April 2022
Issue 127

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Welder's Anthrax: Newly Identified Health Hazard Identified Among Employees Exposed to Welding Fumes

Special Interest Articles:

According to CDC, welder's anthrax is a bacterial infection that results in severe pneumonia. The disease was caused by bacteria within the B. cereus group that produces anthrax toxin; these bacteria thrive in lungs affected by welding fumes and iron deposits. The disease has been identified in welders and metalworkers, all of whom were men with a median age of 39 years. The majority of cases have been identified in southern states. As a percentage of welders, the number of identified cases is still rare.

The CDC suggests, as with all other safety and health hazards, employers should use the standard hierarchy of controls to prevent workplace exposure to welding fumes and gases and soils that may be contaminated with B. cereus group bacteria producing anthrax toxins. This would include elimination of exposure to welding fumes where possible, then employing respiratory protection for employees welding.

Read more:
https://www.jdsupra.com/legalnews/welder-s-anthrax-newly-identified-1789158/

Contents:

Bone Aluminum Measured in Miners Exposed to McIntyre Powder

McIntyre Powder Project

A small pilot study was conducted to test whether the technique of in vivo neutron activation analysis could measure bone aluminum levels in 15 miners who had been exposed to McIntyre Powder over 40 years prior. All miners were over 60 years of age, had worked in mines which used McIntyre Powder and were sufficiently healthy to travel from northern to southern Ontario for the measurements. Individual aluminum levels were found to be significantly greater than zero with 95% confidence ($p < 0.05$) in 7 out of the 15 miners. The inverse variance weighted mean of the 15 participants was 21.77 ± 2.27µgAl/gCa. This was significantly higher ($p < 0.001$) than in a group of 15 non-occupationally exposed subjects of a comparable age from Southern Ontario who had been measured in a previous study. The inverse variance weighted mean bone aluminum content in the non-occupationally exposed group was 3.51 ± 0.85µgAl/gCa.

Since the use of McIntyre Powder ceased in 1979, these subjects had not been exposed for more than forty years. Calculations of potential levels at the cessation of exposure in the 1970s, using a biological half life of aluminum in bone of 10 to 20 years predicted levels of bone aluminum comparable with studies performed in dialysis patients in the 1970s and 1980s.

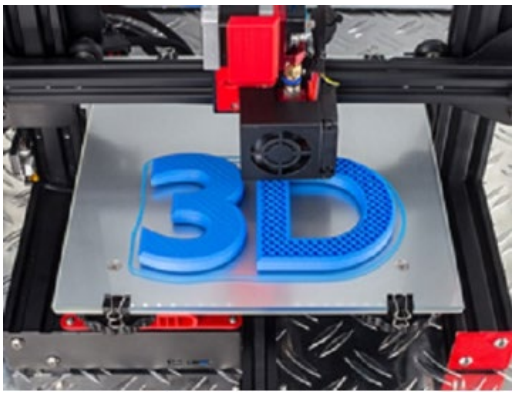
This pilot study has shown that the neutron activation analysis technique can determine differences in bone aluminum between McIntyre Powder exposed and non-exposed populations even though forty years has passed since exposure ceased. The technique has potential application as a biomarker of exposure in cross-sectional studies of the health consequences of exposure to McIntyre Powder.

Read more: Journal of Occupational and Environmental Hygiene,

Accepted author version posted online: 22 Apr 2022 (Available with AIHA membership)

Volatile Organic Compound and Particulate Emissions from the Production and Use of Thermoplastic Biocomposite 3D Printing Filaments

Biocomposites (BCs) can be used as substitutes for unsustainable polymers in 3D printing, but their safety demands additional investigation as biological fillers may produce altered emissions during thermal processing. Commercial filament extruders can be used to produce custom feedstocks, but they are another source for airborne contaminants and demand further research. These knowledge gaps are targeted in this study. Volatile organic compound (VOC), carbonyl compound, ultrafine particle (UFP), and fine (PM2.5) and coarse (PM10) particle air concentrations were measured in this study as a filament extruder and a 3D printer were operated under office environment using one PLA and four PLA-based BC feedstocks. Estimates of emission rates (ERs) for total VOCs (TVOC) and UFPs were also calculated. VOCs were analyzed with a GC-MS system, carbonyls were analyzed with an LC-MS/MS system, whereas real-time particle concentrations were monitored with continuously operating instruments. VOC concentrations were low throughout the experiment; TVOC

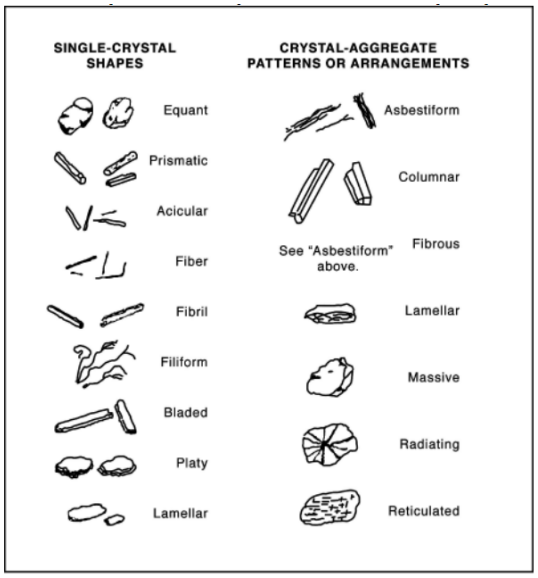


ranged between 34–63 µg/mduring filament extrusion and 41–56 µg/m3 during 3D printing, which represent calculated TVOC ERs of $2.6–3.6 \times 10^2$ and $2.9–3.6 \times 10^2$ µg/min. Corresponding cumulative carbonyls ranged between 60–91 and 190–253 µg/m^3 . Lactide and miscellaneous acids and alcohols were the dominant VOCs, while acetone, 2-butanone, and formaldehyde were the dominant carbonyls. Terpenes contributed for ca. 20–40% of TVOC during BC processing. The average UFP levels produced by the filament extruder were $0.85 \times 10^2–1.05 \times 10^3$ #/cm^3 , while the 3D printer generated 6.05×10^2 – 2.09×10 #/cm particle levels. Corresponding particle ERs were $5.3 \times 10^8–6.6 \times 10^9$ and 3.8×10^9 –

1.3×10^{10} #/min. $PM_{2.5}$ and PM_{10} particles were produced in the following average quantities; $PM_{2.5}$ levels ranged between 0.2–2.2 µg/m^3, while PM_{10} levels were between 5–20 µg/m^3 for all materials. The main difference between the pure PLA and BC feedstock emissions were terpenes, present during all BC extrusion processes. BCs are similar emission sources as pure plastics based on our findings, and a filament extruder produces contaminants at comparable or slightly lower levels in comparison to 3D printers.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 11 April 2022 (Available with AIHA membership)

Asbestos Fiber Length and Width Comparison between Manual and Semi-Automated Measurements



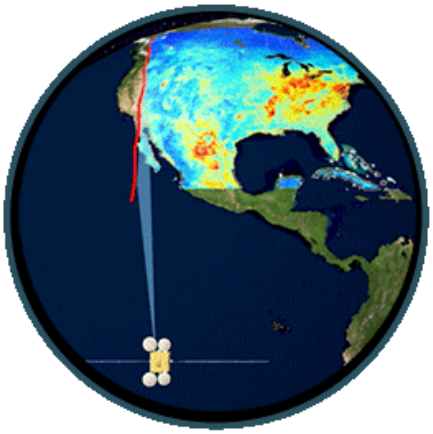
The objective of the present study is to find a fast and accurate procedure to measure the length and width of asbestos fibers using images acquired by a scanning electron microscope (SEM), a phase contrast microscope (PCM), and a polarized light microscope (PLM). The accuracy of the procedure was evaluated by comparing fiber length and width measurements to manual measurements. Four different types of images were used in the evaluation: 1) backscattered electron SEM images of fibrous tremolite, 2) secondary electron SEM images of fibrous grunerite, 3) PCM images of fibrous grunerite, and 4) PLM images of fibrous grunerite. Fiber length and width were measured with ImageJ (manual measurement) and Image-Pro software and were compared on an individual fiber basis and over the number-length and number-width distribution of each sample. The results of the comparison showed that the individual length and width measurements with ImageJ and Image-Pro software had a nearly 1:1 relationship except for the width measurement in PLM images (8% of the variance in ImageJ width measurements was not explained by Image-Pro width measurements). Similarly, the number-length distributions were not significantly different ($p > 0.05$) between ImageJ and Image-Pro, but the number-width distributions were significantly different ($p < 0.05$) for PLM and secondary electron SEM images. Although the image analysis procedure for measuring fiber

length and width with Image-Pro is not a fully automated procedure and still requires some manual intervention, it can be a more efficient and equally accurate alternative to time-consuming manual fiber length and width measurements for well dispersed fibers with high aspect ratios.

Read more: Journal of *Occupational and Environmental Hygiene, Accepted author version posted online: 08 April 2022 (Available with AIHA membership)*

Air Lasing: A New Tool for Atmospheric Detection

The innovative advances in ultrafast laser technologies provide new strategies for remote sensing of atmospheric pollutants and hazardous biochemical agents. The high-energy femtosecond laser can propagate a long distance without diffraction via femtosecond laser filamentation. Besides, abundant secondary radiations, e.g., supercontinuum white light, air lasing, fluorescence, provide natural probe sources for atmospheric detection at a remote location. Particularly, the discovery and intensive investigation of air lasing induced by intense femtosecond laser pulses open an exciting perspective for atmospheric remote sensing due to its ability of generating cavity-free light amplification in the open air. Although significant efforts have been paid to air-lasing-based remote sensing, the realistic

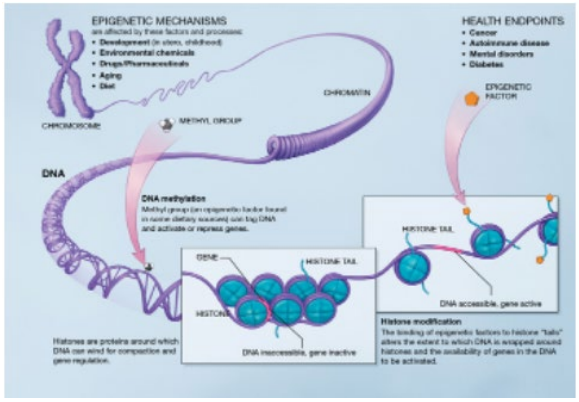


application still remains challenging due to the limit of the detection sensitivity and signal stability.

Read more: https://www.eurekalert.org/news-releases/950390

Study Shows Potential Epigenetic Basis for Increased Health Risks in Firefighters

A new study led by researchers at the University of Arizona Mel and Enid Zukerman College of Public Health identified changes in the cellular mechanisms controlling gene expression, called epigenetics, that may contribute to an increased risk of diseases including cancer in firefighters.



Jeff Burgess, MD, MS, MPH, professor of public health, led a research team that found changes in DNA methylation after multiple fire exposures. The discovery offers a potential mechanistic link between occupational hazards and adverse health outcomes.

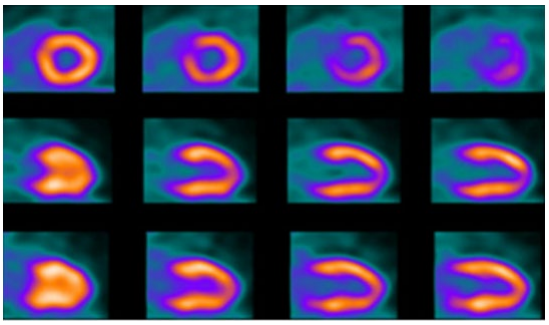
"This is significant new data for firefighters," Dr. Burgess said. "We have known there is a higher incidence of cancers among firefighters, and this research potentially shows us the mechanism through which the exposures that firefighters face on the job lead to increased health risks."

Read more:
https://www.eurekalert.org/news-releases/948866

Radiation

New Production Method Promises to End Medical Radioisotope Shortages

A commonly used radioisotope, technetium-99m, used in medical diagnoses regularly suffers from shortages due to being produced at aging nuclear reactors that often shut down for repairs. But an alternative technique for producing the isotope, developed by a group of researchers at the University of Tokyo and that takes advantage of equipment commonly found in hospitals, promises to bring an end to such supply chain frustrations.



A paper describing the method and its effectiveness in mice test subjects was recently published in the journal Nuclear Medicine Biology.

Read more:
https://www.eurekalert.org/news-releases/950361

Ventilation

Investigating Dilution Ventilation Control Strategies in a Modern U.S. School Bus in the Context of the COVID-19 Pandemic

Fresh air ventilation has been identified as a widely accepted engineering control effective at diluting air contaminants in enclosed environments. The goal of this study was to evaluate the effects of selected ventilation measures on air change rates in school buses. Air changes per hour (ACH) of outside air were measured using a well-established carbon dioxide (CO_2) tracer gas decay method. Ventilation was assessed while stationary and while traversing standardized route during late autumn/winter months in Colorado. Seven CO_2 sensors located at the driver's seat and at passenger seats in the front, middle, and rear of the bus yielded similar and consistent measurements. Buses exhibited little air exchange in the absence of ventilation (ACH = 0.13 when stationary; ACH = 1.85 when mobile). Operating the windshield defroster to introduce fresh outside air increased ACH by approximately 0.5–1 ACH during mobile and stationary phases. During the mobile phase (average speed of 23 miles per hour (mph)), the combination of the defroster and two open ceiling hatches (with a powered fan on the rear hatch) yielded an ACH of approximately 9.3 ACH. A mobile phase ACH of 12.4 was achieved by the combination of the defroster, ceiling hatches, and six passenger windows open 2 inches in the middle area of the bus. A maximum mobile phase ACH of 22.1 was observed by using the defroster, open ceiling hatches, driver window open 4 inches, and every other passenger window open 2 inches. For reference, ACHs recommended in patient care settings where patients are being treated for airborne infectious diseases range from 6 to ≥12 ACHs. The results indicate that practical ventilation protocols on school buses can achieve air change rates thought to be capable of reducing airborne viral transmission to the bus driver and student passengers during the COVID-19 pandemic.

Read more: Journal of Occupational and Environmental Hygiene Accepted author version posted online: 05 April 2022 (Available with AIHA membership)

PPE

Disposable Masks Could Be Used to Improve Concrete

With the pervasive single-use masks during the pandemic now presenting an environmental problem, researchers have demonstrated the idea of incorporating old masks into a cement mixture to create stronger, more durable concrete.

In a paper published in the journal, Materials Letters, a Washington State University research team showed that the mixture using mask materials was 47% stronger than commonly used cement after a month of curing.

"These waste masks actually could be a valuable commodity if you process them properly," said Xianming Shi, professor and interim chair of the Department of Civil and Environmental Engineering and the

corresponding author on the paper. "I'm always looking out for waste streams, and my first reaction is 'how do I turn that into something usable in concrete or asphalt?'"

Read more: https://www.sciencedaily.com/releases/2022/04/220427100444.htm

Noise

Scientists Creating Universal E-Scooter Sound to Help Pedestrians Detect Them

A universal sound for e-scooters is being developed by scientists at the University of Salford working with the Royal National Institute for Blind People (RNIB) to help pedestrians hear the oncoming vehicles.

The silent motors of e-scooters can be dangerous for people who expect to be able to hear hazards approaching on roads and pavements, and the researchers have gained funding to explore a range of audible motor sounds to find one which is sufficiently noticeable to help safety, while being pleasant for those around, and avoiding unnecessary urban noise pollution.

Read more:
https://www.theguardian.com/uk-news/2022/mar/31/scientists-creating-e-scooter-sound-to-help-blind-people-detect-them

Preventive Medicine

Researchers Discover Drug-Resistant Environmental Mold Is Capable of Infecting People

A new study led by Imperial College London finds that drug-resistant mould is spreading from the environment and infecting susceptible people's lungs.

The researchers found six cases of people infected with a drug-resistant form of a fungi called Aspergillus fumigatus that could be traced back to spores in the

environment. Their findings use samples from England, Wales, Scotland and Ireland, and are published in Nature Microbiology.

Aspergillus fumigatus is an environmental mould that can cause fungal lung disease. While people with healthy lungs clear inhaled spores, people with lung conditions or weakened immune systems sometimes cannot, meaning the spores may remain in the lungs causing an infection called aspergillosis. Aspergillosis affects 10-20 million people worldwide. The infection is usually treated with an antifungal drug but emerging resistance to these drugs has been reported.

Read more:
https://www.sciencedaily.com/releases/2022/04/220425121059.htm

Reducing the Particles Generated by Flushing Institutional Toilets

Airborne particles play a significant role in the transmission of SARS-CoV-2, the virus that causes COVID-19. A previous study reported that institutional flush-O-meter (FOM) toilets can generate 3–12 times as many droplets as other toilets by splashing (large droplets) and bubble bursting (fine droplets). In this study, an aerosol suppression lid was evaluated to measure the reduction of particles by size using three metrics; number, surface area, and mass concentrations. To quantify toilet flush aerosol over time, detailed particle size distributions (from 0.016–19.81 µm across 152 size bins) were measured from a FOM toilet in a controlled-environment test chamber, without ventilation, with and without use of the suppression lid. Prior to each flushing trial, the toilet bowl water was seeded with 480 mL fluorescein at 10 mg/mL. A high-speed camera was used to record the large droplet movements after flushing. An ultraviolet-visible spectrophotometer was used to analyze the wipe samples to evaluate the contamination on the lid. The particle number, surface area, and mass concentrations without a lid were elevated compared to a lid in the first 90 sec. Overall, the lid reduced 48% of total number concentration, 76% of total surface area concentration, and 66% of total mass concentration, respectively. Depending on the particle size, the number concentration reduction percentage ranged from 48–100% for particles larger than 0.1 µm. Large droplets created by splashing were captured by the high-speed camera. Similar studies can be used for future particle aerodynamic studies. The fluorescein droplets deposited on the lid back sections, which were closer to the FOM accounted

for 82% of the total fluorescein. Based on two-way ANOVA analysis, there were significant differences among both the experimental flushes ($p = 0.0185$) and the sections on the lid ($p = 0.0146$). Future work should explore the aerosolization produced by flushing and the performance of the lid in real restroom environments, where feces and urine exist in the bowl water and the indoor ventilation system is in operation.

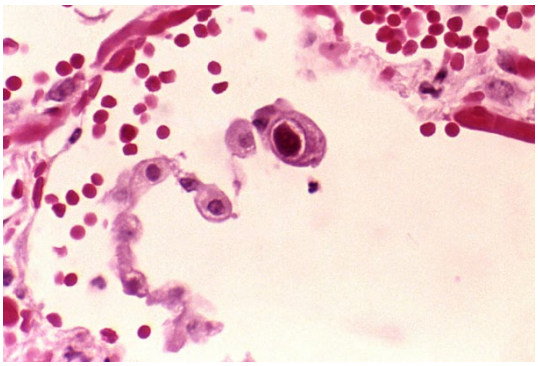
Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 19 Apr 2022 (Available with AIHA membership)

How Air Pollution Alters Lung Tissue, Increasing Cancer Susceptibility

Scientists have identified a mechanism that explains how fine air pollution particles might cause lung cancer, according to a study published today in eLife.

The findings could lead to new approaches for preventing or treating the initial lung changes that lead to the disease.

Tiny, inhalable fine particulate matter (FPM) found in air pollutants has been recognised as a Group 1 carcinogen and a substantial threat to global health. However, the cancer-causing mechanism of FPM remains unclear.



Read more: https://www.sciencedaily.com/releases/2022/04/220419112520.htm

Scientists Have Taken the First Step to Creating the Next Generation of Wearable Health Monitors.

Most research on measuring human biomarkers, which are measures of a body's health, rely on electrical signals to sense the chemicals excreted in sweat. But sensors that rely on perspiration often require huge amounts of it just to get a reading.

A new study suggests that a wearable sensor may be able to monitor the body's

health by detecting the gases released from a person's skin.

"It is completely non-invasive, and completely passive on the behalf of the user," said Anthony Annerino, lead author of the study and a graduate student in materials science and engineering at The Ohio State University.

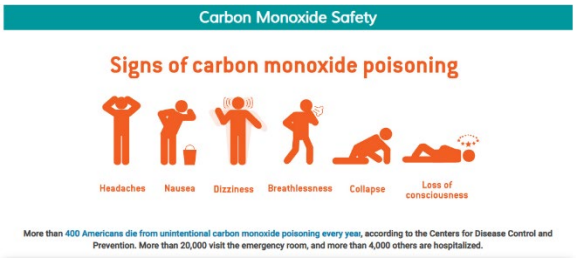
Read more:
https://www.sciencedaily.com/releases/2022/04/220429144924.htm

Unlocking a Cure for Carbon Monoxide Poisoning

Carbon monoxide is an odorless and colorless gas made when fossil fuels burn incompletely. It's also a silent killer.

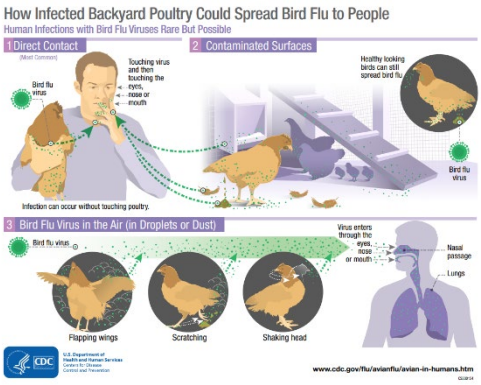
According to the Centers for Disease Control (CDC), more than 400 deaths and 20,000 emergency room visits can be attributed to carbon monoxide (CO) poisoning every year. While CO detectors and making sure your fireplace and heaters work correctly can help prevent exposure, treatment options are limited for those suffering from CO poisoning.

That's why Tim Johnstone, an assistant professor of chemistry and biochemistry at UC Santa Cruz, has been working to develop an easy-to-administer antidote.



Read more:
https://www.sciencedaily.com/releases/2022/04/220429144907.htm

Colorado Reports Nation's First Human H5 Avian Flu Infection



Amid a massive response to highly pathogenic avian influenza outbreaks that have struck 251 flocks in 30 states, Colorado and the US Centers for Disease Control and Prevention (CDC) yesterday reported the country's first human H5 infection, which involved a person working as a culler on an infected commercial farm.

The case marks the second human case of its kind and was detected in routine testing and monitoring of people exposed to the virus during global circulation of the Eurasian H5N1 strain in poultry. The first was reported early January in a British man who had close and very regular contact with sick birds.

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/04/colorado-reports-nations-first-human-h5-avian-flu-infection

Environmental Health

Study Finds Microplastics in Human Lung Tissue

Less than one month after the release of a study showing the discovery of microplastics in human blood, reported by the Environmental Law Monitor here, scientists have discovered microplastics in the lungs of living individuals. The study, out of Hull York Medical School in England and published in Science of the Total Environment, found 39 microplastics in 11 of 13 lung tissue samples collected during thoracic surgical procedures on living patients. Samples were taken from upper, middle, and lower lobe specimens following surgical resection for cancer or lung volume reduction surgery.

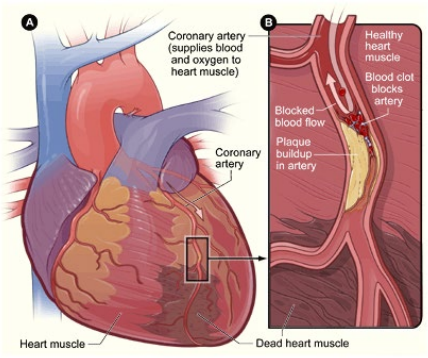
Read more:
https://www.jdsupra.com/legalnews/study-finds-microplastics-in-human-lung-5943271/

AHA News: Air Pollution Exposure May Cause Heart Attack within an Hour

Exposure to air pollutants – even at levels below World Health Organization air quality guidelines – may trigger a heart attack within the hour, according to a new study from China that found the risks were highest among older people and when the weather was colder.

The study found exposure to any level of four common air pollutants could quickly trigger the onset of acute coronary

Figure 2: What is a heart attack?

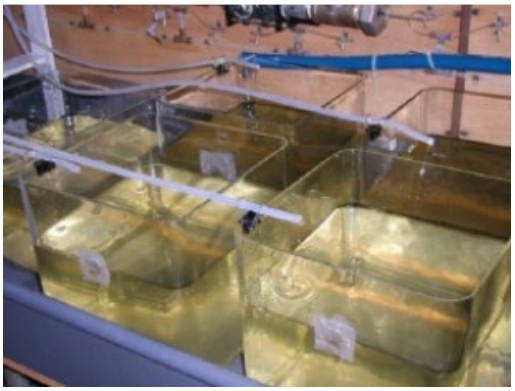


syndrome. ACS is an umbrella term describing any situation in which blood supplied to the heart muscle is blocked, such as in a heart attack or unstable angina, chest pain caused by blood clots that temporarily block an artery. The strongest risk occurred within the first hour of exposure and diminished over the course of the day.

Read more:
https://consumer.healthday.com/aha-news-air-pollution-exposure-may-cause-heart-attack-within-an-hour-2657198591.html

Water Processing: Light Helps Degrade Hormones

Micropollutants in water often are hormones that accumulate in the environment and may have negative impacts on humans and animals. Researchers of Karlsruhe Institute of Technology (KIT) and Leibniz Institute of Surface Engineering (IOM) in Leipzig have now developed a process for the photocatalytic degradation of these pollutants when they flow through polymer membranes. It is presented in Nature Nanotechnology. Irradiation with light triggers a chemical reaction, as a result of which steroid hormones are degraded on the membranes coated with titanium dioxide.



Read more:
https://www.sciencedaily.com/releases/2022/04/220422094315.htm

Pacific Northwest Wildfires Alter Air Pollution Patterns across North America

Increasingly large and intense wildfires in the Pacific Northwest are altering the seasonal pattern of air pollution and causing a spike in unhealthy pollutants in

August, new research finds. The smoke is undermining clean air gains, posing potential risks to the health of millions of people, according to the study.

The research, led by scientists at the National Center for Atmospheric Research (NCAR), found that levels of carbon monoxide -- a gas that indicates the presence of other air pollutants -- have increased sharply as wildfires spread in August. Carbon monoxide levels are normally lower in the summer because of chemical reactions in the atmosphere related to changes in sunlight, and the finding that their levels have jumped indicates the extent of the smoke's impacts.

Read more:
https://www.sciencedaily.com/releases/2022/04/220419091846.htm

Both Antibiotic Resistant Bacteria and Genes Transmitted Between Healthy Dogs and Cats and Their Owners, Finds Study in UK and Portugal

Healthy pet dogs and cats could be passing on antibiotic-resistant bacteria as well as genes that play a key role in bacterial resistance to their owners, according to new research to be presented at this year's European Congress of Clinical Microbiology & Infectious Diseases (ECCMID) in Lisbon, Portugal (23-26 April). The study is by Dr Juliana Menezes from the University of Lisbon in Portugal and Dr Sian Frosini from the Royal Veterinary College, UK, and colleagues.

"Our findings verify not only the sharing of antibiotic resistant bacteria but also of resistance genes between companion animals and their owners in the community,

underscoring the need for continuous local surveillance programmes to identify the potential risk to human health", says Dr Menezes from the University of Lisbon.

Read more:
https://www.eurekalert.org/news-releases/948710

Nanoparticles Prove Effective against the Yellow Fever Mosquito

Before being accidentally introduced to the New World by the 16th century slave trade, the yellow fever mosquito was a species native only to Africa. Highly adaptable, it has since become an invasive species in North America, but researchers at The Ohio State University may have found a way to squash the pesky population in its juvenile stages.

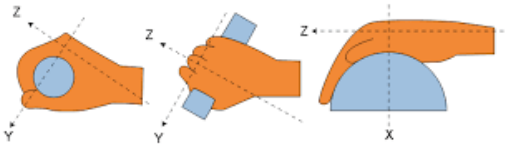
Recently published in the journal Insects, a new paper describes how mosquitoes have evolved a natural resistance to some chemical insecticides, and offers an alternative called carbon black, a type of carbon-based nanoparticles, or CNPs.

Read more:
https://www.eurekalert.org/news-releases/950087

Ergonomics

Effects of Various Handle Shapes and Surface Profiles on the Hand-Arm Responses and Comfort during Short-Term Exposure to Handle Vibration

The magnitude of hand- (HTV) and wrist- (WTV) transmitted vibration can negatively impact upper limb responses even during short-term exposure. This study aimed to establish the effects of various handle-grip designs on the harmful impacts of vibration, sustained grip exertion, and unnatural posture. The primary focus was to investigate how using a handle grip and how three shapes with two surface profiles affect HTV, WTV, and forearm muscle activities during exposure. The secondary



goal was to evaluate the immediate effects on fundamental hand functions, perceived discomfort/comfort, and perceived vibration level after exposure. The final objective was to assess which of the handle designs had the least harmful effects.

Fourteen young male adults were recruited and asked to consistently grip a vibrating handle structure for two-min while the primary parameters were recorded. Pre- and post-task measurements of secondary parameters were recorded on the six design conditions and one control condition (no handle grip). The study found that implementing a regular circular-smooth handle resulted in lower transmitted vibrations, leading to lower upper limb discomfort, higher grip comfort, and lower perceived vibration. Additionally, shape significantly affected HTV, resulting in grip strength reduction, while surface profile did not influence transmitted vibrations but significantly impacted ring and small finger sensitivity, finger and hand discomfort, and grip comfort. Finally, forearm muscle activities were unaffected, and no significant interaction effects were observed. Circular handles also had the least negative impacts, and elliptic handles had the most negative impacts on the upper extremity because of the level of hand-handle contact stress and hand grip effort. Meanwhile, the uneven distribution of vibration on the fingers and palm imposed by the rounded spikes on the patterned surface led to decreased finger sensitivity, higher discomfort, and lower grip comfort. Therefore, when machine operation involves moderate grip exertion, pronated forearm posture, and short-term handle vibration exposure, implementing a hard-solid handle with less hand-handle contact area, less grip effort, and even texture is recommended.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 11 Apr 2022 (Available with AIHA membership)

Safety

Glove 101: Types of Safety Gloves

The sheer number of factors to consider when choosing safety work gloves can be a daunting task. This is where some basic knowledge on gloves can really come in handy.

Let's start with the basics—categorizing the different types of safety gloves.

In this article, we will take a closer look at the different types of safety gloves, their defining characteristics, and how these characteristics influence glove performance.

Types of Safety Gloves

There are five main types of safety gloves:

1. Leather
2. String knit
3. Mechanics
4. Chemical

5. Disposable

Each glove type offers different benefits and features. The table below provides a quick overview of the defining characteristics of each.

Read more:
https://ehsdailyadvisor.blr.com/2022/04/glove-101-types-of-safety-gloves/

Monitor for Asbestos to Help Save Lives

Occupational asbestos exposure impacts more than a million Americans each year.[1] Once hailed a "wonder material," asbestos served a central role in American commercial product manufacturing and construction throughout the 20th century because of its electrical insulating and heat resistant properties. Today, it is recognized as a carcinogen and hazardous substance that takes2

Left alone, the material is not harmful, but once disturbed or disintegrating, it can release asbestos fibers that infiltrate and progressively damage the lungs. The damage can take decades to develop, often well into retirement and old age. Tragically, by the time lung diseases such as

mesothelioma are diagnosed, it is often too late for effective treatment and proves fatal.

Read more:
https://ohsonline.com/articles/2022/05/01/monitor-for-asbestos.aspx?admgarea=news

New Guidance for Preventing Healthcare-Associated Bloodstream Infections

New expert guidance from five medical organizations highlights practice recommendations for the prevention of central line-associated bloodstream infections (CLABSIs) at a time when hospitals urgently need to strengthen infection prevention programs. The CLABSI prevention guide is the first to be published

from a series of seven concise, evidence-based practice recommendation guides for acute care hospitals on the prevention of healthcare-associated infections that threaten patient safety.

The Compendium, as this series has been known since its first publication in 2008, is a multiyear, highly collaborative guidance-writing effort by over 100 experts from around the world. The 2022 update will also include guidance for improving hand hygiene practices in hospitals, and a document on concepts and frameworks to successfully implement healthcare-associated infection prevention practices. The authors note that the Compendium documents may help hospitals restart conversations about quality indicators and remind hospitals to reinforce healthcare-associated infections preventive measures outside of COVID-19.

Read more:
https://www.eurekalert.org/news-releases/950119

Research Brief: Highway Death Toll Messages Cause More Crashes

Displaying the highway death toll on message boards is a common awareness campaign, but new research from the University of Toronto and University of Minnesota shows this tactic actually leads to more crashes.

A new study in Science by University of Toronto Assistant Professor Jonathan D. Hall and U of M Carlson School of Management Assistant Professor Joshua Madsen evaluated the effect of displaying crash death totals on highway message boards (e.g., “1669 deaths this year on Texas roads”). Versions of highway fatality

messages have been displayed in at least 27 US states.

Read more:
https://www.eurekalert.org/news-releases/949843

The Impact of USP 797, USP 800 on Compounding Pharmacies

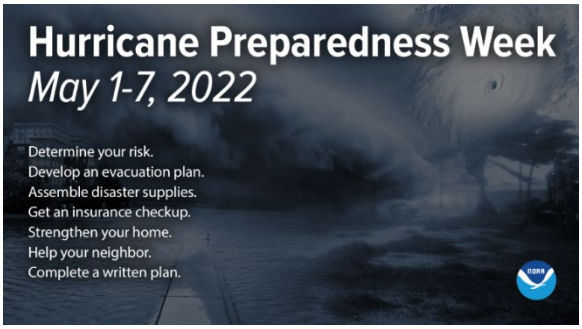
The advent of United States Pharmacopeia (USP) 797 and USP 800 has driven many hospitals and compounding pharmacies to develop and/or revise policies on sterile compounding of hazardous chemotherapies and biotherapies. In USP 797, the guidance establishes standards for sterile compounding to ensure accuracy and avoid contamination of sterile products.1 On the other hand, USP 800 highlights recommendations and processes for the handling of hazardous drugs and includes guidance for health care personnel and facilities.2 USP 800 was a necessary step to maximize the safety of health care workers and patients that are exposed to hazardous medications, but it also recommended many institutions reevaluate their facilities, equipment, processes, and staffing capacity, potentially costing millions of dollars.3

Read more:
https://www.pharmacytimes.com/view/the-impact-of-usp-797-usp-800-on-compounding-pharmacies

Emergency Preparedness

National Hurricane Preparedness

Be ready for hurricane season. Today you can determine your personal hurricane risk, find out if you live in a hurricane evacuation zone, and review/update insurance policies. You can also make a list of items to replenish hurricane emergency supplies and start thinking about how you will prepare your home for the coming hurricane season. If you live in hurricane-prone areas,



you are encouraged to complete these simple preparations before hurricane season begins on June 1.

Read more:
https://www.noaa.gov/hurricane-prep

Deployment Health

2021 Health of the Force Report Examines COVID-19 Pandemic Impacts to Soldier Health, Public Health Response

The U.S. Army Public Health Center released the seventh annual Health of the Force (HOF) report April 18. The report focuses on Active Component Soldiers and presents Army-wide and installation-level data for more than 20 medical, wellness, and environmental indicators.

"This year's HOF report also includes a new COVID-19 metric section for a deep dive into surveillance data and methods, the effect of the pandemic on military healthcare utilization, effects on physical and mental health, and local actions focused on Army Public Health Nursing and vaccination efforts," said Dr. Erin Goodell, HOF editor.

The report also continues the discussion from last year's report on health disparities faced by racial and ethnic minority Soldiers and introduces a focus on the unique health needs of female Soldiers.

Read more:
https://www.dvidshub.net/news/418895/2021-health-force-report-examines-covid-19-pandemic-impacts-soldier-health-public-health-response

Nanotechnology

Study Highlights the Transit of Metal Titanium Dioxide Nanoparticles during Pregnancy

According to scientists at Rutgers University who have studied the factors that cause low-birth-weight babies, inhaled nanoparticles — human-made specks so small they cannot be seen in conventional microscopes and found in thousands of

everyday products — can cross a natural, protective layer that normally protects fetuses.

The researchers revealed their findings in the medical journal Placenta. Scientists were able to follow the transit of metal titanium dioxide nanoparticles through the bodies of pregnant rats. Some nanoparticles escaped the initial barrier after being inhaled into the lungs of the animals. The particles then passed through the placentas, which filter out extraneous elements to safeguard the fetus.

Read more:
https://www.azonano.com/news.aspx?newsID=39011

Regulatory Research & Industrial Hygiene Professional News

State Legislation

New Employee Safety Bill May Increase Litigation in California

The California Senate recently pass a bill which, if enacted, would permit employees in California to refuse to report to work when they feel "unsafe." The bill purports to apply during major natural disasters and states of extreme peril, but contains little limit on what may constitute an emergency condition permitting an employee to refuse to report to work. In fact, the bill is not limited to declared "states of emergency", but expands to "emergency conditions", including any event that poses a "serious danger" to a worker's immediate health and safety. Presumably, it is up to the employee to determine whether such emergency condition exists, since the bill only requires the employee report to their employer, "when feasible", the state of emergency or emergency condition that requires the employee to stay home from

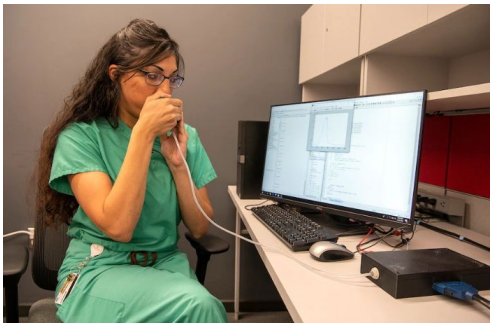
work that day. If this bill is signed into law, we are likely to see an uptick in litigation over whether an employee was protected from termination by this new law.

Read more:
https://www.jdsupra.com/legalnews/new-employee-safety-bill-may-increase-2188295/

FDA

FDA Authorizes COVID Breath Test for Emergency Use

The US Food and Drug Administration (FDA) yesterday authorized for emergency use the first COVID-19 test based on breath samples, a system that looks for chemical signatures of infection and can provide a result in about 3 minutes.



The development comes as US COVID-19 cases are rising slightly in some areas, especially in the Northeast, amid Easter and spring break travel and as the proportion of more transmissible BA.2 subvariant infections rises. The 7-day daily averages today are at 36,503 cases and 522 deaths, according to a Washington Post analysis."

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/04/fda-authorizes-covid-breath-test-emergency-use

FDA Issues Draft Action Levels for Lead in Juice

On April 27, 2022, FDA issued a draft guidance providing draft action levels for lead in single-strength apple juice and other single-strength juices. FDA states that the new levels are intended to reduce the potential for negative health effects associated with dietary exposure to lead. The action supports FDA's Closer to Zero action plan which intends to reduce exposure to toxic elements in foods.

Read more:
https://www.natlawreview.com/article/fda-issues-draft-action-levels-lead-juice

NIOSH

NIOSH to Employers: Are You Inspecting Your Lockout/Tagout Procedures?

Pointing to OSHA guidance citing "the significant risks associated with inadequate energy control procedures or the failure to properly implement them," NIOSH is reminding employers that OSHA's standard on lockout/tagout (1910.147) requires an inspection of written hazardous energy control procedures at least once a year.

In fiscal year 2021, lockout/tagout ranked sixth on OSHA'S Top 10 list of most frequently cited standards, with 1,670 total violations, according to preliminary OSHA Information System data.

Read more:
https://www.safetyandhealthmagazine.com/articles/22473-niosh-to-employers-are-you-inspecting-your-lockouttagout-procedures

OSHA

OSHA Proposes Revoking Arizona's State Plan

On April 21, the Occupational Safety and Health Administration (OSHA) proposed revoking its final approval of Arizona's state workplace safety and health plan (87 Federal Register (FR) 23783). Federal OSHA could resume concurrent workplace safety and health enforcement in the state, as the status of Arizona's program would revert to initial approval.

The agency has tentatively scheduled an informal public hearing on the proposed revocation, beginning August 16 at 10:00

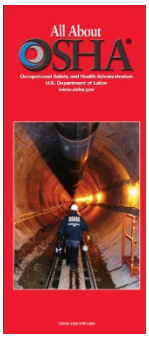
a.m. ET., that may continue over subsequent days. The hearing will be held virtually on WebEx.

OSHA initiated the action because Arizona failed to adopt the healthcare COVID-19 emergency temporary standard (ETS) that OSHA issued on June 21, 2021. Under Section 18(c) of the Occupational Safety and Health (OSH) Act, states with their own occupational safety and health programs

must establish and enforce standards at least as effective as federal OSHA standards.

Read more:
https://ehsdailyadvisor.blr.com/2022/04/osha-proposes-revoking-arizonas-state-plan/

Are You Ready for OSHA's Wave of New Rules?



Are you ready for a wave of new federal worker safety and health regulations?
OSHA is moving forward with several rulemakings, three of which are healthcare-specific, that could affect many employers.

If you're in the healthcare field, you could be facing a permanent COVID-19 standard based on the agency's 2021 emergency temporary standard (ETS) and infectious disease and workplace violence standards.

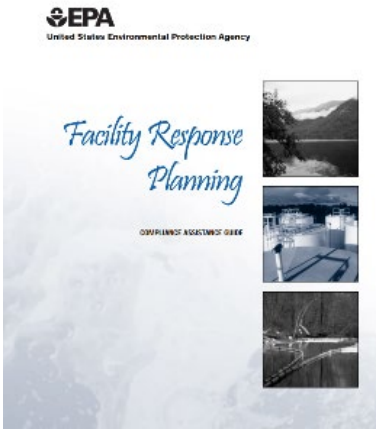
Healthcare—COVID-19
OSHA is moving forward with establishing a permanent COVID-19 standard for healthcare based on the agency's June 21, 2021, ETS. OSHA has requested comment on a permanent standard and scheduled a virtual public hearing on the rulemaking. Most of the industry-specific ETS was allowed to expire, and OSHA withdrew all but the recordkeeping provisions of the emergency rule on December 27.

Read more:
https://ehsdailyadvisor.blr.com/2022/04/are-you-ready-for-oshas-wave-of-new-rules/

EPA

Proposal Requires FRPs for Hazardous Substances

A recently proposed rule would require facilities located near navigable waters and storing hazardous substances above certain levels to submit Facility Response Plans (FRPs) for worst-case discharges and substantial threats of worst-case discharges of those hazardous substances.



"As climate change increases the frequency and severity of extreme weather events, planning and preparedness for these incidents are especially important," said

Carlton Waterhouse, the EPA's deputy assistant administrator for the Office of Land and Emergency Management, in an EPA news release. "This action will help protect the environment and public health from releases of Clean Water Act hazardous substances, particularly in communities with environmental justice concerns, which are disproportionately located in proximity to industrial facilities."

Read more:
https://ehsdailyadvisor.blr.com/2022/04/proposal-requires-frps-for-hazardous-substances/

U.S. EPA Sends Biofuel Blending Mandate Rule to White House For Final Review

The U.S. Environmental Protection Agency has sent a rule on U.S. biofuel blending mandates to the White House for final review, according to a notice posted by the Office of Management and Budget.
The oil and biofuel industries, which have in the past been at odds over the requirements, have been eagerly waiting for the EPA to finalize the mandates. The EPA action comes as the United States faces high gas prices and as companies recover from the coronavirus pandemic.

Read more:
https://www.reuters.com/world/us/us-epa-sends-biofuel-blending-mandate-rule-white-house-final-review-2022-05-02/

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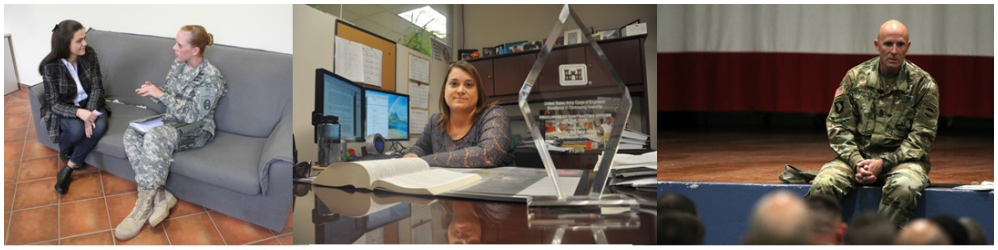
On the Web:
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx



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.