November 2021

Issue 122

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Researchers Identify on-The-Job Asthma Triggers in Office Workers

Special Interest Articles:

Exposure to printer toner, cleaning products and mold circulated in air conditioning systems – along with poor ventilation – can trigger asthma in office workers, results of a recent study out of England suggest.

Researchers at the Birmingham (UK) Regional Occupational Lung Disease Service at University Hospitals Birmingham NHS Foundation Trust studied 47 cases of workers with occupational asthma. Among the cases, 22 were triggered by an internal office environment (floor adhesive, mold, toner or cleaning agent), 11 were linked to an office ventilation system (mold from an air conditioning unit or incorrect installation of ventilation shafts) and nine

were tied to external environments adjacent to an office (workshop, paint, vehicle fumes).

Read more:
https://www.safetyandhealthmagazine.com/articles/21896-researchers-identify-on-the-job-asthma-triggers-in-office-workers

Contents:

Airborne Contamination during Post-Fire Investigations: Hot, Warm and Cold Scenes

Fire investigators may be occupationally exposed to many of the same compounds as the more widely studied fire suppression members of the fire service but are often tasked with working in a given exposure for longer periods ranging from hours to multiple days and may do so with limited personal protective equipment. In this study, we characterize the area air concentrations of contaminants during post-fire investigation of controlled residential fires with furnishings common to current bedroom, kitchen and living room fires in the United States. Area air sampling was conducted during different investigation phases including when investigations might be conducted immediately after fire suppression and extended out to five-days after the fire.

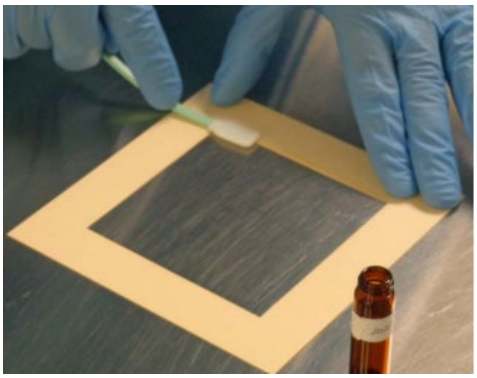
Airborne particulate over a wide range of dimensions, including sub-micron particles, were elevated to potentially unhealthy levels (based on air quality index) when averaged over a 60 min investigation period shortly after fire suppression with median PM2.5 levels over 100 µg/m3 (range 16-498 µg/m3) and median peak transient concentrations of 1,090 µg/m3 (range 200-23,700 µg/m3) during drywall removal or shoveling activities. Additionally, airborne aldehyde concentrations were elevated compared to volatile organic compounds with peak values of formaldehyde exceeding NIOSH ceiling limits during the earliest investigation periods (median 356 µg/m3, range: 140-775 µg/m3) and occasionally one day post-fire when the structure was boarded up before subsequent investigation activities.

These results highlight the need to protect investigators' airways from particulates when fire investigation activities are conducted as well as during post-fire reconstruction activities. Additionally, vapor protection from formaldehyde should be strongly considered at least through investigations occurring three days after the fire and personal formaldehyde air monitoring is recommended during investigations.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 11 Nov 2021 (Available with AIHA membership)

A Quantitative LC-MS Method to Determine Surface Contamination of Antineoplastic Drugs by Wipe Sampling

The main objective was to develop a wipe sampling test to measure surface contamination of the most frequently used antineoplastic drugs (ADs) in Swedish healthcare and furthermore to develop an analysis method sensitive enough to assess low levels of contamination. Two wipe sampling tests with separate sample processing methods assessing i) cyclophosphamide (CP), ifosfamide (IF), 5-fluorouracil (5-FU), etoposide (ETO), gemcitabine (GEM) and cytarabine (CYT) (Wipe Test 1), and ii) GEM, CYT and methotrexate (MTX) (Wipe Test 2), respectively were developed by optimization of absorption and extraction efficiencies using different wipe tissue materials, tissue wetting solution and extraction solvents. A fast LC-MS/MS method was developed for simultaneous detection of the studied ADs. The limit of quantification for the method was between 0.04 to 2.4 ng/wipe sample (0.10 to

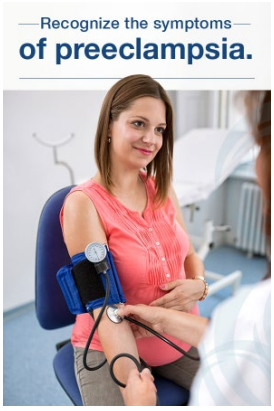


6.1 pg/cm^2 for an area of 400 cm^2) and at 50 ng/sample the within-day precision was between 1.3-15%, and the accuracy between 102-127%. Wipe Test 1 was applied in an assessment of cleaning efficiency of five different cleaning solutions (formic acid, water, sodium hydroxide, ethanol and sodium dodecyl sulfate (SDS) for removal of ADs from surfaces made of stainless steel or plastic. For CP, IF, 5-FU, GEM and CYT 92% of the AD were removed regardless of surface and cleaning solution. In conclusion, a user-friendly assessment

method to measure low levels of seven ADs in the work environment was developed and validated. Assessment of the decontamination efficiency of cleaning solutions concerning removal of ADs from stainless steel showed that efficiencies differed depending on the AD with water being the least effective cleaning agent. The results suggests that a combination of different cleaning agents including detergent and a solution with an organic component would be optimal to efficiently remove the measured ADs from surfaces in the workplace.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 01 Nov 2021 (Available with AIHA membership)

Study Finds Link Between Certain 'Forever Chemicals' And Preeclampsia



Perfluoroalkyl substances (PFAS), sometimes referred to as "forever chemicals," are long-lasting, man-made substances known to pollute the drinking water supplies of many communities. The Biden administration recently announced that it will require manufacturers to publicly report on PFAS levels found in household items. While scientists recognize their potential toxicity, they have yet to understand how exactly these substances impact human health. A new study by investigators from Brigham and Women's Hospital suggests an association between PFAS exposure and late-onset preeclampsia, a condition characterized by hypertension and kidney dysfunction that affects anywhere between 2 and 8 percent of pregnancies in the United States. Results are published in Environmental Health Perspectives.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 27 Sep 2021 (Available with AIHA membership)

A Pilot Study of Total Personal Exposure to Volatile Organic Compounds among Hispanic Female Domestic Cleaners

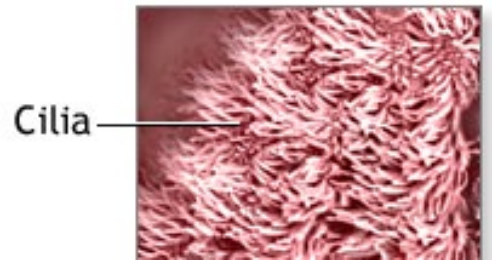
Cleaners have an elevated risk for the development or exacerbation of asthma and other respiratory conditions, possibly due to exposure to cleaning products containing volatile organic compounds (VOCs) leading to inflammation and oxidative stress. This pilot study aimed to quantify total personal exposure to VOCs and to assess biomarkers of inflammation and pulmonary oxidative stress in 15

predominantly Hispanic women working as domestic cleaners in San Antonio, Texas, between November 2019 and July 2020. In partnership with a community organization, Domésticas Unidas, recruited women were invited to attend a training session where they were provided 3M 3500 passive organic vapor monitors (badges) and began a 72-hour sampling period at which time they were instructed to wear one badge during the entire period ("AT", for ***A*** ll the ***T***ime), a second badge only while they were inside their home ("INS", for ***INS***ide), and a third badge only when they were outside their home ("OUT", for ***OUT***side). At the end of the sampling period, women returned the badges and provided blood and exhaled breath condensate (EBC) samples. From the badges, 30 individual VOCs were measured and summed to inform total VOC (TVOC) concentrations, as well as concentrations of the following VOC groups: aromatic hydrocarbons, alkanes, halogenated hydrocarbons, and terpenes. From the blood and EBC samples, concentrations of serum C-reactive protein (CRP) and EBC 8-isoprostane (8-ISP) and pH were quantified. Data analyses included descriptive statistics. The 72-hour average of personal exposure to TVOC was 34.4 ppb

and ranged from 9.2-219.5 ppb. The most prevalent class of VOC exposures for most women (66.7%) was terpenes, specifically *d*-limonene. Overall, most women also experienced higher TVOC concentrations while outside their home (86.7%) as compared to inside their home. Serum CRP concentrations ranged from 0.3-20.3 mg/dL; 8-ISP concentrations ranged from 9.5-44.1 pg/mL; and EBC pH ranged from 7.1-8.6. Overall, this pilot study demonstrated personal VOC exposure among Hispanic domestic cleaners, particularly to *d*-limonene, which may result from the use of scented cleaning products.

Read more:
https://medicalxpress.com/news/2021-11-link-chemicals-preeclampsia.html

Researchers Design Microfluidic Device to Understand How Air Pollution Affects Lungs



University of Toronto researchers in biomedical engineering have developed a new technology that combines a microfluidic device with a novel airflow system to mimic lung airways. The technology enables scientists and engineers to perform particle exposure experiments to examine the pathological effects of air pollutants on respiratory health.

Siwan Park, a Ph.D. candidate at the Institute of Biomedical Engineering in the Faculty of Applied Science & Engineering, and Edmond Young, an associate professor in the department of mechanical and industrial engineering, recently published their findings in Advanced Materials Technologies.

The microfluidic device-on-a-chip—known as E-FLOAT, short for Extractable Floating Liquid gel-based Organ-on-a-chip for Airway Tissue modeling under airflow—is an easily modifiable system in which scientists can grow lung cells in a suspended hydrogel that resembles lung tissue.

Read more:
https://medicalxpress.com/news/2021-11-microfluidic-device-air-pollution-affects.html

Radiation

High Exposure to Radio Frequency Radiation Associated With Cancer in Male Rats

The National Toxicology Program (NTP) concluded there is clear evidence that male rats exposed to high levels of radio frequency radiation (RFR) like that used in 2G and 3G cell phones developed cancerous heart tumors, according to final reports released today. There was also some evidence of tumors in the brain and adrenal gland of exposed male rats. For female rats, and male and female mice, the evidence was equivocal as to whether cancers observed were associated with exposure to

RFR. The final reports represent the consensus of NTP and a panel of external scientific experts who reviewed the studies in March after draft reports were issued in February.

Read more:
https://www.niehs.nih.gov/news/newsroom/releases/2018/november1/index.cfm

Ventilation

Air Filter Significantly Reduces Presence of Airborne SARS-Cov-2 in COVID-19 Wards

When a team of doctors, scientists and engineers at Addenbrooke's Hospital and the University of Cambridge placed an air filtration machine in COVID-19 wards, they found that it removed almost all traces of airborne SARS-CoV-2.

While the discovery could have implications for improving the safety of repurposed "surge wards," the researchers say it also opens up the possibility of being able to set standards for cleaner air to reduce the risk of airborne transmission of infections.

Over the duration of the pandemic there has been a steady rise in the evidence that the SARS-CoV-2 virus can be transmitted through the air in small droplets (aerosols). But as hospitals have seen their capacity overwhelmed, they have been forced to manage many of their COVID-19 patients in repurposed 'surge' wards, which often lack the ability to change the air with a high frequency. While the use of appropriate personal protective equipment (PPE) protects staff and patients significantly reduces the risk of transmission, there are still reports of patient-to-healthcare worker transmission of the virus, potentially through the inhalation of viral particles.

Read more: https://medicalxpress.com/news/2021-11-air-filter-significantly-presence-airborne.html

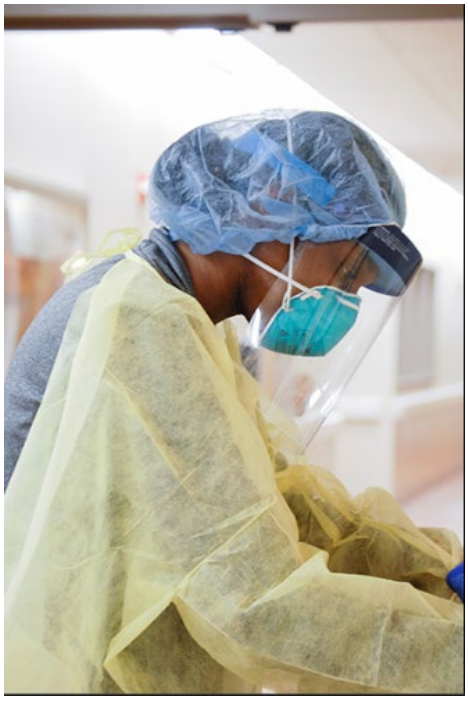
PPE

Study: Most PPE Not Designed For Ethnic Minority Health Workers and Women

Female healthcare workers and those from Black And Minority Ethnic (BAME) backgrounds have struggled to find personal protective equipment (PPE) that provides them with adequate protection, a new study has found.

Researchers at the University of Southampton found that most masks are not designed for BAME and women, due to limited research into how differences in facial dimensions across gender and ethnicity affect PPE performance. There findings have been published in the journal BMJ Global Health.

Previous studies have shown that BAME people have been disproportionately affected by COVID-19. Amongst NHS staff, 63 percent of COVID-related deaths are of BAME people, even though they represent only 20 percent of the workforce.



Read more: https://medicalxpress.com/news/2021-11-ppe-ethnic-minority-health-workers.html

Quantifying Face Mask Comfort

Face mask usage is one of the most effective ways to limit SARS-CoV-2 transmission, but a mask is only useful if user compliance is high. Through anonymous surveys (n = 679), it was shown that mask discomfort is the primary source of noncompliance in mask wearing. Further, through these surveys, three critical predicting variables that dictate mask comfort were identified: air resistance, water vapor permeability, and face temperature change. To validate these predicting variables in a physiological context, experiments (n = 9) were performed to measure the respiratory rate and change in face temperature while wearing different types of three commonly used masks. Finally, using values of these predicting variables from experiments and the literature, and surveys asking users to rate the comfort of various masks, three machine learning algorithms were trained and tested to generate overall comfort scores for those masks. Although all three models performed with an accuracy of approximately 70%, the multiple linear regression model provides a simple analytical expression to predict the comfort scores for common face masks provided the input predicting variables. As face mask usage is crucial during the COVID-19 pandemic, the goal of this quantitative framework to predict mask comfort is hoped to improve user experience and prevent discomfort-induced noncompliance.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 08 Nov 2021 (Available with AIHA membership)

Noise

Common Loud Noises Cause Fluid Buildup in the Inner Ear, Study Finds

Exposure to loud noise, such as a firecracker or an ear-splitting concert, is the most common preventable cause of hearing loss. Research suggests that 12% or more of the world population is at risk for noise-induced loss of hearing.

Loud sounds can cause a loss of auditory nerve cells in the inner ear, which are

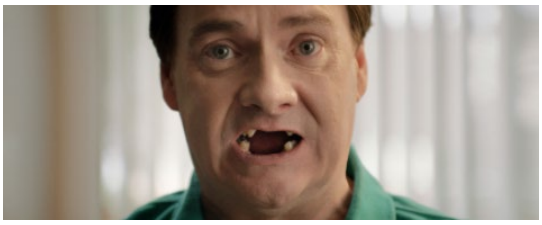
responsible for sending acoustic information to the brain, resulting in hearing difficulty. However, the mechanism behind this hearing loss is not fully understood.

Now, a new study from Keck Medicine of USC links this type of inner ear nerve damage to a condition known as endolymphatic hydrops, a buildup of fluid in the inner ear, showing that these both occur at noise exposure levels people might encounter in their daily life.

Read more:
https://www.sciencedaily.com/releases/2021/11/211111080420.htm

Preventive Medicine

Why Having Bad Oral Health Could Raise the Risk of COVID



Not brushing your teeth will get you in trouble with the dentist—but since the arrival of the pandemic, it could lead to bigger problems too. There's growing evidence that poor oral health raises the risk posed by COVID.

Research shows that people with poor oral health can end up with more severe symptoms if they catch the coronavirus. COVID patients who also have gum disease are 3.5 times as likely to be admitted to intensive care compared to those without. They're also 4.5 times as likely to need to be put on a ventilator and nine times as likely to die from COVID.

Read more:
https://medicalxpress.com/news/2021-11-bad-oral-health-covid.html

New Database Shows Hundreds of Contaminants Detected in US Tap Water

Since 2019, more than 320 toxic substances have been detected in U.S. drinking water systems, according to a new analysis by the Environmental Working Group (EWG), a nonprofit environmental advocacy organization.

Those harmful chemicals are linked to cancer, adverse birth and reproduction outcomes, impaired brain development, and a revolving door of other deleterious health impacts.

Read more: https://www.ehn.org/drinking-water-pollution-2655521279/56-new-chemicals-added

A Mediterranean Diet Can Lead to a High Intake of Environmental Contaminants

A Mediterranean diet can provide many health benefits, but you may risk consuming too many environmental contaminants.

Organically produced food can be the solution, a new study shows.
Many people swear by a Mediterranean diet, which involves eating a lot of fruits and vegetables, whole grains, nuts, legumes and fish, along with a little wine. Another advantage is that this diet only contains small amounts of saturated fats from dairy products and red meat.

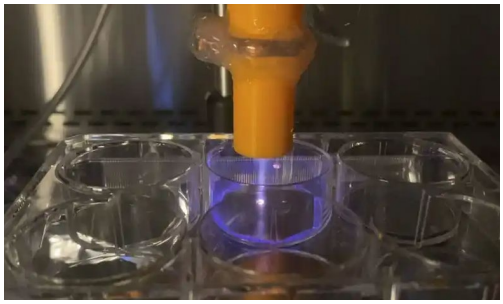
But a new study carried out by scientists at the University of Oslo and universities in other countries made a rather surprising discovery: people participating in the study who lived on a Mediterranean diet

containing foods cultivated in the normal manner had three times the intake of environmental contaminants compared to when they were eating an ordinary, Western diet.

Read more: https://medicalxpress.com/news/2021-11-mediterranean-diet-high-intake-environmental.html

Cold Plasma Ionised Gas As New Treatment for Diabetic Foot Ulcers Could Also Kill COVID-19 Virus Indoors

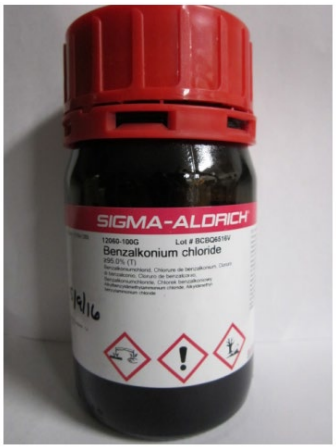
A new formulation developed by University of South Australia scientists to treat antimicrobial-resistant bacterial infections in diabetic foot ulcers could also be used to kill the COVID-19 virus circulating in air conditioning systems.



Enhancing cold plasma ionized gas with peracetic acid eradicates bacteria in wounds and substantially reduces SARS-CoV-2 viral loads, Australian and UK scientists claim in a paper published in Applied Physics Letters.

Read more: https://medicalxpress.com/news/2021-11-cold-plasma-ionised-gas-treatment.html

Common Disinfectant May Lead to Superbug Mutation



We tend to think of disinfectants as our allies in the fight against disease, a feeling that may never have been stronger than during the COVID-19 pandemic. But now a groundbreaking Macquarie University study has found a commonly used disinfectant may be a double agent, blocking antibiotics from working and even promoting antibiotic resistance.

Antimicrobial resistance is a huge, ever-growing, challenge for global healthcare, and among the worst offenders is a group of resistant bacteria known as the ESKAPE pathogens.

These common bacteria—Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter

species—are harmless enough in their natural habitats of gut, soil or water.

Read more:
https://medicalxpress.com/news/2021-11-common-disinfectant-superbug-mutation.html

Blood Metabolites Associated With Coffee Consumption May Affect Kidney Disease Risk

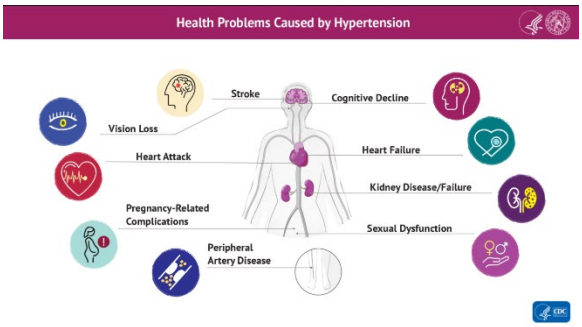
Food and beverages may have important effects on kidney health, but the potential biological mechanisms involved are often unclear. New research in CJASN identifies several metabolites in the blood whose levels are altered by coffee consumption and may affect the risk of developing chronic kidney disease (CKD).

When Casey M. Rebholz, Ph.D., MS, MNSP, MPH (Johns Hopkins Bloomberg School of Public Health) and her colleagues examined 372 blood metabolites in 3,811 participants in the Atherosclerosis Risk in Communities study, a prospective community-based cohort, they found that 41 metabolites were associated with coffee consumption. When the team analyzed these metabolites in an additional 1,043 adults in the Bogalusa Heart Study, a community-based long-term epidemiological study, 20 of the 41 metabolites were also associated with coffee consumption in this group.

Read more
https://medicalxpress.com/news/2021-11-blood-metabolites-coffee-consumption-affect.html

Environmental Health

Exposure to Some Airborne Chemicals Found Indoors May Increase Blood Pressure



Acrolein, crotonaldehyde and styrene, compounds found in everything from cigarette smoke to plastics, were associated with higher blood pressure measurements for both the top, systolic, and bottom, diastolic, numbers.

"Acrolein is a well-known cardiotoxic chemical, and styrene had a causative signal with diastolic blood pressure," said lead researcher Katlyn E. McGraw, a postdoctoral fellow at Columbia University's Mailman School of Public Health in New York. "We've seen effects in the vascular system in other studies with acrolein and crotonaldehyde."

For the new research, which will be presented Saturday at the American Heart Association's virtual Scientific Sessions conference, McGraw and her colleagues examined the relationship between exposure to so-called volatile organic compounds, or VOCs, and blood pressure among 778 nonsmokers in the Jackson Heart Study, a long-term study of Black residents in Mississippi. The findings are considered preliminary until they are published in a peer-reviewed journal.

Read more: https://medicalxpress.com/news/2021-11-exposure-airborne-chemicals-indoors-blood.html

White-Tailed Deer Found to Be Huge Reservoir of SARS-CoV-2 Infection

New research from the US has shown that white-tailed deer are being infected with SARS-CoV-2, the virus that causes COVID-19 in humans. Antibodies were found in 40% of deer that were tested from January to March 2021 across Michigan, Pennsylvania, Illinois and New York state. A second

unpublished study has detected the virus in 80% of deer sampled in Iowa between November 2020 and January 2021.

Such high levels of infection led the researchers to conclude that deer are actively transmitting the virus to one another. The scientists also identified different SARS-CoV-2 variants, suggesting there have been many human-to-deer infections.

Read more:
https://globalbiodefense.com/2021/11/08/white-tailed-deer-found-to-be-huge-reservoir-of-sars-cov-2-infection/

Electronic Nose on a Drone Sniffs out Wastewater Treatment Plant Stink

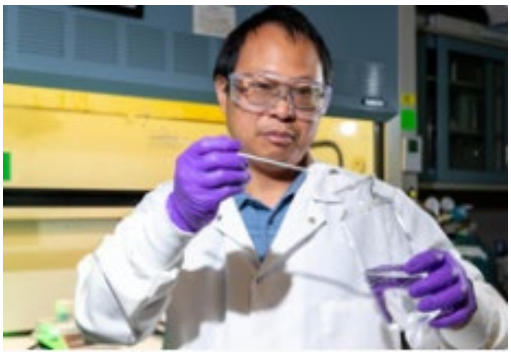
Researchers from Spain have engineered a portable electronic nose (e-nose) that's almost as sharp as a human nose at sniffing out the stink of wastewater treatment plants. Coupled with a drone, the lightweight e-nose can measure the concentration of different smells, predict odor intensity, and produce a real-time odor map of the plant for management. The method appears November 16 in the journal iScience.

Conventionally, a wastewater plant's odor is measured by dynamic olfactometry, where a human panel whiffs and analyzes bags of air collected from the plant. Although the method has been considered the gold standard, the process is costly, slow, and infrequent, which doesn't allow operators

to quickly respond to problems or pinpoint the root of the stench.

Read more:
https://techxplore.com/news/2021-11-electronic-nose-drone-wastewater-treatment.html

'I'm Melting, Melting' — Environmentally Hazardous Coal Waste Diminished By Citric Acid



In one of nature's unexpected bounties, a harmless food-grade solvent has been used to extract highly sought rare-earth metals from coal ash, reducing the amount of ash without damaging the environment and at the same time increasing an important national resource.
Coal ash is the unwanted but widely present residue of coal-fired power. Rare-earth metals are used for a variety of high-tech equipment from smartphones to submarines.

The separation method, which uses carbon dioxide, water and food-grade citric acid, is the subject of a Sandia National Laboratories patent application.

Read more:
https://newsreleases.sandia.gov/coal_ash/

EPA Unveils National Recycling Plan with Goal of 50 Percent Rate

The Environmental Protection Agency (EPA) on Monday issued the final draft of its first "National Recycling Strategy," aiming to achieve a 50 percent nationwide recycling rate by 2030.

The program, first announced nearly a year ago, takes aim at the greenhouse gas emissions generated by production, use and disposal of certain materials.

The United Nations Environment Program's (UNEP) International Resource Panel has estimated such activity comprises about half of all greenhouse gas emissions. Most plastics are created using fossil fuels, and UNEP projects about 300 million metric tons of plastic waste are generated a year.

Read more:
https://thehill.com/policy/energy-environment/581578-epa-issues-national-

recyling-plan-with-goal-of-50-percent-recycling

Ergonomics

Musculoskeletal Issues Common among Dentists: Study

Neck and shoulder problems are common musculoskeletal disorders among dentists, leading more than 1 out of 5 to seek medical care, a recent study out of Germany shows.

Researchers from Munster University Hospital surveyed 229 dentists in the state of North Rhine-Westphalia, who answered questions about any occurrence of musculoskeletal symptoms over the past 12 months that led to sick leave or medical care.

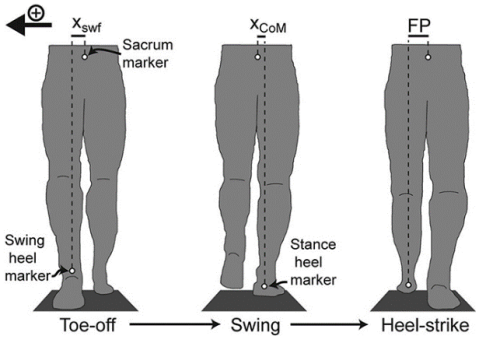
The vast majority of the dentists (93%) reported having experienced at least one musculoskeletal symptom, with the neck (65%) and shoulders (58%) being the most common areas affected. The researchers note that dentists regularly work in uncomfortable static postures and keep their head in a rotated position, with the neck flexed and shoulders abducted.

Read more:
https://www.safetyandhealthmagazine.com/articles/21944-musculoskeletal-issues-common-among-dentists-study

Gait Breakthrough with Knitted Sensors

Footfalls and Heartbeats, based in Nottingham, UK, continues to innovate and push the boundaries of what is possible with knitted textile sensors.

In the past couple of weeks, its knitting team has produced shoes that are able to measure the full gait cycle without



embedded electronics or sensors – just technical knitting.

The gait cycle is a measure of the stance and stride phase when either walking or running. These phases are noted by various points of contact under the foot. Until very recently the Footfalls team has found it very difficult to measure “toe off” – a technical term for when you push off using the front of your foot.

Read more:
https://www.innovationintextiles.com/gait-breakthrough-with-knitted-sensors/

Safety

Guard Dogs, Panic Buttons: Nurses under Threat from Rising Violence

Emergency room nurse Grace Politis was catching up on paperwork during her shift when she suddenly realized her head hurt badly. Then she blacked out.

"Later on, I found out I was hit in the head twice with a fire extinguisher by a patient," said Politis, who works at Lowell General Hospital in Lowell, Mass.
A disturbed man awaiting psychiatric evaluation had fractured Politis' skull, causing her head to bleed in two places and crushing one of her fingers.

Workplace violence in health care facilities has been shockingly high for years. The U.S. Bureau of Labor Statistics says that a health care worker is five times more likely to suffer violence and injury on the job than workers overall.

Read more:
https://medicalxpress.com/news/2021-11-dogs-panic-buttons-nurses-threat.html

CDC Expands Recall of Aromatherapy Sprays Tied to Rare Illness

A recall of aromatherapy sprays connected with fatal cases of a rare tropical disease called melioidosis has been expanded by the U.S. Centers for Disease Control and Prevention.

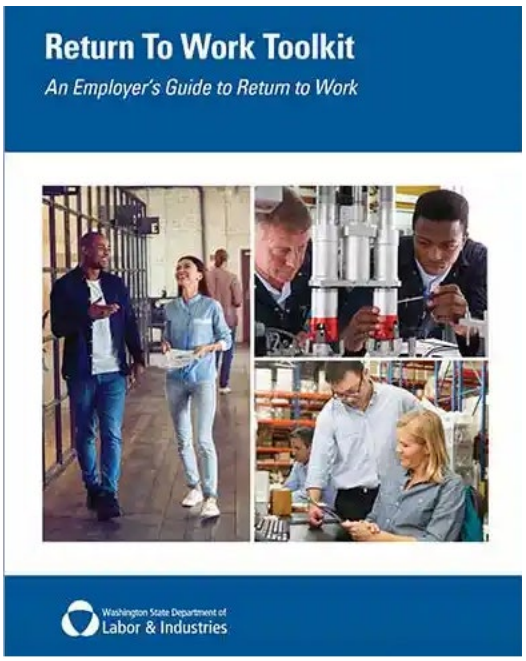
The agency previously identified four cases of melioidosis—two of them fatal—linked with Better Homes & Gardens Lavender & Chamomile Essential Oil Infused Aromatherapy Room Spray with Gemstones, which was made in India and sold by Walmart.

Melioidosis is caused by the bacteria Burkholderia pseudomallei.

The agency said in a statement Wednesday that it is now testing for the presence of the bacteria in five other scents under the same brand name with Gemstones: Lemon & Mandarin, Lavender, Peppermint, Lime & Eucalyptus, and Sandalwood & Vanilla, CNN reported.

Read more:
https://medicalxpress.com/news/2021-11-cdc-recall-aromatherapy-tied-rare.html

Washington L&I Publishes Return-to-Work Toolkit for Employers



A new toolkit from the Washington State Department of Labor & Industries offers employers resources they can use to help injured employees return to work as soon as medically possible, aid worker recovery and prevent long-term disability while reducing the financial burden of workers' compensation claims.

The Return to Work Toolkit is a collection of resources, forms and best practices that provide a step-by-step explanation for improving how workplace injuries and return-to-work opportunities are managed within an organization.

According to Washington L&I, the longer an employee remains off work, the more

difficult it is for that person to return to their original job and income. A strong return-to-work program can help employees get back to work quickly and safely.

Read more:
https://www.safetyandhealthmagazine.com/articles/21939-washington-li-publishes-return-to-work-toolkit-for-employers

Safe Crane Lifts: New Toolbox Talk from CPWR

A toolbox talk recently published by CPWR – The Center for Construction Research and Training features guidance on planning a safe lift with a crane.

The resource – available in English and Spanish – includes a short story and subsequent questions to consider, safety tips, and a way to communicate how organizations can "stay safe today."

Among CPWR's recommendations is to conduct a lift planning meeting with all workers involved before beginning. Additionally, don't lift a load that exceeds the capacity of the crane or rigging; monitor the weather, ground conditions and other environmental factors; and keep the crane clear of obstructions such as overhead power lines.

Read more:
https://www.safetyandhealthmagazine.com/articles/21910-safe-crane-lifts-new-toolbox-talk-from-cpwr

Differential Effectiveness of the Minnesota Safe Patient Handling Act by Health Care Setting: An Exploratory Study

Background
The Minnesota Safe Patient Handling (MN SPH) Act requires health care facilities to implement comprehensive programs to protect their workers from musculoskeletal injuries caused by lifting and transferring patients. Nursing homes, hospitals, and outpatient facilities each face unique challenges implementing and maintaining SPH programs. The objective of the study was to compare patient handling injuries in these three health care settings and determine whether change in injury rate over time

differed by setting following enactment of the law.

Methods
Workers' compensation data from a Minnesota-based insurer were used to describe worker and claim characteristics in nursing homes, hospitals, and outpatient facilities. Negative binomial models were used to compare claims and estimate mean annual patient handling claim rates by health care setting and time period following enactment of the law.

Read more:
https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.23312

Cooking Material-Storage Containers to Assess Fire Safety

A team at Sandia National Laboratories has completed a series of tests on specially designed stainless-steel containers used by the Department of Energy for storage and transportation of hazardous materials. The engineers, technologists and project managers were surprised to find that the containers did not split open when heated to 2000 degrees Fahrenheit. That is almost as hot as a cement kiln.

"These containers were welded shut and heated to 2000 degrees, so we assumed that they were going to split open, but they developed small pinholes instead," said Walt Gill, the test director and Sandia mechanical engineer. "We think the material inside reacted with the container itself and produced the pinholes in the container. These tiny holes let out all of the superheated gas without the containers pressurizing and pulling themselves apart."

Read more:
https://techxplore.com/news/2021-11-cooking-material-storage-safety.html

Emergency Preparedness

PPE CASE – Evaluation of Fit and Strap Extension Performance of Stockpiled Filtering Facepiece Respirators from One U.S. Facility

In the event of a national emergency, eighteen million U.S. healthcare workers may face exposure to high-consequence infectious disease [NIOSH 2017]. Personal

PPE CASE

Personal Protective Equipment Conformity Assessment Studies and Evaluations

Evaluation of Fit and Strap Extension Performance of Stockpiled Filtering Facepiece Respirators from One U.S. Facility

National Institute for Occupational Safety and Health (NIOSH)
National Personal Protective Technology Laboratory (NPPTL)
Lee A. Greenawald, Susan M. Moore, Patrick L. Yorio
November 3, 2021

NIOSH evaluated 293 stockpiled N95 filtering facepiece respirators (FFR) from a single facility to determine if long-term storage (9-13 years) affected fit. Using human subjects, quantitative fit testing identified product- and lot-specific differences between the control and stockpiled respirators—substantial differences were detected for some products.

In the event of a national emergency, eighteen million U.S. healthcare workers may face exposure to high-consequence infectious disease [NIOSH 2017]. Personal protective equipment (PPE), such as gowns, gloves, goggles, and respirators, is an important control measure within the infection prevention hierarchy of controls. During public health emergencies, the sudden increase in PPE demand may exceed supplies for upwards of three months while manufacturers increase production [ASTHO 2013; Carias et al. 2015; Patel et al. 2017]. Recent outbreaks—even those that occurred without extensive impact on US operations (e.g., 2009 H1N1 pandemic, 2016 Ebola outbreak)—caused respirator shortages; when the first U.S. fatality was reported during the Ebola outbreak, the PPE orders increased 10-200 fold [CDC 2021; DHHS 2012; NIOSH 2018]. To prepare for these surge demands, emergency planners stockpile large quantities of PPE at federal and state levels to support local supplies [Patel et al. 2017]. At the onset of this study in 2017, these products had been stored for more than five or even ten years. NIOSH-approved N95 filtering facepiece respirators (FFRs) are commonly used particulate-only air-purifying respirators (APRs) by many healthcare facilities so they are a commonly stockpiled product. NIOSH does not require approval holders (i.e., those granted the approval from NIOSH) to designate a shelf life for particulate-only air-purifying respirators (APRs), including FFRs. However, some approval holders have assigned a shelf life to the FFRs that they produce as indicated by product packaging or online reference materials. Additionally, NIOSH minimum performance requirements found within *Title 42, Code of Federal Regulations, Part 84* do not require an assessment of fit as part of the evaluation. However, under its Respiratory Protection Standard (29 CFR 1910.134), the Occupational Safety and Health Administration (OSHA) requires employers to fit test any workers using tight-fitting respirators, including FFRs, prior to initial use of the respirator, whenever a different respirator facepiece (size, style, model or make) is used, and at least annually thereafter [OSHA 2021]. OSHA also requires employers to ensure that workers using tight-fitting respirators perform a user seal check each time they put on the respirator [OSHA 2021].

Over the past decade, the Strategic National Stockpile (SNS) and state and local stockpile personnel asked NIOSH to evaluate the effect of stockpile conditions on the viability of respirators. To support this request, NIOSH collected samples of stockpiled N95 FFRs from ten geographically dispersed facilities with varying storage

protective equipment (PPE), such as gowns, gloves, goggles, and respirators, is an important control measure within the infection prevention hierarchy of controls. During public health emergencies, the sudden increase in PPE demand may exceed supplies for upwards of three months while manufacturers increase production [ASTHO 2013; Carias et al. 2015; Patel et al. 2017]. Recent outbreaks—even those that occurred without extensive impact on US operations (e.g., 2009 H1N1 pandemic, 2016 Ebola outbreak)—caused respirator shortages; when the first U.S. fatality was reported during the Ebola outbreak, the PPE orders increased 10-200 fold [CDC 2021; DHHS 2012; NIOSH 2018].

Read more:
https://www.cdc.gov/niosh/npptl/ppecase/PPE-CASE-P2021-0102.html

Deployment Health

Military Service Complicates Cardiovascular Disease Risk in Women

New science from the American Heart Association shows heart-related health concerns are rising among female veterans. They face unique life challenges which can lead to higher cardiovascular risk.

Over the last few decades, the U.S. military has seen a rapid growth in the number of women veterans.

"We now have over 800,000 women actually enrolled in VA care," said Dr. Sally G. Haskell, director of comprehensive women's health care with the Veteran's Health Administration.

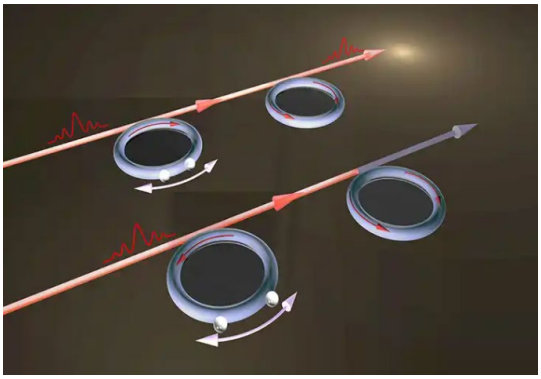
She says female vets may be more subject to traditional cardiovascular risk factors including high blood pressure, diabetes,

overweight and high cholesterol. Adding to those concerns, Haskell says these veterans face a greater risk of depression and PTSD or post traumatic stress disorder.

Read more:
https://www.wral.com/military-service-complicates-cardiovascular-disease-risk-in-women/19983016/

Nanotechnology

New Sensor Detects Ever Smaller Nanoparticles



Conventional microscopes produce enlarged images of small structures or objects with the help of light. Nanoparticles, however, are so small that they hardly absorb or scatter light and, hence, remain invisible. Optical resonators increase the interaction between light and nanoparticles: They capture light in smallest space by reflecting it thousands of times between two mirrors. In case a nanoparticle is located in the captured light field, it interacts thousands of times with the light such that the change in light intensity can be measured. "The light field has various intensities at different points in space. This allows conclusions to be drawn with respect to the position of the nanoparticle in the three-dimensional space," says Dr. Larissa Kohler from KIT's Physikalisches Institut.

Read more: https://phys.org/news/2021-11-sensor-smaller-nanoparticles.html

Regulatory Research & Industrial Hygiene Professional News

Congress

Bill Would Direct OSHA to Send News of Citations to Local Media

Legislation introduced Oct. 20 by House and Senate Democrats would direct OSHA to publicize major workplace safety violations by widely distributing the news to local media outlets and other groups.

Sponsored by Sen. Brian Schatz (D-HI), S. 3030 was referred to the Senate Health, Education, Labor and Pensions Committee. On Oct. 21, Rep. Andy Levin (D-MI) introduced H.R. 5664, which was referred to the House Education and Labor Committee. Sens. Dianne Feinstein (D-CA) and Robert Menendez (D-NJ) are co-sponsors of the Senate bill.

Read more:
https://www.safetyandhealthmagazine.com/articles/21920-new-bill-would-direct-osha-to-send-news-of-employer-citations-to-local-media

BLS

BLS: Nonfatal Injuries and Illnesses in Private Sector Down Slightly, But Respiratory Illness Cases Rise Dramatically

The number of nonfatal work-related injuries and illnesses in the U.S private sector, as well as the nonfatal injury and illness rate, decreased slightly in 2020. However, estimated injuries and illnesses that resulted in at least one day of lost work soared by nearly a third amid the COVID-19 pandemic, data released Nov. 3 by the Bureau of Labor Statistics shows.

Workers in private industry experienced an estimated 2.7 million nonfatal injuries and illnesses in 2020 – down from 2.8 million the previous year. However, BLS reports an estimated 1,176,340 nonfatal injuries and illnesses that resulted in days away from work – a 32.4% increase from 2019. According to an agency press release, that estimate includes more than 390,000 cases categorized as "other diseases due to viruses not elsewhere classified, which includes reported COVID-19 pandemic-related illnesses."

Read more:
https://www.safetyandhealthmagazine.com/articles/21918-bls-nonfatal-injuries-and-illnesses-in-private-sector-down-slightly-but-respiratory-illness-cases-rise-dramatically

ANSI/ISEA

Dental School Research Influences New PPE Standard

Peter Arsenault, professor and division head of operational dentistry at the Tufts School of Dental Medicine, helped influence a new national standard for healthcare workers that seeks to fix a decades-old flaw in personal protection equipment, or PPE, along with a team of experts. Passed in July, this national regulation creates new protections against the infamous "bottom gap."

Arsenault explained that the "bottom gap" is a breach in modern medical masks created by the space between the lower rim of medical glasses and the top edge of the mask, where the material is cheaper and more vulnerable.

Read more:
https://tuftsdaily.com/news/2021/10/28/dental-school-research-influences-new-ppe-standard/

OSHA

OSHA Suspends Enforcement of COVID-19 Vaccine Mandate for Businesses

The Occupational Safety and Health Administration (OSHA) is suspending enforcement of the Biden administration's COVID-19 vaccine mandate for large private businesses after a federal appeals court upheld a stay on it last week.

OSHA said in a statement published on its website Friday night that while it is confident in its power to protect workers amid the pandemic, it is suspending activities related to the mandate, citing the pending litigation.

Read more:
https://thehill.com/policy/healthcare/582022-osha-suspends-enforcement-of-covid-19-vaccine-mandate-for-businesses

EPA

EPA Inspector General Finds IDEM Air Compliance Monitoring Dropped by 28% during Pandemic

Air compliance monitoring of the state's polluting industries declined by more than a quarter during the pandemic, according to a new report by the U.S. Environmental Protection Agency's internal watchdog organization.

An EPA Office of Inspector General report found that overall air monitoring compliance nationwide had fallen by an average 2.1% in 2020, but the Indiana Department of Environmental Management's total compliance monitoring activities dropped by 28%.

Read more:
https://www.indianaenvironmentalreporter.org/posts/epa-inspector-general-finds-idem-air-compliance-monitoring-dropped-by-28-during-pandemic

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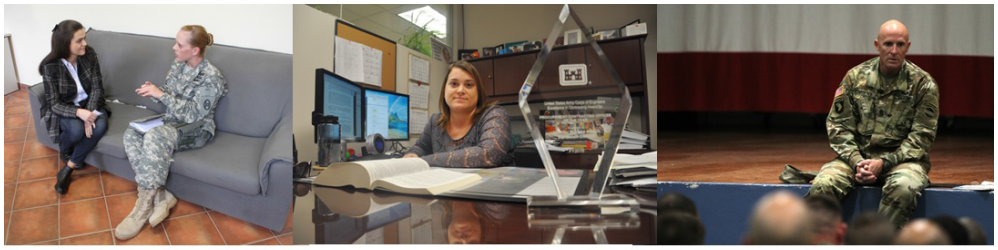
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx



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.