August 2021
Issue 119

# Army Industrial Hygiene News and Regulatory Summary

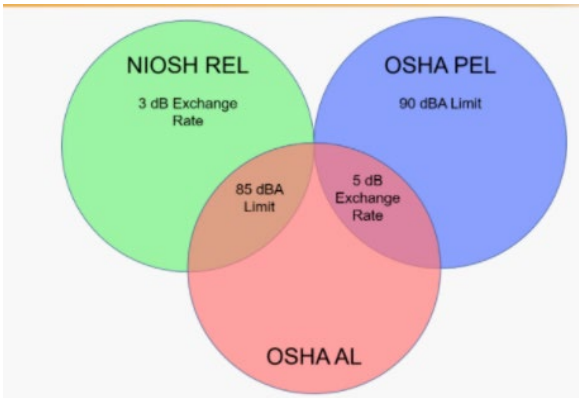
## Hazardous Substances

### Beyond Descriptive Statistics: Using Additional Analyses to Determine the Technological Feasibility of Meeting A New Exposure Limit

*Special Interest Articles:*



In determining whether a new permissible exposure limit is technologically feasible, the Occupational Safety and Health Administration (OSHA) and various courts have used poorly defined criteria such as whether "most employers most of the time" are able to comply with a standard. This vague definition creates problems when employers try to determine the best way to protect their workers and estimate the costs to remain in compliance with the permissible exposure limit. This article proposes a more rigorous approach to determine feasibility. By utilizing the best available statistical methods, employers and rule makers can better understand the variability within existing exposure data to determine the feasibility of new exposure limits. There are several readily available statistical tools that can be used for this purpose. To illustrate these techniques, a subset of data from the foundry industry and analysis from the OSHA respirable crystalline silica rulemaking proceeding are compared to methods published by the National Institute for Occupational Safety and Health in 1977 and a more sophisticated Bayesian approach. The results of this analysis suggest that complying with a new permissible exposure limit is more challenging than




what is implied by OSHA's analysis, and calls into question its method of determining compliance. In the same vein, OSHA should move away from assessing compliance based on individual measurements and instead use a statistical approach to determine if a workplace is in compliance. These changes will encourage employers to better characterize occupational exposures, and will ultimately lead to better protection for employees while also providing employers protection from violations due to one-off overexposures.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 13 Aug 2021 (Available with AIHA membership)*

*Contents:*



## Face Masks Protect Against Aerosolized Toxins from Algal Blooms, Study Finds

Intense blooms of toxic algae are becoming common occurrences along the coast of Florida and elsewhere. Results from a new study led by University of Miami (UM) scientists found that wearing the face mask everyone has become accustomed to during the COVID-19 pandemic may help protect against these airborne toxins too.

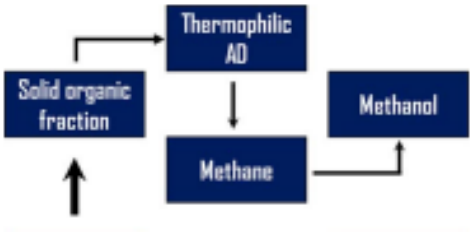
The UM Rosenstiel School of Marine and Atmospheric Science researchers designed an experiment to understand how effective commonly available air conditioner filters and face masks are at filtrating out the toxins emitted during harmful algal bloom events.

*Read more:*
https://medicalxpress.com/news/2021-08-masks-aerosolized-toxins-algal-blooms.html

## Scientists Turn Harmful Methane into Methanol at Room Temperature

A “tantalizing” ” principle borrowed from nature turns harmful methane into useful methanol at room temperature. A team of researchers from Stanford University and the University of Leuven in Belgium has further elucidated the process in a new study in a recent edition of Science.

The discovery may be an important step toward a methanol fuel economy with abundant methane as the feedstock, an advance that could fundamentally change how the world uses natural gas. Methanol – the simplest alcohol --– is used to make various products, like paints and plastics, and as an additive to gasoline. Rich in




hydrogen, methanol can drive new-age fuel cells that could yield significant environmental benefits.

*Read more:*
https://scitechdaily.com/scientists-turn-harmful-methane-into-methanol-at-room-temperature/

## “Phantom Head” Used to Devise Strategies to Reduce Aerosolization of SARS-CoV-2 During Dental Procedures

Limiting infection transmission is central to the safety of all in dentistry, particularly during the current SARS-CoV-2 pandemic, yet many dental procedures unavoidably generate aerosols. In the study “Dental

Mitigation Strategies to Reduce Aerosolization of SARS-CoV-2,” published in the Journal of Dental Research (JDR), researchers at the University of Leeds, England, UK used a ‘phantom head’ model to mimic dental procedures in a multifaceted approach to measure aerosol dispersal in a dental surgery setting and determine the potential of different mitigation strategies to reduce the infection risk to the dental team from bioaerosol exposure during routine dental procedures.

In a dental surgery setting, crown preparation and root canal access procedures were performed with an air

turbine or high-speed contra-angle hand-piece (HSCAH) operated with water cooling, with mitigation via rubber dam or high-volume aspiration and a no mitigation control. A phantom head was used with a flow of artificial saliva infected with Φ6-bacteriophage, a surrogate virus for SARS-CoV-2. Bioaerosol dispersal was measured using agar settle plates lawned with the Φ6-bacteriophage host, Pseudomonas syringae. Viral air concentrations were assessed by active air sampling, and particle size and quantities were monitored using optical particle counters.

*Read more:*
https://scitechdaily.com/phantom-head-used-to-devise-strategies-to-reduce-aerosolization-of-sars-cov-2-during-dental-procedures/

## Impact of Sampling and Storage Stress on the Recovery of Airborne SARS-Cov-2 Virus Surrogate Captured by Filtration

Environmental air sampling of the SARS-CoV-2 virus in occupational and community settings is pertinent to reduce and monitor the spread of the COVID pandemic. However, there is a general lack of standardized procedures for airborne virus sampling and limited knowledge of how sampling and storage stress impact the recovery of captured airborne viruses. Since filtration is one of the commonly used methods to capture airborne viruses, this study analyzed the effect of sampling and storage stress on SARS-CoV-2 surrogate virus (human coronavirus OC43, or HCoV-OC43) captured by filters. HCoV-OC43, a simulant of the SARS-CoV-2, was aerosolized and captured by PTFE-laminated filters. The impact of sampling stress was evaluated by comparing the RNA yields recovered when sampled at 3 L/min and 10 L/min and for 10 min and 60 min; in one set of experiments, additional stress was added by passing clean air through filters with the virus for 1, 5, and 15 hr. The impact of storage stress was designed to examine RNA recovery from filters at room temperature (25 °C) and refrigerated conditions (4 °C) for up to 1 week of storage. To our knowledge, this is the first report on using HCoV-OC43 aerosol in air sampling experiments, and the mode diameter of the virus aerosolized from the growth medium was 40–60 nm as determined by SMPS + CPC system (TSI Inc.) and MiniWRAS (Grimm Inc.) measurements. No significant difference was found in virus recovery between the two sampling flow rates and different sampling times ($p > 0.05$). However, storage at room temperature (25 °C) yielded ~2x less RNA than immediate processing and storage at refrigerated conditions (4 °C). Therefore, it is recommended to store filter samples with viruses at 4 °C up to 1 week if the immediate analysis is not feasible. Although the laminated PTFE filter used in this work purposefully does not include a non-PTFE backing, the general recommendations for handling and storing filter samples with

viral particles are likely to apply to other filter types.

*Read more: Journal of Occupational and Environmental Hygiene, Published online: 17 Aug 2021 (Available with AIHA membership)*

## Using Graphene Foam to Filter Uranium and Other Heavy Metals from Drinking Water

Some kinds of water pollution, such as algal blooms and plastics that foul rivers, lakes, and marine environments, lie in plain sight. But other contaminants are not so readily apparent, which makes their impact potentially more dangerous. Among these invisible substances is uranium. Leaching into water resources from mining operations, nuclear waste sites, or from natural subterranean deposits, the element can now be found flowing out of taps worldwide.

In the United States alone, "many areas are affected by uranium contamination, including the High Plains and Central Valley aquifers, which supply drinking water to 6 million people," says Ahmed Sami Helal, a postdoc in the Department of Nuclear Science and Engineering. This contamination poses a near and present danger. "Even small concentrations are bad for human health," says Ju Li, the Battelle Energy Alliance Professor of Nuclear Science and Engineering and professor of materials science and engineering.

*Read more:* https://scitechdaily.com/using-graphene-foam-to-filter-uranium-and-other-heavy-metals-from-drinking-water/

# *Radiation*

## National Academies Recommends NASA Update Radiation Exposure Limits for Astronauts

To protect the health and safety of astronauts, NASA should proceed with its proposals to set a universal careerlong radiation dose limit – regardless of age or gender – and improve its system for communicating cancer risks, a recently released report from the National

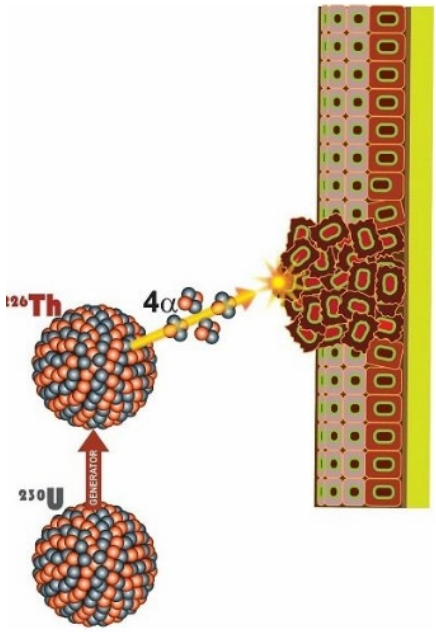
Academies of Sciences, Engineering and Medicine recommends.

According to the report – prepared by an ad hoc committee of the National Academies at NASA's request – a limit of about 600 millisieverts would protect astronauts during space travel, which exposes the human body to higher levels of ionizing radiation than on Earth. That radiation can lead to long-term health issues such as cancer, cataracts and heart problems.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/21541-national-academies-recommends-nasa-update-radiation-exposure-limits-for-astronauts

## Harnessing the Power of Uranium to Treat Diseases like Cancer

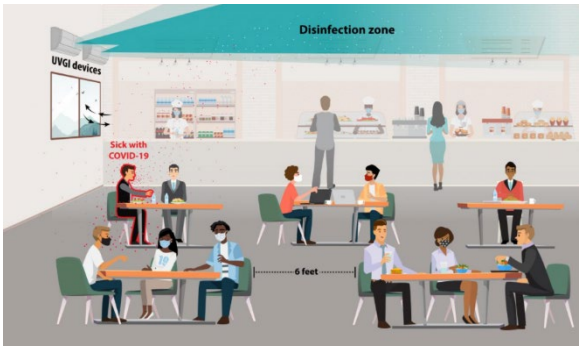
The Science
Scientists have developed a new system for producing radioactive isotopes, or "radioisotopes" for cancer therapy. The system uses a simple radionuclide generator to repeatedly separate thorium-226 from its longer-lived parent isotope, uranium-230. Both of these isotopes emit radioactive alpha particles. This makes them candidates for use in targeted alpha therapy agents. These are substances that deliver targeted particles to treat disease. The uranium-230/thorium-226 pair has the unique advantage of emitting multiple alpha particles as they decay. This means they can deliver more destructive energy to cancer cells.




*Read more:*
https://scitechdaily.com/harnessing-the-power-of-uranium-to-treat-diseases-like-cancer/

## *Ventilation*

### Best Practices for Implementing UVGI Solutions into HVAC Systems




As the country continues to recover from the COVID-19 pandemic, building owners, managers, and operators across the country are faced with the formidable task of creating safer, cleaner, and more sanitary environments for occupants — particularly amid the reopening of and return to private and public spaces. In the coming weeks and months, tens of millions of employees will be returning to their workplaces as companies shift back to fully in-person or hybrid work environments. In addition, come this fall, students will head back into classrooms to resume in-person learning. In light of this mass return, managers, company leaders, and school district administrators should explore all available options to heighten the safety and cleanliness of their respective spaces, especially the air. According to recent survey data, nearly a third of remote workers still feel uncomfortable returning at this time, indicating lingering concerns over their environments following more than a year of heightened attention to health and sanitation.

*Read more:*
https://www.achrnews.com/articles/145415-best-practices-for-implementing-uvgi-solutions-into-hvac-systems

## *PPE*

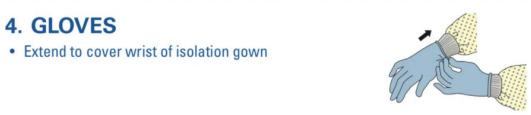
### A Pilot Study of Core Body Temperatures in Healthcare Workers Wearing Personal Protective Equipment in a High-Level Isolation Unit

Personal protective equipment used by healthcare workers to mitigate disease transmission risks while caring for patients with high-consequence infectious diseases can impair normal body cooling mechanisms and exacerbate physiological

strain. Symptoms of heat strain (e.g., cognitive impairment, confusion, muscle cramping) are especially harmful in the high-risk environment of high-consequence infectious disease care. In this pilot study, the core body temperatures of healthcare workers were assessed using an ingestible, wireless-transmission thermometer while performing patient care tasks common to a high-level isolation unit setting in powered air purifying respirator (PAPR)-level. The objective was to determine the potential for occupational health hazard due to heat stress in an environmentally controlled unit. Maximum core temperatures of the six participants ranged from 37.4 °C (99.3 °F) to 39.9 °C (103.8°F)°F) during the 4-hr shift; core temperatures of half (n = 3) of the participants exceeded 38.5 °C (101.3 °F), the upper core temperature limit. Future investigations are needed to identify other heat stress risks both in and outside of controlled units. The ongoing COVID-19 pandemic offers unique opportunities for field-based research on risks of heat stress related to personal protective equipment in healthcare workers that can lead to both short- and long-term innovations in this field.

*Read more: Journal of Occupational and Environmental Hygiene,* Published online: 12 Aug 2021 *(Available with AIHA membership)*

## Faulty Glove-Gown Connections Endanger Health Care Workers, Patients




There needs to be a national standard for measuring the effectiveness of personal protective equipment at its most vulnerable spot—the wrist, urge CDC investigators.

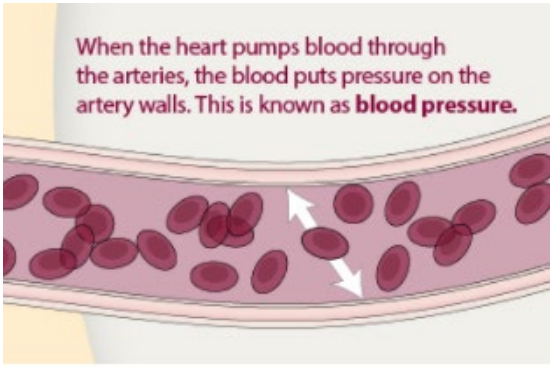
Proper donning and doffing of personal protective equipment (PPE) lowers the chance of spreading pathogens in a hospital or other health care facility. It involves several steps but it's worth doing well because the equipment protects patients and health care workers from the many deadly pathogens that may strike. COVID-19 and its variants aren't the only dangers that infection preventionists (IPs) have to deal with.

The Centers for Disease Control and Prevention (CDC) offers IPs and other health care professionals a step-by-step guide for how best to don and doff PPE. And as the CDC's National Institute for Occupational Safety and Health (NIOSH) points out, the various parts of PPE might come from different sources—or manufacturers—and that presents a problem.

*Read more:*
https://www.infectioncontroltoday.com/view/faulty-glove-gown-connections-endanger-health-care-workers-patients

## *Noise*

### Examining Correlation between Occupational Noise, Heart Disease




Occupational settings can involve exposure to loud noise, a known and preventable contributor to hearing loss. Hearing conservation programs and policies aim to protect workers from noise-induced hearing loss, but it remains unclear whether stress reactions caused by noise exposure might also lead to other negative health outcomes—possibly at sound levels below those associated with hearing impairment.

In The Journal of the Acoustical Society of America, researchers from the Canadian Federal Department of Health describe how data from the Canadian Health Measures Survey do not support an association between loud noise exposure and changes in biomarkers for cardiovascular disease or outcomes, such as hypertension, myocardial infarction, or stroke.

*Read more*:
https://medicalxpress.com/news/2021-08-occupational-noise-heart-disease.html

## *Preventive Medicine*

### Physics Shows Why 20 Seconds Is Right for Hand-Washing

Twenty seconds.
That's how long you need to wash your hands to remove germs, a new physics study confirms.

Typical hand-washing guidelines—including those from the U.S. Centers for Disease Control and Prevention—advise scrubbing your hands for a minimum of 20 seconds.

To assess that recommendation, researchers used a mathematical model to examine the key mechanics of hand-washing and determine how long it takes to remove viruses, bacteria and other particles from the hands.

*Read more:*
https://medicalxpress.com/news/2021-08-physics-seconds-hand-washing.html

## Biomarkers: Do We Really Need to Discuss Privy Privacy?

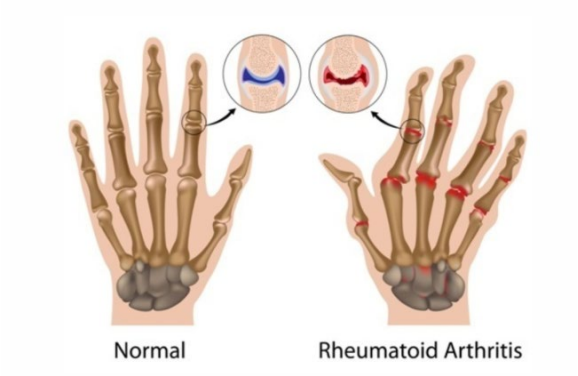
Two media stories this week raised a stink about post-pandemic personal privacy as more sensors sniff out our secrets. The first discussed public analysis of wastewater for public health purposes. The other covered the use of dogs as disease detection systems. Both describe exposure of public action in realms once thought clearly to be personal and private.

The issue in both cases is biomarkers – a measurable substance in an organism – in this case a person – whose presence is indicative of some phenomenon such as disease, infection, or environmental exposure. In first instance, human liquid and solid waste is being tested right now to measure the spread of COVID-19 variants, find residual evidence of opioid abuse, and note the continued recycling of polyhalogenated chemicals in our water supply. In the second instance, trained dogs, using their spectacularly sensitive olfactory processes, can screen humans very effectively for pandemic diseases or virtually any cancer with a quick sniff and an immediate result. Did you ever think you needed to worry because your biomarkers are showing? Until now, you may not have known it was possible.

*Read more:*
https://www.jdsupra.com/legalnews/biomarkers-do-we-really-need-to-discuss-4115897/

## Smoking Exposure during Childhood May Increase Risk of Rheumatoid Arthritis

A new study by investigators from Brigham and Women's Hospital found a potential direct link between exposure to parental smoking during childhood and increased risk of seropositive rheumatoid arthritis (RA) later in life. Researchers utilized established longitudinal data from 90,923 women in the Nurses' Health Study II (NHSII) to elucidate the relationship between passive smoking exposure and incident RA. Passive exposure was broken down into three categories, including maternal smoking during pregnancy, parental smoking during childhood, and years lived with smokers since age 18. Even with personal smoking accounted for, passive exposure to parental smoking during childhood was found to increase risk of incident seropositive RA by 75-percent.




Findings are published in Arthritis & Rheumatology.

*Read more:*
https://medicalxpress.com/news/2021-08-exposure-childhood-rheumatoid-arthritis.html

## Sit All Day for Work? A Simple Step Can Cut Your Health Risk

Take a work break: A small, new study suggests that getting out of your chair every half hour may help improve your blood sugar levels and your overall health.

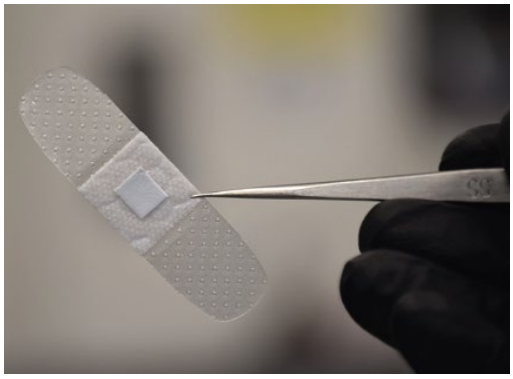
Every hour spent sitting or lying down increases the risk for metabolic syndrome and type 2 diabetes, the study authors said. But moving around during those sedentary hours is an easy way to improve insulin sensitivity and reduce the odds of developing metabolic syndrome, which is a group of conditions that can lead to heart disease, diabetes, stroke and other health problems.

*Read more:*
https://medicalxpress.com/news/2021-08-day-simple-health.html

## Bio-Inspired, Blood-Repelling Tissue Glue Could Seal Wounds Quickly

Inspired by the sticky substance that barnacles use to cling to rocks, MIT engineers have designed a strong, biocompatible glue that can seal injured tissues and stop bleeding.

The new paste can adhere to surfaces even when they are covered with blood, and can form a tight seal within about 15 seconds of application. Such a glue could offer a much more effective way to treat traumatic injuries and to help control bleeding during surgery, the researchers say.



*Read more*:
https://medicalxpress.com/news/2021-08-bio-inspired-blood-repelling-tissue-wounds-quickly.html

# *Environmental Health*

## Common Pesticide May Contribute to Global Obesity Crisis

A commonly-used pesticide could be partially responsible for the global obesity epidemic, says a study led by McMaster University scientists.

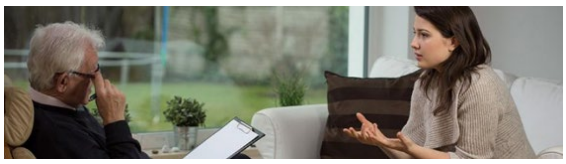
Researchers discovered that chlorpyrifos, which is banned for use on foods in Canada but widely sprayed on fruits and vegetables in many other parts of the world, slows down the burning of calories in the brown adipose tissue of mice. Reducing this burning of calories, a process known as diet-induced thermogenesis, causes the body to store these extra calories, promoting obesity.

*Read more*:
https://medicalxpress.com/news/2021-08-

common-pesticide-contribute-global-obesity.html

## Study: Exposure to Air Pollution Linked With Increased Mental Health Service Use

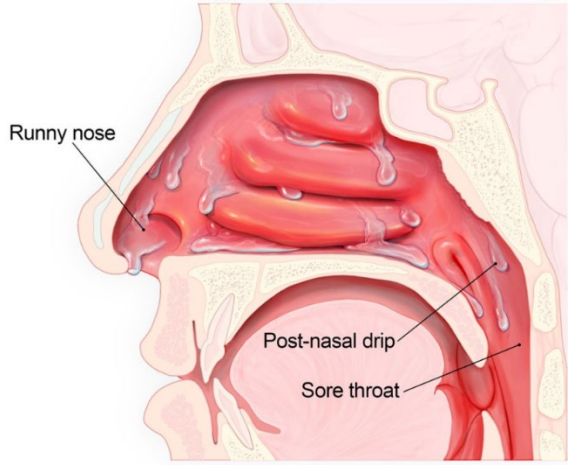
Exposure to traffic-related air pollution is associated with increased mental health service-use among people recently diagnosed with psychotic and mood disorders such as schizophrenia and depression, a study on data from over 13,000 people has found.
Increased use of mental health services reflects mental illness severity, suggesting that initiatives to lessen air pollution could improve outcomes for those with these



disorders and reduce costs of the healthcare needed to support them.

*Read more:*
https://medicalxpress.com/news/2021-08-exposure-air-pollution-linked-mental.html

## Common Environmental Pollutants in Air and Water Damage Our Mucus Structure and Function




Major disruptions to our health and quality of life are front of mind in an era when wildfires, floods, and the ongoing COVID-19 pandemic impact Earth's population daily.

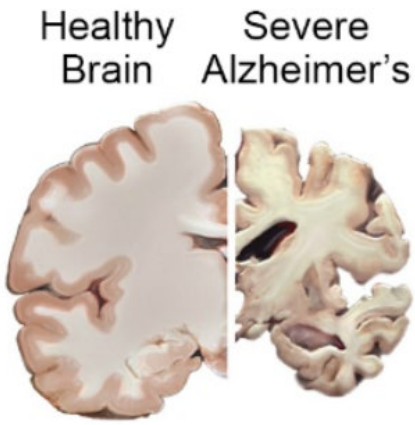
Amid these glaring threats, the slow but rising creep of air and water pollution that humans encounter and even ingest may be easy to overlook, but research continues to reveal new data proving these exposures do impact human health.

In Biophysics Reviews, from AIP Publishing, researchers from the Technical University of Munich review recent scientific literature about the effects of particle contaminants on the mucosal system, an internal membrane that serves as the body's lubricant and the first line of defense from infections and toxins. These data establish a clear link between exposure to airborne or

waterborne particulate matter and several health conditions.

*Read more*: https://scitechdaily.com/common-environmental-pollutants-in-air-and-water-damage-our-mucus-structure-and-function/

## Environmental Pollution May Contribute to Racial/Ethnic Disparities in Alzheimer's Disease Risk, Says New Study




Fine particle pollution may be one reason why Black women have double the risk of developing Alzheimer's than white women, suggests new research from the Keck School of Medicine of USC.

For decades, research has shown the risk for developing Alzheimer's disease in the United States is dramatically higher among African American populations than in non-Hispanic white populations. Scientists have suspected a variety of contributing factors, but the underlying reasons have remained unclear.

*Read more:* https://medicalxpress.com/news/2021-08-environmental-pollution-contribute-racialethnic-disparities.html

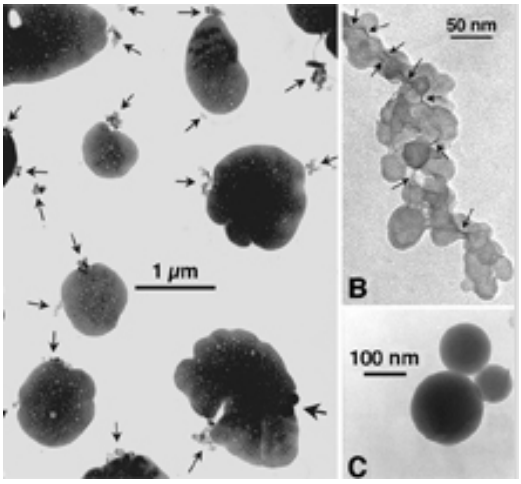
## Toxic Carpet: We're Breathing Harmful Forever Chemicals in Homes, Offices, and Classrooms

The air we breathe in our homes, schools, and workplaces can be polluted with harmful PFAS chemicals, according to a study published today (August 31, 2021) in Environmental Science & Technology Letters. A new measurement technique developed by the research team detected PFAS chemicals in the air of kindergarten classrooms, university offices and laboratories, and a home—some with levels as high as those measured at an outdoor

clothing company and carpet stores selling PFAS-treated products. The results suggest indoor air is an underestimated and potentially important source of exposure to PFAS, particularly for children.

*Read more:* https://scitechdaily.com/toxic-carpet-were-breathing-harmful-forever-chemicals-in-homes-offices-and-classrooms/

## Black Carbon Aerosols in Beijing, China Become "Slim"




Black carbon (BC) is the product of incomplete combustion of fossil fuels, biofuel, and biomass. By strongly absorbing solar radiation, BC can heat the atmosphere, affect its stability, and further deteriorate air quality.
The climatic and environmental effects of BC are determined by its loading in the atmosphere. Scientists find that microphysical characteristics of BC, such as particle size and mixing state, can also influence these effects.

The team pointed out that the reduction of the thickly coated BC would further lead to a decline of solar radiation absorption by atmospheric aerosols, besides the decline resulting from the BC loading itself.

*Read more:* https://scitechdaily.com/black-carbon-aerosols-in-beijing-china-become-slim/

# *Ergonomics*

## Nearly 100% of Hygienists Have Pain on the Job. What Can You Do?

The dental hygiene profession is at high risk for musculoskeletal disorders (MSDs), with 96% of hygienists reporting pain due to their clinical work habits.1 High pain rates come from repetitive movements, bending, twisting, reaching, incorrect operator and patient positioning, and static posture. According to the Centers for Disease Control and Prevention (CDC), MSDs are the

number one reason people are on disability.[2] Since dental hygienists are at high risk for MSDs, it's crucial to develop strong ergonomic habits. Focusing on ergonomics, including proper posture, positioning, and healthy habits, will help you practice pain-free for the duration of your career.

*Read more:*
https://www.rdhmag.com/career-profession/personal-wellness/article/14209263/nearly-100-of-hygienists-have-pain-on-the-job-what-to-do

## *Safety*

### Understanding the Differences Between Construction and General Industry Confined Space Regulations

Rarely are construction and general industry OSHA standards identical or interchangeable. When it comes to OSHA's confined space standards, there are some notable differences between the Construction 29 CFR 1926, Subpart AA standard and General Industry 29 CFR 1910.146. Before we dive into the confined space details, let's first define some terms. OSHA says that "general industry" is any industry not included in construction, agriculture, or maritime. OSHA clarifies other nuances in several letters of interpretation (LOI):

- The first is from February 1, 1996. OSHA makes it clear that Section 29 CFR 1910.12(b) defines construction work as "construction, alteration, and/or repair including painting, and decorating." Further, construction work is defined as work not limited to new construction, which includes the repair of existing facilities, and the replacement of structures and their components."

*Read more:*
https://ohsonline.com/Articles/2021/08/02/Understanding-the-Differences.aspx

# An Exploratory Survey of Heat Stress Management Programs in the Electric Power Industry

Workers in the electric power industry commonly perform physically demanding jobs in hot environments, which combined with the protective clothing worn, places them at risk of disease and health problems related to occupational heat stress. With climate change fueling an increase in the occurrence of hot weather, a targeted approach to heat stress management within the industry is needed. To better understand current heat management practices and identify opportunities for refinement, we conducted an exploratory survey among 33 electric utility companies operating in the United States (n = 32) and Canada (n = 1).

Forty-six employees responsible for health and safety of company workers completed 26 questions assessing heat stress as a workplace hazard and heat management practices within five categories: (1) use and administration of heat stress management program; (2) surveillance of heat stress and heat strain; (3) job evaluation and heat-mitigation guidance; (4) education and training programs; and (5) treatment of heat-related illness. While a majority of the respondents (87.0%) indicated heat stress is a workplace hazard and their organization has a heat stress management program (78.3%), less than half reported performing real-time monitoring of heat stress in the workplace (47.8%) or tracking worker heat strain (19.6%) (i.e., physiological response to heat stress). However, most organizations indicated they conducted pre-job evaluations for heat stress (71.7%) and implemented an employee training program on managing heat stress (73.9%). The latter included instruction on various short- and long-term heat-mitigation guidance for workers (e.g., use of work exposure limits, hydration protocols) and the prevention (52.2%) and treatment (63.1%) of heat-related illnesses. Altogether, our survey demonstrates that although many companies employ some form of a heat management program, the basic components defining the programs vary and are lacking for some companies. To maximize worker health and safety during work in hot environments, a consensus-based approach, which considers the five basic components of a heat management program, should be employed to formulate effective practices and methodologies for creating an industry-specific heat management strategy.

*Read more: Journal of Occupational and Environmental Hygiene Published online: 18 Aug 2021 (Available with AIHA membership)*

## NIST's Emberometer Could Gauge Threat of Wildfire-Spreading Embers

As wildfire fronts advance through landscapes or communities on the ground, they also attack from above, launching volleys of glowing embers into the air. Also known as firebrands, these specks of burning debris can glide for up to 40 kilometers(approximately 24 miles) before landing and can cause up to 90%of home and business fires during wildfires. Guidance on fending off ember attacks is sparse, largely because so little is known about embers' behavior. But a new instrument, dubbed an emberometer, could offer a glimpse at their true nature. In a paper published in *Experiments in Fluids,* researchers at the National Institute of Standards and Technology (NIST) showcase the tool's ability to characterize the size and trajectory of embers, which may provide insights into their level of threat. With NIST's new tool, fire engineers may be better equipped to protect buildings from embers and could produce data to support cost-effective guidance in building codes.

*Read more:*
https://www.nist.gov/news-events/news/2021/08/nists-emberometer-could-gauge-threat-wildfire-spreading-embers

## Industrial Vacuum Cleaner Options for Cleaning Confined Spaces

Whether it's eliminating the need to enter a permit-only confined space to clean accumulations of combustible dusts from grain elevators, or eliminating the amplified ergonomic, fall and overexertion hazards associated with cleaning non-permit confined spaces, such as blast recovery and sludge pits, industrial vacuum cleaners are an accepted engineering control to mitigate safety hazards and support compliance with OSHA and NFPA guidelines.

Employing industrial vacuum systems in housekeeping routines to remove dust and debris not only creates a safer environment but also saves companies tens of thousands of dollars per year in labor costs, equipment maintenance, material expenditures (through reclamation), and through increased uptime by reducing lengthy production interruptions for manual cleaning. In environments where cleaning needs to occur in confined spaces, especially in permit-required spaces, the ROI of an industrial vacuum cleaning system quickly rises when vacuums allow for cleaning from outside the enclosed space or cut man hours in half.

*Read more:*
https://ohsonline.com/Articles/2021/08/02/Industrial-Vacuum-Cleaner.aspx

## How Much Is a Safety Leader Worth?

The 2021 National Safety & Salary Survey identifies what a typical safety leader gets paid, and how satisfied they are with their jobs and the EHS profession.

The COVID-19 pandemic brought home just how essential safety professionals are to their companies, but how well does that translate into how valuable their companies consider their safety leaders? We expanded our annual survey to create what we're now calling the National Safety & Salary Survey in an effort to identify how much a typical safety leader gets paid, where the highest-paid leaders live, and what types of companies tend to pay the most.

*Read more*:
https://www.ehstoday.com/safety/article/21172264/how-much-is-a-safety-leader-worth

## *Emergency Preparedness*

### FEMA Launches National Risk Index Update

FEMA announced the full application launch of the National Risk Index, a new online resource that provides a clear, visual guide to natural hazard risks throughout the United States, and information to help communities to understand and reduce those risks, whether they involve flooding, wildfire, extreme heat, or drought. Developed with attention to the increased risks from climate change, and the need to develop new approaches to reduce those risks, this online mapping application provides simple measures of a community's risk for 18 natural hazards. The online mapping application also measures resilience, social vulnerability and expected annual loss.

*Read more:*
https://www.hstoday.us/subject-matter-areas/climate-security/fema-launches-national-risk-index-update/

## *Deployment Health*

### NICoE, NHRC Team up to Make CAREN Technology Portable

Since the National Intrepid Center of Excellence opened in 2010, Biomedical Engineer Sarah Kruger has operated the center's Computer Assisted Rehabilitation Environment (CAREN).

The CAREN is a large-scale virtual-reality system used to evaluate and treat NICoE patients with traumatic brain injury (TBI) and posttraumatic stress disorder (PTSD).

Now, her team is collaborating with researchers at the Naval Health Research Center (NHRC) to scale the technology down to a mobile system, with the long-

term goal of making the novel therapy more attainable throughout both the Military Health System and the Defense Intrepid Network for TBI and Brain Health.
"Head-mounted display technology has become more affordable and accessible over the past couple of years," said Kruger. "It's also portable. So we want to leverage what we've learned about the [CAREN] system and see if we can make it possible to use similar treatments without committing the space or funding to a CAREN."

*Read more:* https://health.mil/News/Articles/2021/08/12/NICoE-NHRC-Team-Up-To-Make-CAREN-Technology-Portable

## *Nanotechnology*

### Sizing Nanoparticles Using Fluid-Filled Tubes

The functionality of nanoparticles in a host of applications, including drug delivery and nano-optics, is often dictated by their mass and size. Measuring these properties simultaneously for the same nanoparticle has also been challenging.

Now scientists from the University of Melbourne and Massachusetts Institute of Technology (MIT) have discovered that this measurement feat can be performed by passing the nanoparticles, in their native solution, through an inexpensive and simple mechanical tube.

In a paper released today in Nature Communications researchers detail how

they made the discovery using existing instrumentation and new mathematics.

*Read more:* https://phys.org/news/2021-08-sizing-nanoparticles-fluid-filled-tubes.html

## *Regulatory Research & Industrial Hygiene Professional News*

***Executive Order***

### Pandemic 'Recall' Laws Give Nonunion Workers Union-Style Rights


Mandates that employers must offer laid-off workers their jobs back before hiring other applicants are the latest example of workplace protections making the leap from the union bargaining table to state or municipal law.

California, Connecticut, and Nevada, along with more than a dozen cities around the U.S., have enacted "right to recall" or "right to return" laws in response to the wave of layoffs brought on by the Covid-19 pandemic.
Each is a temporary measure, applying to workers in specific industries who were laid off in connection with pandemic health orders or business shutdowns. In some cases, they require employers to recall laid-off workers in order of seniority. Their adoption into law is novel and part of a gradual push by Democratic policymakers to extend union-style job protections to nonunion workplaces.

*Read more:*
https://news.bloomberglaw.com/daily-labor-report/pandemic-recall-laws-give-nonunion-workers-union-style-rights

***FDA***

### FDA Gives Pfizer's COVID-19 Vaccine Its Full Approval

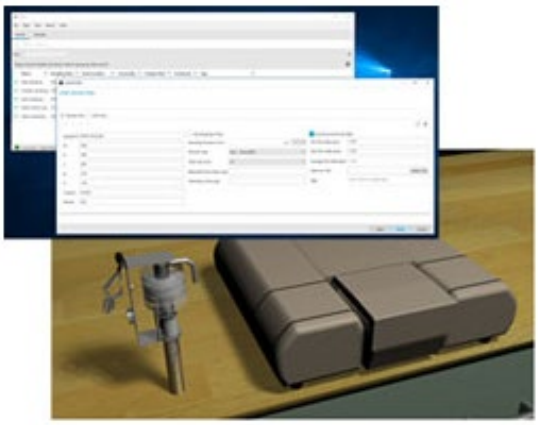
The Food and Drug Administration on Monday granted full approval to the Pfizer-BioNTech COVID-19 vaccine for people 16 and older, making it the first vaccine against the virus to earn that status in the United States.

"The FDA's approval of this vaccine is a milestone as we continue to battle the COVID-19 pandemic," Janet Woodcock, the acting FDA administrator, said in a statement. "While this and other vaccines have met the FDA's rigorous, scientific standards for emergency use authorization, as the first FDA-approved COVID-19 vaccine, the public can be very confident that this vaccine meets the high standards for safety, effectiveness, and manufacturing quality the FDA requires of an approved product."


*Read more:*
https://www.rollcall.com/2021/08/23/fda-gives-pfizers-covid-19-vaccine-its-full-approval/

## *NIOSH*

## NIOSH Finalizes Silica Monitoring Software for Miners



NIOSH has finalized the beta version of an online software tool designed to provide post-shift assessments of mine worker exposure to respirable crystalline silica.

Officially released in June after its initial unveiling in September 2018, the Field Analysis of Silica Tool uses portable infrared technology to analyze exposure to crystalline silica – a carcinogen found in sand, stone and artificial stone. The software accounts for changing mine conditions to provide accurate and immediate readings of respirable crystalline silica levels, offering same- or next-day results, NIOSH states.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/21591-niosh-finalizes-silica-monitoring-software-for-miners

## *OSHA*

### South Carolina OSHA Plans to Adopt an Infectious Disease Standard

South Carolina OSHA has announced its plan to adopt a standard on infectious diseases in the workplace, including COVID-19.

The standard will be "an alternative" to federal OSHA's emergency temporary standard on COVID-19 focused on health care workers, which went into effect June 21.

SC OSHA operates under OSHA's State Plan program, so its standards must be "at least as effective as" federal standards, meaning they can be more stringent but not less stringent.

*Read more:*
https://www.safetyandhealthmagazine.com/articles/21549-south-carolina-osha-plans-to-adopt-an-infectious-disease-standard

## *EPA*

### EPA Adds 36 Chemicals to the Safer Chemical Ingredients List

The U.S. Environmental Protection Agency (EPA) announced on August 10, 2021, that it added 36 chemicals to the Safer Chemical Ingredients List (SCIL). EPA states that the SCIL "is a living list of chemicals, by functional-use class, that EPA's Safer Choice program has evaluated and determined meet Safer Choice criteria." Listed chemicals "are among the safest for their functional use." According to EPA, the SCIL is a "critical resource" that can be used by many different stakeholders, including:

- Product manufacturers that use the SCIL to help them make high-

functioning products that contain safer ingredients;

- Chemical manufacturers that use the SCIL to promote the safer chemicals they manufacture;

*Read more:*
https://www.epa.gov/chemicals-under-tsca/epa-updates-safer-chemical-ingredients-list

## EPA, Army Take Action to Address Implementation Challenges with 2020 Clean Water Act Section 401 Certification Rule

Today, the U.S. Environmental Protection Agency (EPA) and the U.S. Department of the Army issued a joint memorandum regarding implementation of the 2020 Clean Water Act (CWA) Section 401 Certification Rule associated with U.S. Army Corps of Engineers (Corps) permits. EPA and Army are closely coordinating to address challenges and better empower states and Tribes to protect public health and the environment.

*Read more:*
https://www.epa.gov/newsreleases/epa-army-take-action-address-implementation-challenges-2020-clean-water-act-section

## *APHC*

### *Training*


As we continue to combat the COVID-19 virus, we are making our best efforts to provide you with Blueprint, Design Review, and Ventilation lessons that otherwise you'd travel to acquire.

Due to the changing MS TEAMS and DCS environments, and the ability to host a live event with hundreds of participants, we've been providing "Pre-recorded" webinar events.

All handouts are made available, and can be downloaded from your Blackboard webinar course shell with recorded material for you to view ad-hoc, and participation certificates awarded for each lesson survey/evaluation completed.


You may ask yourself "what's the difference between a live webinar and a pre-recorded webinar?"

Not only does a pre-recorded webinar allow you to view in your own time zone at a time most convenient for you, it allows us to edit and re-record segments, swap out segments that didn't work so well, add effects, graphics, and more in the post-production stage.

Pre-recorded webinars give a more polished effect than a live webinar. Right now, we're all adjusting to having more remote meetings, watching broadcasts instead of attending live events, and spending a little more time on our computers than doing surveys.

It is our goal to connect with you, getting you the relevant and emerging information you need to help your clients. Our sustainment webinars, whether live or pre-recorded, can help you achieve those goals.


How to participate in a "pre-recorded" webinar:

1. Navigate to your "Army Industrial Hygiene Webinar" shell on our Blackboard site https://aiph-dohs.ellc.learn.army.mil
2. Use the left navigation tile to locate SPECIAL EDITION WEBINARS
3. Select each webinar link to view
4. Record case sensitive code words while viewing
5. Use the left navigation tile to locate COLLECT CERTIFICATES
6. Select the link for your webinar and use code word to initiate certificate

NOTE: Our classroom space is not allowing traditional classroom courses due to the pandemic. We continue our efforts to provide relevant content that aligns with these courses via our webinars.


DOCUMENT LIBRARY
COLLECT CERTIFICATES
**NEW WEBINARS**
ASK THE SME RECORDINGS
MANAGE YOUR IH MONSTER RECORDINGS
ARMY IH FEILD OP MANUAL RECORDINGS
IH LEADER RECORDINGS
SPECIAL EDITION WEBINAR RECORDINGS
All slide handouts are here
Most recent recordings here
SME recording archive
MONSTER recording archive
FOM recording archive
LEADER recording archive
Special Edition archive


ABOUT THE "ASK THE SME" WEBINARS
These "Ask the SME" Webinars are about communicating freely with subject matter experts.
Most of the subject matter experts have lead in slides to spark conversation, and then take questions from the live a
If you are here, then you probably missed the live event. That's OKAY. This is why we provide recordings.
If you have questions for the subject matter experts that
ot addressed during the live event, we encourage yo
Description
SLIDE HANOUTS: Ask the SME Webinars
Enabled: Statistics Tracking
Attached Files:
11/4/2016 Monster: All About ANOVA (1.918 MB)
11/14/2018 SME: Hexavalent Chromium 48min (451.598 KB)
2/27/2019 SME: Ergonomics 51min (402.939 KB)
8/6/2019 SME: Pharmacy Hazardous Drug Samples 28min (1.569 MB)
3/4/2020 SME: APHC Analytical Lab (1.425 MB)
6/17/20 SME: IH Contract Technical Monitors (1.0hr) (773.407 KB)
OWAS Table.doc (90.5 KB)
Liberty Mutual Tables.pdf (874.9 KB)
OWAS Postures.pdf (135.149 KB)
12/2/20 SME: DOEHRS-IH Report Standardization 90min
Example Standardized Ergo Survey (4.361 MB)
Handouts
Download Handouts
Recordings
12/2/20 SME: DOEHRS-IH Report Standardization 90min
Enabled: Statistics Tracking
Look for slide handouts and a copy of the Army DOEHRS IH Buddy v0.7 in the SLIDE HANDOUTS above, or the DOCUMENT LIBRARY section of this course
12/2/20 SME: Downdraft Ventilation Q/A 7min
Enabled: Statistics Tracking

| Downdraft Day | |
|---|---|
| 12/2/20 Monster: Building Downdraft Tables in DOEHRS-IH (52min) | THEME: CONTROLING AIR CONTAMINANTS |
| 12/2/20 Leader: Measuring Downdraft Tables (42min) | THEME: CONTROLING AIR CONTAMINANTS |
| 12/2/20 SME: Downdraft Ventilation Q/A | THEME: CONTROLING AIR CONTAMINANTS |
| 12/2/20 SME: DOEHRS-IH Report Standardization (30min) | THEME: MANAGING ARMY IH |
| 12/2/20 Leader: Compressed Air use with Heavy Metals (30min) | THEME: CONTROLING AIR CONTAMINANTS |

| Vehicle Maintenance Day | |
|---|---|
| 3/3/21 Monster: Building Vehicle Exhaust Ventilation in DOEHRS-IH (72min) | THEME: CONTROLING AIR CONTAMINANTS |
| 3/3/21 Leader: Measuring Vehicle Exhaust Ventilation (50min) | THEME: CONTROLING AIR CONTAMINANTS |
| 3/3/21 Leader: Vehicle Design Review (2hr) | THEME: CONTROLING AIR CONTAMINANTS |
| 3/3/21 SME: Vehicle Exhaust Ototoxins (40min) | THEME: CONTROLING AIR CONTAMINANTS |
| 3/3/21 SME: IH Manpower Study Survey (14min) | THEME: MANAGING ARMY IH |

| Coating/Painting Day | |
|---|---|
| 6/2/2021 Monster: Building Paint Booths in DOEHRS-IH (60min) | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 Leader: Measuring Paint Booths (37min) | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 Leader: Paint Spray Design (65min) | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 SME: Data Mining DOEHRS-IH (Paintbooth Accident Investigation) (17min) | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 SME: DOEHRS Cadmium Data/Protecting Against Cadmium 49min | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 SME: Protecting Against Cadmium (combined with Cadmium Data) | THEME: CONTROLING AIR CONTAMINANTS |
| 6/2/2021 Leader: Particle Size Selective Sampling 35min | THEME: SAMPLING |
| 6/2/2021 Leader: IH Professional Sampling Kit 20min | THEME: SAMPLING |
| 6/2/2021 SME: Surface Sampling 18min | THEME: SAMPLING |

| Laboratory/Healthcare Day | |
|---|---|
| 9/1/2021 Monster: Building Lab Hood Ventilation in DOEHRS-IH (64min) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 Monster: Building Dilution Ventilation in DOEHRS-IH (93min) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 Leader: IH Value Strategy Laboratory Engineering Controls (17min) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 SME: Sampling Qualifiers (15min) | THEME: SAMPLING |
| 9/1/2021 Leader: Laboratory Design (2hr) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 Leader: Methylene Chloride (Workplace, Data Mining, Virtual Tour) (2hr) | THEME: SAMPLING |
| 9/1/2021 Leader: Healthcare Ventilation and Design (3hr) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 Leader: OHS for Laboratory/Healthcare (Overview, Risk Management, IH Role, Virtual Tours) (3hr) | THEME: SAMPLING |
| 9/1/2021 Leader: Modeling Laboratory/Healthcare Exposures in DOEHRS-IH (60min) | THEME: CONTROLING AIR CONTAMINANTS |
| 9/1/2021 Leader: Laboratory/Healthcare Compliance Survey Tour (2hr) | THEME: SURVEY |
| 9/1/2021 SME: Ergonomic Patient Handling (28min) | THEME: HAZARD EVALUATION AND CONTROL |

| *REVIEW* | *Recommended Healthcare/Laboratory lessons if you have not already viewed these previously)* |
|---|---|
| Leader | Adventures in Ventilation at Natick Laboratories (68min) |
| Monster | Pathology, Grossing, Morgue, Tissue, and Death Care (1.5hr) |
| SME | Pharmacy Hazardous Drug Samples (28min) |
| Leader | Audiometric Booth Testing and Certification (17min) |

This monthly summary is published by the Industrial Hygiene Program Management Division for the Army Public Health Center.

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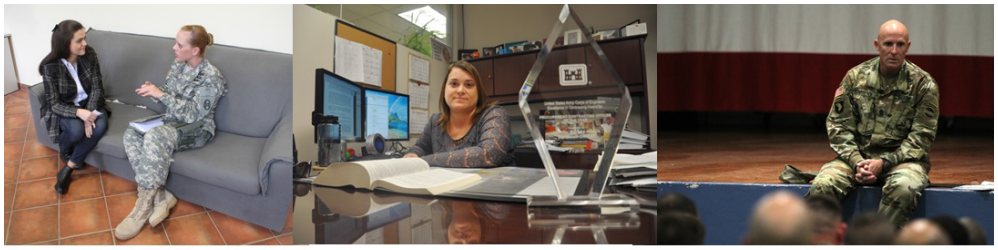

## Professional Development and Career Programs

For Army Industrial Hygienists and Industrial Hygiene Technicians, Professional Development is through the Army Safety and Occupational Health (SOH) Career Program, known as Career Program 12 (CP-12).

Career Programs were established to ensure there is an adequate base of qualified and trained professional, technical, and administrative personnel to meet the Army`s current and future needs.

Planned training and development are essential elements to building a successful career.