6 $\mu\text{g}/\text{kg}$ bw, and 0.003–0.877 $\mu\text{g}/\text{kg}$ bw for pendimethalin, metribuzin, and metolachlor, respectively. Dermal exposure was about 88% of the actual dose for metribuzin and more than 95%, for pendimethalin and metolachlor. For risk assessment, the total absorbed doses (sum of respiratory and skin absorbed doses) were compared with the AOEL for each compound.

The actual and absorbed doses of the three pesticides were always lower than the acceptable operator exposure level (AOEL), which are reported to be 234 µg/kg bw, 20 µg/kg bw, and 150 µg/kg bw for pendimethalin, metribuzin, and metolachlor, respectively. In any case, personal protective equipment and

spraying devices should be chosen with care to minimize exposure.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Risk Analysis for Confined Space Entries: Critical Analysis of Four Tools Applied to Three Risk Scenarios



Investigation reports of fatal confined space accidents nearly always point to a problem of identifying or underestimating risks. This paper compares 4 different risk analysis tools developed for confined spaces by applying them to 3 hazardous scenarios. The tools were namely 1. a checklist without risk estimation (Tool A), 2. a checklist with a risk scale (Tool B), 3. a risk calculation without a formal hazard identification stage (Tool C), and 4. a questionnaire followed by a risk matrix (Tool D). Each tool's structure and practical application were studied. Tools A and B

gave crude results comparable to those of more analytic tools in less time. Their main limitations were lack of contextual information for the identified hazards and greater dependency on the user's expertise and ability to tackle hazards of different nature. Tools C and D utilized more systematic approaches than tools A and B by supporting risk reduction based on the description of the risk factors. Tool D is distinctive because of 1. its comprehensive structure with respect to the steps suggested in risk management, 2. its dynamic approach to hazard identification, and 3. its use of data resulting from the risk analysis.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016(Available with AIHA membership)

Calibration of High Flow Rate Thoracic-Size Selective Samplers

High flow rate respirable size selective samplers, GK4.126 and FSP10 cyclones, were calibrated for thoracic-size selective sampling in two different laboratories. The National Institute for Occupational Safety and Health (NIOSH) utilized monodisperse ammonium fluorescein particles and scanning electron microscopy to determine the aerodynamic particle size of the monodisperse aerosol. Fluorescein intensity was measured to determine sampling efficiencies of the cyclones. The Health Safety and Laboratory (HSL) utilized a real time particle sizing instrument (Aerodynamic Particle Sizer) and polydisperse glass sphere particles and particle size distributions between the cyclone and reference sampler were compared. Sampling efficiency of the cyclones were compared to the thoracic convention defined by the American Conference of Governmental Industrial Hygienists (ACGIH)/Comité Européen de Normalisation (CEN)/International Standards Organization (ISO). The GK4.126 cyclone showed minimum bias compared to the thoracic convention at flow rates of 3.5 l min⁻¹ (NIOSH) and 2.7–3.3 l min⁻¹ (HSL) and the difference may be from the use of different test systems. In order to collect the most dust and reduce the limit of detection, HSL suggested using the upper end in range (3.3 l min⁻¹). A flow rate of 3.4 l min⁻¹ would be a reasonable compromise,



pending confirmation in other laboratories. The FSP10 cyclone showed minimum bias at the flow rate of 4.0 l min⁻¹ in the NIOSH laboratory test. The high flow rate thoracic-size selective samplers might be used for higher sample mass collection in order to meet analytical limits of quantification.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Radiation

Healthcare Providers in Cath Labs May Be Harmed By Radiation



Healthcare workers in labs where patients undergo heart procedures guided by X-rays may be at higher risk for cataracts, skin lesions, bone disorders or cancer than other

healthcare workers, according to a new study.

Procedures in the "cath lab" - named for the catheters threaded into the heart - are done for all forms of cardiac disease, like congenital heart defects, ischemic heart disease or heart arrhythmias, said lead author Maria Grazia Andreassi of the CNR Institute of Clinical Physiology in Pisa, Italy.

Read more:

<http://www.foxnews.com/health/2016/04/13/healthcare-providers-in-cath-labs-may-be-harmed-by-radiation.html>

Advances in Extracting Uranium from Seawater Announced in Special Issue

The oceans hold more than four billion tons of uranium—enough to meet global energy needs for the next 10,000 years if only we could capture the element from seawater to fuel nuclear power plants. Major advances in this area have been published by the American Chemical Society's (ACS) journal *Industrial & Engineering Chemistry Research*.

For half a century, researchers worldwide have tried to mine uranium from the oceans with limited success. In the 1990s, Japan Atomic Energy Agency (JAEA) scientists



pioneered materials that hold uranium as it is stuck or adsorbed onto surfaces of the material submerged in seawater. In 2011, the U.S. Department of Energy (DOE)

initiated a program involving a multidisciplinary team from U.S. national laboratories, universities and research institutes to address the fundamental challenges of economically extracting uranium from seawater. Within five years this team has developed new adsorbents

that reduce the cost of extracting uranium from seawater by three to four times.

Read more:

<https://www.ornl.gov/news/advances-extracting-uranium-seawater-announced-special-issue>

Ultraviolet Safety Assessments of Insect Light Traps



Near-ultraviolet (UV-A: 315–400 nm), “black-light,” electric lamps were invented in 1935 and ultraviolet insect light traps (ILTs) were introduced for use in agriculture around that time. Today ILTs are used indoors in several industries and in food-service as well as in outdoor settings. With recent

interest in photobiological lamp safety, safety standards are being developed to test for potentially hazardous ultraviolet emissions. A variety of UV “Black-light” ILTs were measured at a range of distances to assess potential exposures. Realistic time-weighted human exposures are shown to be well below current guidelines for human exposure to ultraviolet radiation. These UV-A exposures would be far less than the typical UV-A exposure in the outdoor environment. Proposals are made for realistic ultraviolet safety standards for ILT products.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Ventilation

Effective Dust Control Systems on Concrete Dowel Drilling Machinery



Rotary-type percussion dowel drilling machines, which drill horizontal holes in concrete pavement, have been documented to produce respirable crystalline silica concentrations above recommended exposure criteria. This places operators at potential risk for developing health effects from exposure. United States manufacturers of these machines offer optional dust control systems. The effectiveness of the dust control systems to reduce respirable dust concentrations on two types of drilling machines were evaluated under controlled conditions with the machines operating inside large tent structures in an effort to eliminate secondary exposure sources not related to

the dowel-drilling operation. Area air samples were collected at breathing zone height at three locations around each machine. Through equal numbers of sampling rounds with the control systems randomly selected to be on or off, the control systems were found to significantly reduce respirable dust concentrations from a geometric mean of 54 milligrams per cubic meter to 3.0 milligrams per cubic meter on one machine and 57 milligrams per cubic meter to 5.3 milligrams per cubic meter on the other machine. This research shows that the dust control systems can dramatically reduce respirable dust concentrations by over 90% under controlled conditions. However, these systems need to be evaluated under actual work conditions to determine their effectiveness in reducing worker exposures to crystalline silica below hazardous levels.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 13 Apr 2016 (Available with AIHA membership)

Industrial Dust Collection Design Strategies for Optimal Industrial Airflow

Industrial dust collection systems should be designed for optimal industrial airflow. Each

type of industrial collection system—dust collection, mist elimination and fume

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collection—has unique requirements for optimized airflow.

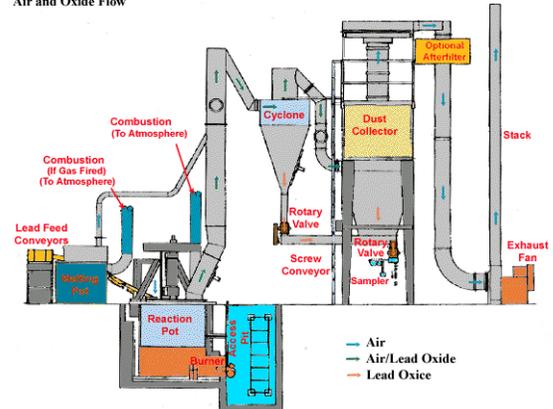
Benefits of proper industrial airflow by dust collection type

- Dust collection systems: Proper airflow contributes to high air quality and a clean work environment.
- Mist elimination systems: Proper airflow helps ensure mist is drawn away from the manufacturing process.
- Fume collection systems: Proper airflow helps mitigate hazardous airborne particles (HAPS).

Design methods for industrial airflow

- Blast gate/orifice plate method: This method is somewhat flexible. Flow rates can be changed, and it's easier to make additions and changes using this method. The location of blast gates depends on the location of elbows, hoods, straight duct and access. This is the most common method of design.
- Balance by design method: This method achieves a “balanced” airflow system

Air and Oxide Flow



without blast gates or orifice plates. The method calls for calculating static pressure of airflow in each segment. Factors that influence static pressure include duct sizes, elbow radius and hood design. This method is best for hazardous materials. Adding, removing or adjusting a collection point requires a complete system redesign.

Read more:

<http://www.ivinc.com/industrial-airflow-design/>

PPE

Efficiency of Five Chemical Protective Clothing Materials against Nano and Submicron Aerosols When Submitted to Mechanical Deformations



Due to their potential toxicity, the use of nanoparticles in the workplace is a growing concern. Some studies indicate that nanoparticles can penetrate the skin and lead to adverse health effects. Since chemical protective clothing is the last

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barrier to protect the skin, this study aims to better understand nanoparticle penetration behaviour in dermal protective clothing under mechanical deformation. For this purpose, five of the most common types of fabrics used in protective clothing, one woven and four nonwoven, were chosen and submitted to different simulated exposure conditions. They were tested against polydispersed NaCl aerosols having an electrical-mobility diameter between 14 and 400 nm. A bench-scale exposure setup and a sampling protocol was developed to measure the level of penetration of the aerosols through the material samples of disposable coveralls and lab coat, while subjecting them to mechanical deformations to simulate the

conditions of usage in the workplace. Particle size distribution of the aerosol was determined upstream and downstream using a scanning mobility particle sizer (SMPS). The measured efficiencies demonstrated that the performances of nonwoven materials were similar. Three nonwovens had efficiencies above 99%, while the woven fabric was by far, the least effective. Moreover, the results established that mechanical deformations, as simulated for this study, did not have a significant effect on the fabrics' efficiencies.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Keep an Eye on Welding PPE

When researching personal protective equipment requirements for welders, OSHA's 29 CFR 1910.252(b)(2) is a good place to start. Unsurprisingly, it begins by specifying eye protection.

The standard states that welders' filter lenses must meet the test for transmission of radiant energy prescribed by the ANSI/ISEA Z87.1 standard, the American National Standard for Occupational and Educational Personal Eye and Face Protection Devices. ANSI/ISEA Z87.1-2015 is the current version of this standard and is available at www.safetyequipment.org.



Read more:

<https://ohsonline.com/articles/2016/04/01/keep-an-eye-on-welding-ppe.aspx?admgarea=ht.ProtectiveApparel>

Noise

Assessment of Noise Exposure for Basketball Sports Referees



Dosimetric measurements carried out on basketball referees have shown that whistles not only generate very high peak sound pressure levels, but also play a relevant role in determining the overall exposure to noise of the exposed subjects. Because of the peculiar geometry determined by the mutual positions of the whistle, the microphone, and the ear, experimental data cannot be directly compared with existing occupational noise exposure and/or action limits.

In this article, an original methodology, which allows experimental results to be reliably compared with the aforementioned limits, is presented. The methodology is based on the use of two correction factors to compensate the effects of the position of the dosimeter microphone (fR) and of the sound source (fS). Correction factors were calculated by means of laboratory

measurements for two models of whistles (Fox 40 Classic and Fox 40 Sonik) and for two head orientations (frontal and oblique). Results show that for peak sound pressure levels the values of fR and fS, are in the range -8.3 to -4.6 dB and -6.0 to -1.7 dB, respectively. If one considers the Sound Exposure Levels (SEL) of whistle events, the same correction factors are in the range of -8.9 to -5.3 dB and -5.4 to -1.5 dB, respectively.

The application of these correction factors shows that the corrected weekly noise exposure level for referees is 80.6 dB(A), which is slightly in excess of the lower action limit of the 2003/10/EC directive, and a few dB below the Recommended Exposure Limit (REL) proposed by the National Institute for Occupational Safety and Health (NIOSH). The corrected largest peak sound pressure level is 134.7 dB(C) which is comparable to the lower action limit of the 2003/10/EC directive, but again substantially lower than the ceiling limit of 140 dB(A) set by NIOSH.

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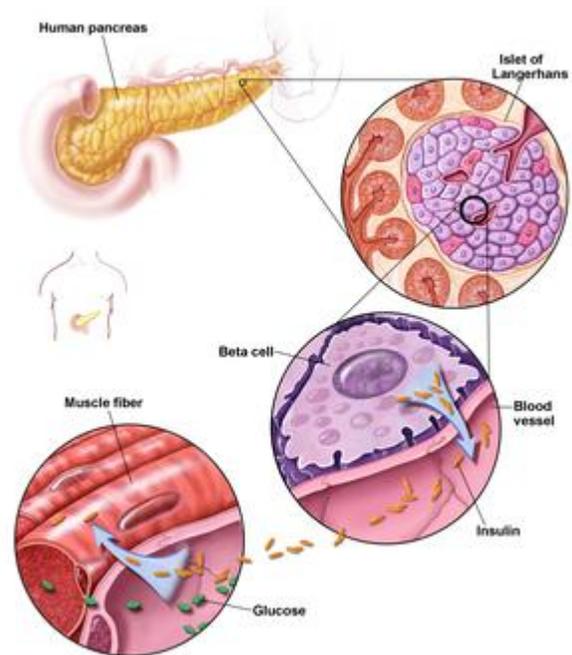
Hearing Impairment Linked to Type 2 Diabetes

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EHS professionals understand that while work-related hearing loss is an important concern, hearing loss for workers also can be attributed to off-the-job activities such as lawn care, woodworking, loud music, target practice and other activities. Now, there's another potential cause of hearing loss for workers: type 2 diabetes.

A review of studies of possible linkages between type 2 diabetes and hearing impairment concludes there is compelling evidence that diabetes can damage the auditory system, and that clinicians should include hearing testing in managing type 2 diabetes. The survey results were published in an article titled, "Type 2 Diabetes and Hearing Impairment" in the journal Current Diabetes Reports.

Read more: <http://ehstoday.com/hearing-protection/hearing-impairment-linked-type-2-diabetes>



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Preventive Medicine

DEET Seen as Safe for Pregnant Women to Avoid Zika Despite Few Studies



This summer, some yellow-fever mosquitoes carrying the Zika virus are expected to arrive along the Gulf Coast and elsewhere in the continental United States.

Health officials are urging people to use insect repellents with DEET to avoid being bitten.

The mounting evidence that the virus is strongly linked with birth defects makes this a priority for pregnant women. But is it safe to use repellents containing DEET with a baby on the way?

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Although the scientific evidence is a bit thinner than some experts would like, most say the answer is yes, as long as you do not overapply.

Read more:

<http://www.nytimes.com/2016/04/05/health/zika-virus-deet-pregant-women-safety.html?ref=health&r=0>

Nestle Develops Foods to Treat Diseases

In a corner of a technical research university campus in Lausanne, Nestlé SA scientists are untangling genetic profiles to develop medical foods—one of the company's big hopes for sales growth.

These aren't the high-energy protein bars that people buy over the counter before a workout. Instead, the Swiss food company is tapping into an estimated \$15 billion

market for prescription-based powders and drinks intended to meet specific nutritional requirements to treat diseases.

Read more

<http://www.foxnews.com/health/2016/04/13/nestle-develops-foods-to-treat-diseases.html>

Painkiller Critics Takes Aim at Hospital Surveys, Procedures

Critics of how prescription painkillers are administered in the U.S. are calling on health officials to phase out hospital procedures and questionnaires used to manage pain.

They say the current system inadvertently encourages the overprescribing of addictive drugs like Vicodin and OxyContin, fueling an epidemic of overdoses tied to the opioid medications. Deaths linked to misuse and abuse of prescription opioids increased to nearly 19,000 in 2014, the highest figure on record, according to the Centers for Disease Control and Prevention.



Partner with patients

to provide safer, more effective pain management. Talk to your patients about risks and benefits of all treatment options.

Read more:

<http://www.foxnews.com/health/2016/04/13/painkiller-critics-takes-aim-at-hospital-surveys-procedures.html>

CDC: 104,000 Quit Smoking Due To 'Tips from Former Smokers' Campaign



The ads feature people and their struggles with smoking-related health issues, including cancer, gum disease, premature

birth, and stroke caused by smoking combined with HIV.

About 80 percent of U.S. adult cigarette smokers who were surveyed reported seeing at least one television ad from Phase 2 of the 2014 campaign, the CDC said.

Read more:

http://www.bizjournals.com/atlanta/morning_call/2016/03/cdc-104-000-quit-smoking-due-to-tips-from-former.html

U.N. Rethinks Global Sleep Standards for Helicopter Pilots

A U.N. aviation task force is updating global standards to ensure commercial helicopter pilots get enough sleep, at a time of broader industry efforts to manage crew fatigue, a technical specialist for the group said Wednesday.

The Montreal-based International Civil Aviation Organization is working to bring sleep standards for helicopter pilots in line with existing recommended practices for commercial airline crew, said Michelle Millar, ICAO's technical specialist, human performance.

Unlike the existing standards for helicopter pilots, guidelines for commercial airline pilots take into account basic human physiology such as circadian rhythms and the importance of sleeping at night.



Fatigue management has become a growing priority for the aviation industry amid concerns that commercial airline and helicopter pilots are being asked to work longer hours because of an anticipated shortage of pilots around the world.

Read more:

<http://www.reuters.com/article/us-aviation-un-fatigue-idUSKCN0X32G2>

Mercury Travels from Water to Land When Spiders Eat Bugs



Call it something like fruit of a poisonous tree. Bugs live around water polluted with mercury; spiders dine on these insects, and then get eaten by birds and animals on land.

Mercury in fish has long been linked to damage of the nervous, digestive and immune systems, lungs, kidneys, skin and eyes. While fish from contaminated waters remain the primary source of mercury in the human diet, a new U.S. study suggests that scientists need to pay closer attention to how much spiders transfer this toxin to foods people can get from the land.

Read more:

<http://www.reuters.com/article/us-health-mercury-food-web-idUSKCN0WY5AQ>

Environmental Health

New Climate Change Report Discusses Impact on Health and Safety of Workers

Climate change can affect human health in two main ways: first, by changing the severity or frequency of health problems that are already affected by climate or weather factors; and second, by creating unprecedented or unanticipated health problems or health threats in places where they have not previously occurred.

A new report, "U.S. Global Change Research Program Climate and Health Assessment," provides a comprehensive overview of the potential health effects of climate change across the United States. The report includes a section on populations of



concern, including outdoor workers and workers who may be exposed to other extreme weather environments. Worker health issues also are included in other sections of the report as part of broader

discussions regarding the public health impact of climate change.

[climate-change-report-discusses-impact-health-and-safety-workers](#)

Read more

<http://ehstoday.com/environment/new->

Elevated Levels of Suspected Carcinogen Found In States' Drinking Water



Water safety concerns aren't just in Flint, Mich., these days. Communities in three states in the Northeast have found elevated levels of a suspected carcinogen — perfluorooctanoic acid, or PFOA.

Used to make Teflon, the chemical has contaminated water supplies in New York, New Hampshire and Vermont.

After a four-month ban in the village of Hoosick Falls, N.Y., the New York State Department of Health declared the water safe to drink and cook with again on Wednesday. A temporary filtering system has brought PFOA levels down to nondetectable levels for weeks.

Read more:

<http://www.npr.org/2016/03/31/472501029/elevated-levels-of-suspected-carcinogen-found-in-states-drinking-water>

Putting Data to Work: How Work Affects Our Health

Despite the varying nature of our jobs, there are common themes that work plays in our lives: it provides income and often other economic benefits, and for many of us, a sense of meaning as well as social support. Clearly, work is vital to our well-being. That being said, work environments, including work organization factors, can negatively affect our health.



Examples of direct impacts that work can have on us include:



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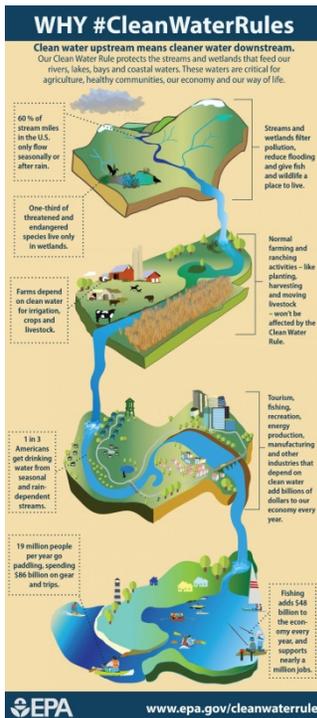
Injuries, including fatal injuries, due to exposure to hazards in the workplace such as dangerous equipment, heavy lifting, toxic chemicals and violence.

Chronic illnesses due to exposure to toxic chemicals, chronic wear and tear and job stress also take a toll on workers.

Read more:

<http://blog.mass.gov/publichealth/workplace-health-and-safety/putting-data-to-work-how-work-affects-our-health/>

EPA: No Changes to Federal Lead Water Rule until Next Year



The EPA's top water regulator said Wednesday that officials are working urgently to strengthen a federal rule limiting lead and copper in drinking water - a key focus in the ongoing lead-

contamination crisis in Flint, Michigan.

But Joel Beauvais, acting chief of the EPA's water office, said proposed changes will not be released until next year, with a final rule expected months after that.

Read more:

http://hosted.ap.org/dynamic/stories/U/US_CONGRESS_FLINT_WATER_MIOL-?SITE=AP&SECTION=HOME&TEMPLATE=DEFAULT&CTIME=2016-04-13-18-57-17

Ergonomics

Work-Life Imbalance Is a Pain in the Neck (Literally)

New research shows that a work/life imbalance can be a pain in the neck for hospital workers – literally. Nurses and hospital employees working long hours or

the graveyard shift are more likely to experience difficulty managing their work and home obligations while also facing

increased musculoskeletal neck pain, the research suggests.

The new study from the George Washington University School of Public Health and Health Services (SPHHS) indicates that higher levels of work-family conflict may lead to an increased risk of these health care workers experiencing neck pain or other types of musculoskeletal pain. The study fits into a growing body of evidence showing that conflict between increased workloads or long hours can spill over into domestic life and adversely affect workers on the front lines of patient care.



Read more:

<http://ehstoday.com/health/work-life-imbalance-pain-neck-literally>

Occupational Physical Activity Assessment for Chronic Disease Prevention and Management: A Review of Methods for Both Occupational Health Practitioners and Researchers



Occupational physical activity (OPA) is an occupational exposure that impacts worker health. OPA is amenable to measurement and modification through the hierarchy of controls. Occupational exposure scientists have roles in addressing inadequate physical activity, as well as excessive or harmful physical activity. Occupational health researchers can contribute to the

development of novel OPA exposure assessment techniques and to epidemiologic studies examining the health impacts of physical activity at work. Occupational health practitioners stand to benefit from understanding the strengths and limitations of physical activity measurement approaches, such as accelerometers in smartphones, which are already ubiquitous in many workplaces and in some worksite health programs. This comprehensive review of the literature provides an overview of physical activity monitoring for occupational exposure scientists. This article summarizes data on the public health implications of physical activity at work, highlighting complex relationships with common chronic diseases. This article includes descriptions

of several techniques that have been used to measure physical activity at work and elsewhere, focusing in detail on pedometers, accelerometers, and Global Positioning System technology. Additional subjective and objective measurement strategies are described as well.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Musculoskeletal Symptoms and Associated Risk Factors among African Hair Braiders

African hair braiders are potentially subject to work-related musculoskeletal disorders (WMSDs) because they perform repetitive hand motions for many hours a day together with prolonged standing and/or prolonged sitting. A complete enumeration of African hair braiders was attempted in Oklahoma City (OKC) and Dallas/Fort Worth (DFW). Braiders were identified through the channels they typically use to offer services to clients. Potential risk factors and symptoms of WMSDs were assessed using an oral interview. Participation rates were 95% (18/19) in OKC and 83% (83/101) in DFW. More than 75% of braiders reported discomfort in the fingers, wrist/hand, upper back, and lower back. In multivariate analysis, years worked as a braider but not age was a significant risk factor ($p < 0.005$) for reported pain in the wrist/hand, time spent sitting during the work day was found to be a significant predictor ($p < 0.05$) of upper back pain and lower back pain, and time spent sitting and time spent standing during the work day were both significant predictors ($p < 0.05$) of shoulder pain. Braiders in OKC, where licensing

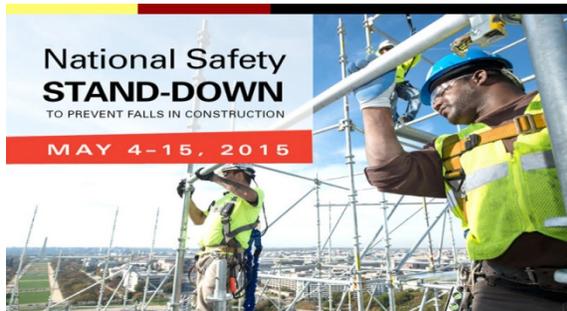


requirements were stricter, were significantly more likely than braiders in DFW to work at home (67% vs. 4%, $p < 0.001$) and to report pain in the lower leg ($p < 0.005$) and ankle/foot ($p < 0.05$). The close-knit nature of the African hair braiding community makes it an appealing candidate for community-based participatory research aimed at further elucidating occupational health concerns and reducing risk.

Read more: Journal of Occupational and Environmental Hygiene Volume 13, Issue 6, 2016 (Available with AIHA membership)

Safety

National Safety Stand-Down to take Place May 2-6



The third annual National Safety Stand-Down will take place from May 2 to 6, as employers across the country pause during the workday to engage workers in

discussions, demonstrations, and training on how to recognize hazards and prevent falls. The event is part of OSHA's effort to remind and educate construction employers and workers of the serious dangers of falls, which remain the leading cause of death in the industry.

Read more:

<https://www.osha.gov/as/opa/quicktakes/qt041816.html>

Taking Hand Hygiene beyond Hand Washing

No matter what the industry, chances are that your company has employees who make a living using their hands. Our hands are the connection we make with everything in our everyday lives. However, they likely are overlooked when it comes to employee health and safety.

According to the Centers for Disease Control and Prevention, up to 40 percent of industrial workers will suffer from occupational dermatitis at some point in their working lives. Poor hand hygiene can lead to increased illness and can result in:

- Disruption cost and lost productivity through employee absence from work;
- Reduced employee efficiency through illness at work and lower morale;



- Damage to an organization's reputation.

Read more: <http://ehstoday.com/industrial-hygiene/taking-hand-hygiene-beyond-hand-washing>

FRA Names Railroad Crossings with Most Incidents over Last Decade



The Federal Railroad Administration released a list detailing 15 railroad crossings throughout the country where 10 or more incidents have occurred in the last decade, and it's notable that crossings in Phoenix

and Glendale, Ariz., dominate it. The list included a letter from FRA Administrator Sarah E. Feinberg urging increased cooperation to improve safety at crossings.

Read more:

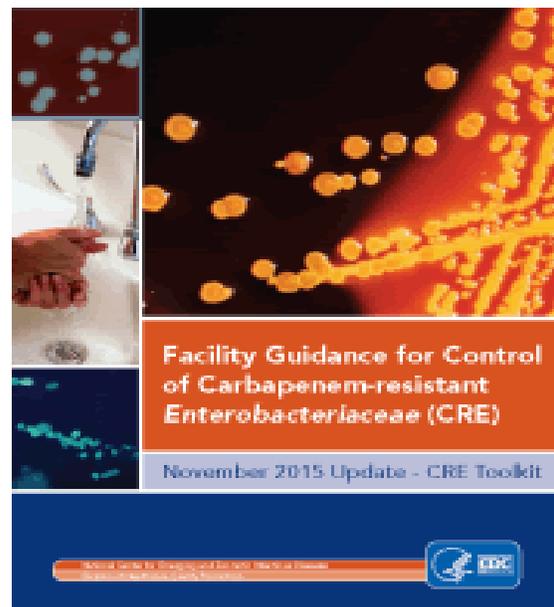
<https://ohsonline.com/articles/2016/04/22/fra-names-railroad-crossings-with-most-incidents-over-last-decade.aspx>

Coordinated Response Could Reduce Spread of Emerging Superbug in Health Facilities by More Than 75 Percent, Study Suggests

A simulation of how the so-called “superbug” carbapenem-resistant Enterobacteriaceae (CRE) might spread among health care facilities found that coordinated efforts prevented more than 75 percent of the often-severe infections that would have otherwise occurred over a five-year period.

The study was led by researchers at the Johns Hopkins Bloomberg School of Public Health and published last month in the American Journal of Epidemiology.

Superbugs such as CRE are antibiotic-resistant bacteria for which there are limited or no treatments. CRE is most commonly found in health care facilities and the CDC says the germ can kill up to half of those it infects. Patients in hospitals and nursing homes are thought to be more susceptible to superbugs in general because



of the potentially high rate of exposure among vulnerable patients, many of whom transfer from one facility to another while infected, bringing the bugs with them. Superbugs are considered a serious public health threat and the U.S. Centers for

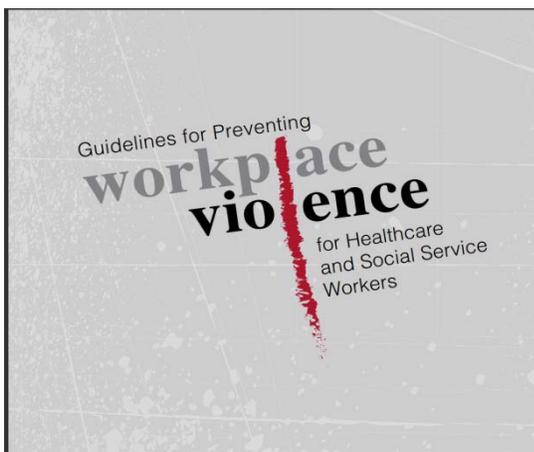
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Disease Control and Prevention (CDC) has issued a “tool kit” to assist health care facilities to create plans to stem their spread – a blue print that walks management through steps from persuading leadership to measuring outcomes.

Read more:

<http://www.jhsph.edu/news/news-releases/2016/coordinated-response-could-reduce-spread-of-emerging-superbug-in-health-facilities-by-more-than-75-percent-study-suggests.html>

GAO Report Highlights Violence in Health Care Settings



A new Government Accountability Office (GAO) report released April 14 recommends actions to address violence directed at the nation's health care workers. Prepared at the request more than two years ago of top Democrats on congressional labor committees, the "Additional Efforts Needed to Help Protect Health Care Workers from Workplace Violence" report describes violence as a serious concern for 15 million health workers in the United States.

It assesses OSHA's actions on the issue, which include inspections of health care workplaces such as hospitals and nursing and residential care facilities, designating a workplace violence coordinator in each regional office, disseminating voluntary guidelines about preventing workplace violence, and adding workplace violence material to the training given to new OSHA inspection personnel. OSHA has not developed a workplace violence prevention standard, and the report says OSHA officials indicated they are not planning one because other hazards have a higher priority for regulatory action.

Read more:

<https://ohsonline.com/articles/2016/04/15/gao-report-highlights-violence-in-health-care-settings.aspx?admgarea=ht.RegulationsStandards>

April is Distracted Driving Awareness Month

The National Safety Council designates April as Distracted Driving Awareness Month, a

time to draw attention to the hazards of using cell phones while driving. As the NSC



notes, phone use while driving, including texting and reading social media, has contributed to thousands of highway deaths. Employers can play a big role in protecting workers who drive for their job. The NSC encourages employers to download its employer cell phone policy toolkit and to read the Cummins cell phone policy case study. In addition, NSC is offering its online Defensive Driving Class at no charge from April 18 to 24. To enroll in the class, go to NSC's online registration

form and enter "distracted" as the access code.

Read more:

<https://www.osha.gov/as/opa/quicktakes/qt041816.html#top> (scroll down)

Study: Many ICU Workers' Cell Phones Harbor Resistant Enterobacteriaceae



The cell phones of half of healthcare workers (HCWs) treating very ill children were contaminated with Enterobacteriaceae, with half the isolates resistance to multiple drugs, according to a study yesterday today in the American Journal of Infection Control.

Researchers swabbed the cell phones of 114 HCWs who worked in three pediatric and two neonatology intensive care units (ICUs) in three Peruvian hospitals. They obtained swabs every other week for an average of four swabs per phone during the 5-month study.

Three quarters of the HCWs said they never decontaminated their phones, and 47% reported using their phones in the ICU more than five times while working.

Read more:

<http://www.cidrap.umn.edu/news-perspective/2016/04/news-scan-apr-08-2016> (Scroll down)

GAO: Many US Agencies Have Gaps in Lab Safety Policies

Five departments and nine agencies across the US government, including CDC, have

gaps in their policies for safely managing biological agents in high-containment



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laboratories, the Government Accountability Office (GAO) said in a report released this week.

The GAO, Congress's investigative arm, said it was asked to review lab safety policies in the wake of several safety lapses that were reported in government labs in 2014 and 2015. For example, in 2014 the inadequate inactivation of *Bacillus anthracis* in a CDC lab potentially exposed dozens of personnel to the pathogen that causes anthrax, though no illnesses were reported.



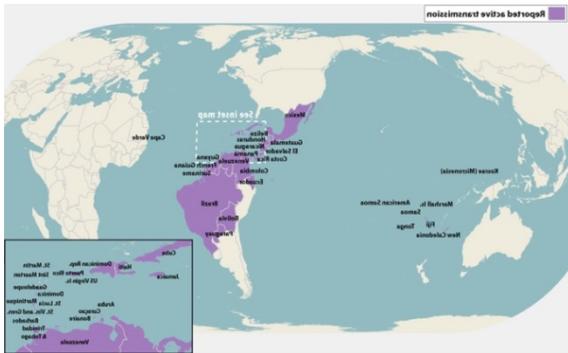
And in 2015, it was revealed that an Army lab in Utah had inadvertently sent supposedly dead, but potentially live, B anthracis to 86 other labs over a decade.

Read more:

<http://www.cidrap.umn.edu/news-perspective/2016/04/gao-many-us-agencies-have-gaps-lab-safety-policies>

Emergency Preparedness & Response

Zika Mosquito's Habits Force New Strategy By U.S. Cities, States



U.S. states and cities need to adopt a different mosquito-fighting strategy to battle the species carrying the Zika virus as an outbreak that started in Brazil heads

north with warmer weather in the coming weeks, health officials said on Friday.

The World Health Organization declared a global health emergency in February as the virus spread rapidly in the Americas, citing Zika's link to the birth defect microcephaly and Guillain-Barre syndrome, an autoimmune disorder in adults that can cause paralysis.

The mosquito species responsible for spreading the virus by biting people lives in and around homes, making traditional

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evening insecticide fogging campaigns from sprayers mounted on trucks an ineffective option, U.S. Centers for Disease Control and Prevention officials said.

Read more:

<http://www.reuters.com/article/us-health-zika-usa-idUSKCN0WY5OE>

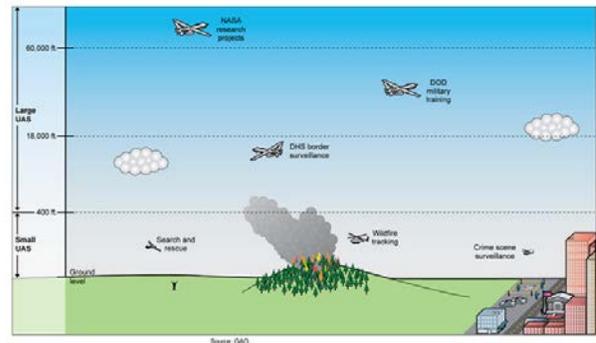
Menlo Park, Calif., Fire Department Could Be First in Nation to Deploy Aerial Drones

When it comes to high-tech tools used in emergency response, the sky's the limit for the local fire department. The sky also is the arena.

Harold Schapelhouman, fire chief for the Menlo Park Fire Protection District, said that his agency is on pace to be the first in the nation approved by the Federal Aviation Administration to deploy aerial drones.

"I hear we're close," Schapelhouman said. "To my knowledge, there are a limited amount of law enforcement agencies and no fire agencies" using drones.

Menlo Park firefighters saw how drones can help when a fire charred 13 acres in a grassy area near Facebook's headquarters March 28. Brandon Vacarro, a private fire



photographer, was allowed to fly a quadcopter drone over the fire. That helped firefighters determine the best course of action to extinguish the blaze the quickest.

Read more:

<http://www.emergencymgmt.com/safety/Menlo-Park-Drones.html>

Deployment Health

New Commission on Care Report: VA Too Broken to Fix



A report, cosigned by nearly half the Commission on Care, that called for the closure of all VHA facilities and the transfer of patients to private care drew immediate criticism from Veterans Service

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Organizations, media outlets, and the VA. The Proposed Strawman Assessment and Recommendations report asserted that “the current VA health care system is seriously broken, and because of the breadth and depth of the shortfalls, there is no efficient path to repair it.” The report called for immediate closure of “obsolete and underutilized facilities” and the

eventual transfer of all VA patients to local providers within the next 2 decades.

Read more:

<http://www.fedprac.com/articles/editor-s-pick/article/new-commission-on-care-report-va-too-broken-to-fix/22930af92ea2d5f75a6dc6911b988743/ocregister.html>

WRNMMC Launches New Tele-Audiology Service

We did a hearing test on you earlier. Your hearing is essentially normal but you still feel that you are experiencing difficulty understanding, is that right?” asked Dr. Georgina Blasco, a staff audiologist, speaking at a monitor from her desk at Walter Reed National Military Medical Center (WRNMMC) on Naval Support Activity Bethesda.

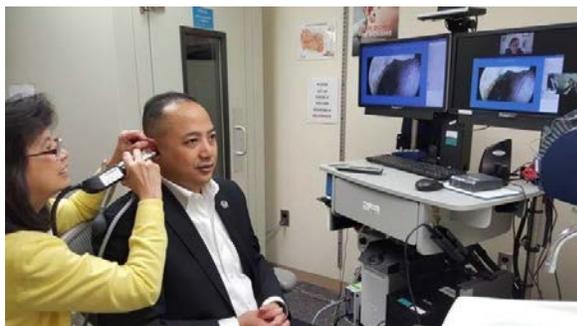
Her patient, Army Lt. Col. Darlene T. Pelletier, 20 miles away at DiLorenzo Clinic in the Pentagon, can see the digitized audiologist from another monitor on a special cart in the clinic.

“Yes, ma’am,” Pelletier answered, with Audiology Technician Leilani Ramos standing at her side. Ramos served as the hands and arms of Blasco during the hearing test.

“And how long has that been going on for?” asked Blasco, leaning forward toward her monitor at WRNMMC.

Read more:

http://www.dcmilitary.com/journal/features/wrnmmc-launches-new-tele-audiology-service/article_f4ecdd68-3f1c-5876-9cd7-c1739a134909.html



Nanotechnology

Microbots Can Clean Up Polluted Water

A new study shows that a swarm of hundreds of thousands of tiny microbots, each smaller than the width of a human hair, can be deployed into industrial wastewater to absorb and remove toxic heavy metals. The researchers found that the microbots can remove 95% of the lead in polluted water in one hour, and can be reused multiple times, potentially offering a more effective and economical way to remove heavy metals than previous methods

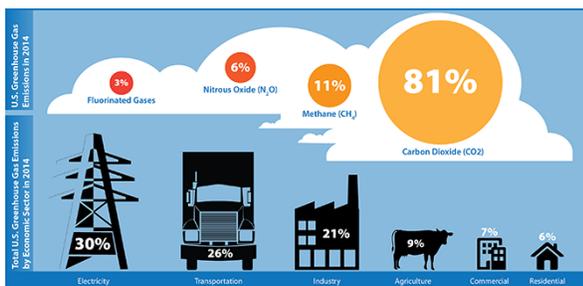


Read more : <http://phys.org/news/2016-04-microbots-polluted.html#iCp>

Regulatory Research & Industrial Hygiene Professional News

EPA

EPA Publishes 21st Annual U.S. Greenhouse Gas Inventory



The U.S.EPA released its 21st annual Inventory of U.S. Greenhouse Gas Emissions and Sinks (GHG Inventory), today, which

presents a national-level overview of annual greenhouse gas emissions since 1990. The inventory shows a nine percent drop in emissions since 2005, and a one percent increase in greenhouse gas emissions in 2014 from 2013 levels.

Read more: <https://www.epa.gov/newsreleases/epa-publishes-21st-annual-us-greenhouse-gas-inventory>

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CDC

CDC, OSHA Publish Interim Guidance for Protecting Workers from Exposure to Zika Virus

In new guidance released on Friday, CDC and OSHA describe ways to protect workers from occupational exposure to Zika virus, a mosquito-borne disease that has been reported in several countries in Africa, the Americas, Asia, and the Pacific. Although the disease is commonly spread from the bite of an infected *Aedes* species mosquito, transmission may also result from exposure to an infected person's blood or other bodily fluids.

The interim guidance applies to outdoor workers, healthcare and laboratory workers, mosquito control workers, and business travelers. The guidance suggests that employers consider reassigning workers who are pregnant or who have pregnant partners to indoor tasks to reduce their risk for mosquito bites. The new information from CDC and OSHA also includes guidance and recommendations



for workers to protect themselves from mosquito bites and exposures from infected individuals. Employers and workers in travel-related operations,

including airlines and cruise lines, may also benefit from CDC's guidance for travel to Zika-affected areas.

Read more:

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/CDC,-OSHA-Publish-Interim-Guidance-for-Protecting-Workers-from-Exposure-to-Zika-Virus.aspx>

OSHA

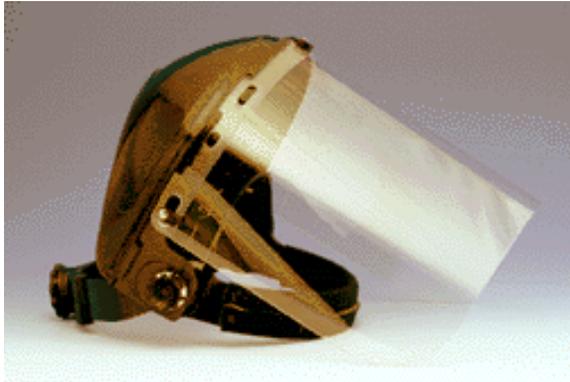
Updating OSHA Standards Based on National Consensus Standards; Eye and Face Protection

OSHA published in the Federal Register a notice of proposed rulemaking (NPRM) to revise its eye and face protection standards for general industry, shipyard employment,

marine terminals, longshoring, and construction by updating the references to national consensus standards approved by the American National Standards Institute

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(ANSI). OSHA received no significant objections from commenters and therefore is adopting the amendments as proposed.



This final rule updates the references in OSHA's eye and face standards to reflect the most recent edition of the

ANSI/International Safety Equipment Association (ISEA) eye and face protection standard. It removes the oldest-referenced edition of the same ANSI standard. It also amends other provisions of the construction eye and face protection standard to bring them into alignment with OSHA's general industry and maritime standards.

Read more:

<https://www.federalregister.gov/articles/2016/03/25/2016-06359/updating-osh-standards-based-on-national-consensus-standards-eye-and-face-protection>

NIOSH Study Quantifies "Healthy Years" Lost Due to Hearing Impairment among Workers

In a first-of-its-kind study, NIOSH researchers examined the audiograms of more than 1.4 million noise-exposed workers collected by the agency's Occupational Hearing Loss Surveillance Project to compare the prevalence of hearing impairment across nine industry sectors. The study quantifies the number of disability-adjusted life years—defined as healthy years lost due to a disease or other health condition—attributable to hearing impairment for noise-exposed workers in the U.S.

NIOSH researchers found that hearing impairment caused the annual loss of approximately 2.5 healthy years per 1,000 noise-exposed workers across all industries during 2003–2012. Workers in the mining,



construction, and manufacturing industries lost even more healthy years, with miners losing nearly 3.5 years each year for every 1,000 workers, construction workers losing about 3.1 years, and manufacturing

workers losing approximately 2.7 healthy years. Public safety workers, including police protection, fire protection, and ambulance services employees, lost 1.3 healthy years per 1,000 workers, the fewest among all workers.

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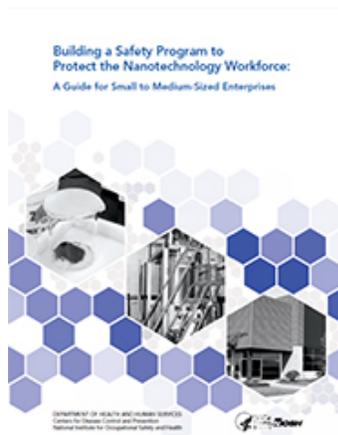
Read more:

<https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Study-Quantifies-Healthy->

[Years-Lost-Due-to-Hearing-Impairment-among-Workers.aspx](https://www.aiha.org/publications-and-resources/TheSynergist/Industry%20News/Pages/NIOSH-Study-Quantifies-Healthy-Years-Lost-Due-to-Hearing-Impairment-among-Workers.aspx)

NIOSH

Building a Safety Program to Protect the Nanotechnology Workforce: A Guide for Small to Medium-Sized Enterprises



The National Institute for Occupational Safety and Health (NIOSH) is pleased to present Building a Safety Program to Protect the

nanotechnologies includes considering and managing the potential, unintended consequences to human health and the environment that might accompany development and use of the technology. This guide will demonstrate that the key to ensuring the safety of your business, particularly when resources are limited, is to prevent occupational exposures and incidents before they happen.

Nanotechnology Workforce: A Guide for Small to Medium-Sized Enterprises. Responsible development of

Read more:

<http://www.cdc.gov/niosh/docs/2016-102/default.html>

Training

APHC

Something is Wrong, I Can't Get My Blackboard Certificate

Instructors are happy to issue students a certificate upon successfully completing a course in Blackboard. However, Blackboard can no longer send mail and certificates to your Army Knowledge Online (AKO) email address.

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AKO EMAIL CHANGES

Want to receive e-mails from ATSC-ELLC at another e-mail address?

Users can now update their ATSC-ELLC Online profile to direct course communications to ANY email, whether .mil, .com or other. By updating their user profile email address, users can direct where course announcements, notifications, and course communication are delivered.

To enable, update the e-mail field located [here](#). Upon doing so, all e-mails sent from ATSC-ELLC Online will be sent to the address in your profile. **This WILL NOT impact messages sent from other systems.**

Non-Army AKO Holders: This change impacts the ATSC-ELLC profile only. To maintain AKO sponsorship, your AKO external email addresses will remain the same, and must remain populated with a .mil (non-AKO) email address.

AKO email addresses will no longer be valid as of March 31, 2015. Please update your Blackboard profile by changing your email address from AKO (@us.army.mil) address to the preferred military Enterprise address (@mail.mil).

If you have any questions or concerns, please contact the Army Training Help Desk at 1-800-275-2872 (option 2) or Email-athd@mails01.csd.disa.mil, Subject: Blackboard.

Thank you,

ATSC-Blackboard Team

The Blackboard Administrator requested almost a year ago that all users change their email address from the outdated AKO format ([your.name@us.army.mil](#)) and replace it with the new enterprise format ([your.name.civ@mail.mil](#)). When students register for courses in Blackboard, the outdated AKO email automatically becomes the default email. If you don't update your email address using the new enterprise format ([your.name.civ@mail.mil](#)) BEFORE you begin to take a course and take the exam, you will not receive emails and certificates. In order to get credit for your

hard work and receive CEUs, you must change your email address in Blackboard to [your.name.civ@mail.mil](#) or [your.name.ctr@mail.mil](#), for contractors. You and only you have the capability to change your email address in Blackboard.

Once you have changed your email address to the proper format ([your.name.civ@mail.mil](#) or [your.name.ctr@mail.mil](#)), it can take up to 48 hours before it is registered in Blackboard. Wait 2 days, then log back into Blackboard and confirm the changes before proceeding to complete the course work and exam.

Please follow the instructions on the Blackboard website! Remember Blackboard no longer uses AKO email. To ensure that you can receive your Blackboard certificates and emails, change your email address to the new enterprise format. For more information about updates and changes, go to <https://amsc.elic.learn.army.mil> and log into Blackboard.

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Upcoming Training



May 2016

• May 16-20 APG, MD DOEHRS-IH Initial Army Course



August 2016

• August 1-5 APG, MD DOEHRS-IH Initial Army Course



October 2016

• October 24-28 APG, MD DOEHRS-IH Initial Army Course



August 2016

• August 1-5 APG, MD DOEHRS-IH Initial Army Course



TBD 2016

• Date/Location TBD Indoor Air Quality Course CP12 Sponsored



February 2017

• TBD APG, MD Blueprint Reading & Design Review Course

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On the Web:

<http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx>



New Army DOEHRS-IH Training Opportunities

- May 16-20 at APG, MD (North Campus-28 seats)
- May 31- June 3, 2016 at APG, MD (Edgewood Campus-16 seats)
- Phase 1 must be completed in Blackboard prior to attending
- The enrollment password is 201

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