June 2022

Issue 129

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Silica Dust a Driving Force Behind Rising Rates of Black Lung, Study Suggests

Special Interest Articles:

The lung tissue of contemporary coal miners contains higher levels of respirable crystalline silica dust than was found in miners of past generations – which may explain an ongoing surge in cases of the most severe form of black lung disease, researchers at University of Illinois Chicago say.

Progressive massive fibrosis is caused by exposure to respirable coal mine dust. Workers can inhale silica dust while cutting, sawing, drilling or crushing materials such as rock and stone. OSHA estimates that 2.3 million workers are exposed to silica dust annually.

The researchers analyzed lung pathology specimens of 85 coal miners with the condition. They compared cases of those born in or after 1930 (contemporary group) with those born between 1910 and 1930 (historical group). They found a "significantly higher proportion" of silica-type progressive massive fibrosis among the contemporary miners compared with those in the historical group – 57% vs. 18%.

Additionally, on average, the contemporary miners were younger at time of tissue collection (age 61 vs. 65) and had fewer years in underground mining (30 vs. 35 years).

Read more:
https://www.safetyandhealthmagazine.com/articles/22678-silica-dust-a-driving-force-behind-rising-rates-of-black-lung-study-suggests

Contents:

Forever Chemicals Linked to Hypertension in Middle-Aged Women

Middle-aged women with higher blood concentrations of common synthetic chemicals called per- and polyfluoroalkyl substances (PFAS), also called "forever chemicals" and found in water, soil, air and food, were at greater risk of developing high blood pressure, compared to their peers who had lower levels of these substances, according to new research published today in Hypertension, an American Heart Association journal.

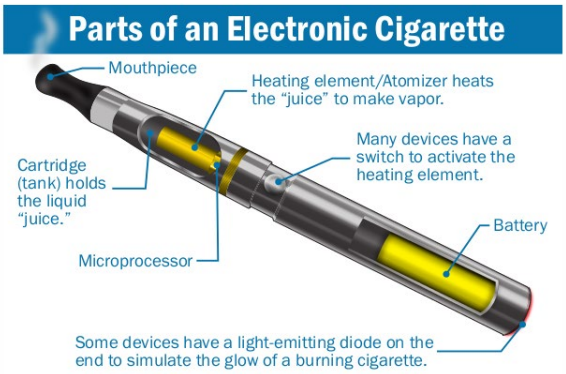
PFAS, are a class of synthetic chemicals and according to the U.S. Environmental Protection Agency, there are thousands of different PFAS that are used in everyday household items, such as certain shampoo, dental floss, cosmetics, non-stick cookware, food packaging, stain-resistant coatings for carpeting, upholstery and clothing. The "forever chemicals" also enter the food system through fish caught in PFAS-contaminated water and dairy products from cows exposed to PFAS through fertilizers on farms, for example.

Read more:
https://www.sciencedaily.com/releases/2022/06/220613112102.htm

Human Skin Can Be Damaged by Exposure to Thirdhand Smoke and Electronic Cigarette Spills

A University of California, Riverside, study has found that dermal exposure to nicotine concentrations found in thirdhand smoke, or THS, and electronic cigarette spills may damage the skin.

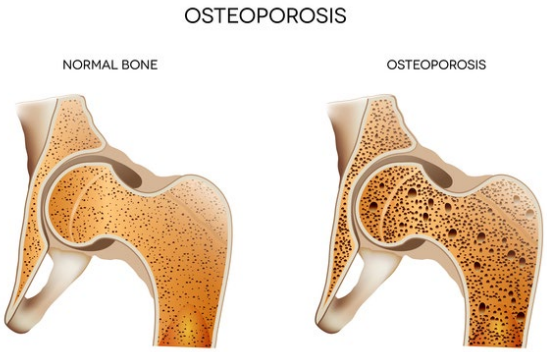
THS, of which nicotine is a major component, is created when exhaled smoke and smoke emanating from the tip of burning cigarettes settles on surfaces such as clothing, hair, furniture, and cars. Not strictly smoke, THS refers to the residues left behind by smoking. Electronic cigarette spills are e-liquid spills that may occur by leaky electronic cigarette products or when consumers and vendors mix e-liquids for refillable electronic cigarettes.



Study results appear in Atmosphere.

Read more:
https://medicalxpress.com/news/2022-06-human-skin-exposure-thirdhand-electronic.html

Continuous NHANES Survey Data For Environmental Ambient And Occupational Hazard Identification – Feasibility And Preliminary Findings for Osteoporosis and Kidney Disease



The Continuous NHANES Survey provides detailed health and environmental chemical burden information on the U.S. population. As of 2012, there were data for 71,000 participants. Based on single biomarker determinations cumulative burdens were estimated. Because age distributions would differ comparing ambient environmental and occupational exposures, a procedure to distinguish ambient from likely occupational exposures was applied. Associations are reported for osteoporosis and kidney

disease-related outcomes with cadmium, lead and other metals. Cumulative cadmium burden (from blood cadmium, ambient and occupational) was a strong predictor of bone fracture risk and ambient tungsten also had a positive association. Cumulative lead (ambient and occupational) had a negative ("protective") association with fractures as did mercury (occupational). Bone mineral density was statistically significantly and similarly predicted by metal exposures. Kidney disease was significantly associated with cumulative lead burdens from both the estimated ambient and occupational sources and with ambient blood cadmium but was most strongly associated with cumulative occupational uranium burden. Systolic blood pressure statistically significantly increased with cumulative ambient and occupational lead (blood) burden and with ambient cadmium and cobalt. Diastolic blood pressure was significantly associated with several cadmium and cobalt metrics along with ambient and occupational cumulative burdens for lead. For environmental substances with burden half-lives measured in years, NHANES offers opportunities for hypothesis generation and confirmation.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 21 Jun 2022 (Available with AIHA membership)

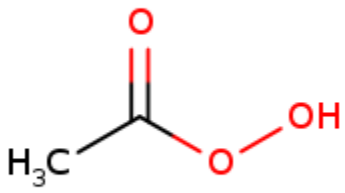
Higher Lead Concentrations Found in Diseased Bones

Among the world's population over age 60, chronic illnesses like the degenerative bone disease osteoporosis have become more common. Trace elements of chemical impurities in bones might play a role in the development of osteoporosis, but this role is currently poorly understood. Identifying which elements have little effect on bones and which might contribute to degeneration can help researchers better understand and treat osteoporosis.

To gain insight into the relationship between trace element impurities and osteoporosis, Coyte et al. selected 16 trace elements and analyzed their prevalence in samples from 58 patients who underwent hip replacement surgery. Of these patients, who ranged in age from 41 to 100, 29 were diagnosed with osteoporosis, and 29 had osteoarthritis, a degenerative disease that affects cartilage but not bone. Researchers tested cortical bone (hard outer layer) and trabecular bone (spongy inner layer) in all samples. Element concentrations in the outer bone result from long-term accumulation, whereas the concentration of trace elements in the inner bone can change over time.

Read more:
https://medicalxpress.com/news/2022-06-higher-diseased-bones.html

A Field-Portable Colorimetric Method for the Measurement of Peracetic Acid Vapors: A Comparison of Glass and Plastic Impingers



A method for measuring peracetic acid vapors in air using impinger sampling and field-portable colorimetric analysis is presented. The capture efficiency of aqueous media in glass and plastic impingers was evaluated when used for peracetic acid vapor sampling. Measurement of peracetic acid was done using an N,N-diethyl-p-phenylenediamine colorimetric method with a field portable spectrometer. The linearity of the N,N-diethyl-p-phenylenediamine method was determined for peracetic acid both in-solution and captured from vapor phase using glass or plastic impingers. The Limits of Detection for the glass and plastic impingers were 0.24 mg/m3 and 0.28 mg/m3, respectively, for a 15 L air sample. The Limits of Quantitation were 0.79 mg/m3 and 0.92 mg/m3 for the glass and plastic impingers, respectively. Both metrics were below the American Conference of Governmental Industrial Hygienists Threshold Limit Value Short-Term Exposure Limit of 1.24 mg/m3 (0.4 ppmv) during a 15-minute period. This impinger sampling method presented herein allows for an easy to use and rapid in-field measurement that can be used for evaluating occupational exposure to peracetic acid.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 16 Jun 2022 (Available with AIHA membership)

Assessment of Formaldehyde Exposures under Contemporary Embalming Conditions in U.S. Funeral Homes

The funeral service profession has used formaldehyde-containing embalming solutions for the preparation of decedents since the early 1900s. The available literature regarding funeral director exposure to formaldehyde largely consists of data collected prior to 2000, with most studies reporting task-length exposure concentrations rather than full-shift time-weighted average concentrations. As formaldehyde undergoes review in the U.S. Environmental Protection Agency Toxic Substances Control Act (TSCA) risk evaluation process, accurately characterizing long-term exposure potential in this profession is critical. This study presents passive badge sampling and air change rate measurement results conducted at 13 funeral home locations across the United States. Full-shift (approximately 8-hr) samples were collected on one embalmer per day in each funeral home and on one occupational non-user (ONU), e.g., a receptionist. Additionally, task-length samples were collected during each embalming that occurred during the shift, were one to occur. Full-shift concentrations ranged from 0.007 to 1.1 ppm and 0.007 to 0.042 ppm for embalmers and ONUs, respectively. Task-length formaldehyde concentrations ranged from 0.058 to 1.4 ppm, with the average embalming taking 72.8 min to

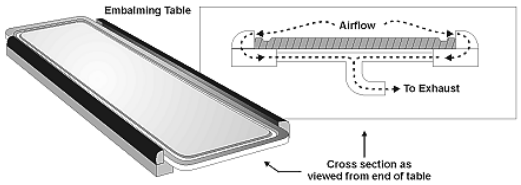


Figure 1. Diagram of local exhaust ventilation slot hood.

complete. Air change rates in the preparation rooms ranged from 2.8 to 28.3 air changes per hour; however, no correlation between task-length formaldehyde concentrations and air change rate was observed. Following empirical data collection, a Monte Carlo analysis of estimated annual 8-hr time-weighted average (TWA) exposure was conducted to determine the potential exposure distribution for embalmers employed at private funeral homes. Inputs to the simulation were derived from responses to a National Funeral Directors Association survey and from empirical measurements collected during the study. With respect to the reconstructed 8-hr TWAs, the median 8-hr TWA was 0.037 ppm, with 93.6% of the predicted concentrations below 0.1 ppm. This study provides a robust characterization of contemporary formaldehyde exposures in the funeral service profession. Further, it provides a strategy for interpreting the results along with surveyed responses regarding embalming frequency to better inform risks associated with formaldehyde exposure in this profession.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 03 Jun 2022 (Available with AIHA membership)

Radiation

New Findings May Trigger Stricter Rules for Low Dose Radiation Discharge

A new report from the National Academies of Sciences, Engineering, and Medicine (NASEM) released on June 2 suggests that radiation standards promulgated by the Environmental Protection Agency (EPA), the Department of Energy (DOE), and the Nuclear Regulatory Commission (NRC) must be strengthened due to low dose radiation's negative effects on human health. The study was undertaken by the Committee on Developing a Long-Term Strategy for Low-Dose Radiation Research in the United States and was sponsored by the DOE.

Broadly, the NASEM findings indicate that exposure to low doses of radiation may lead to cancer, cardiovascular disease, neurological disorders, immune dysfunction, and cataracts. Low dose radiation is defined as below 100 milligray (mGy) or low-dose rates of less than 5 mGy per hour. Such levels may be present in medical, industrial, military, and commercial settings. The findings specifically note that rare earth element mining—which is currently being pursued by the Biden administration to develop cleaner energy—can lead to both low dose radiation exposure and groundwater contamination through the release of radionuclides.

Read more:
https://www.jdsupra.com/legalnews/new-findings-may-trigger-stricter-rules-7899926/

Ventilation

Comparing Ductless vs Ducted Fume Hoods

Many laboratory applications require the use of a fume hood to trap and exhaust volatile vapors and hazardous fumes. Fume hood design has come a long way over the past few decades and there are several different types to choose from. Conventional ducted fume hoods connect to facility ductwork, sending contaminated air outside the facility. Ductless fume hoods are standalone units that filter contaminated air, recirculating clean air back into the room.

Both types of fume hoods have advantages and drawbacks in relation to cost, practicality, and other factors, and it's important to assess these before making a purchase.

Read more:
https://www.labmanager.com/product-focus/comparing-ductless-vs-ducted-fume-hoods-28187

PPE

Powered Air Purifying Respirator (PAPR) Disinfection and Risk of Surface Damage from Hydrogen Peroxide and Quaternary Ammonium Chloride Based Disinfectants

Reusable Powered Air Purifying Respirators (PAPRs) have been increasingly used as an alternative to disposable masks or respirators for healthcare workers needing

protection from respiratory droplets containing respiratory viruses, but little information is available concerning how well PAPRs resist damage from repeat disinfection over their lifetime. This study tested parts from four PAPRs against four commercially available hydrogen peroxide and quaternary ammonium chloride disinfectants by immersion for 28 days to simulate prolonged exposure. Risk of surface damage was assessed through color change, mass change, and visual observation of damage. Minimal risk of damage was found for three of the disinfectants tested and for the fourth disinfectant, a risk of surface damage to a small number of parts. Exposure to tap water caused similar damage in many cases. The study demonstrated that risk of surface damage varied by part and disinfectant, indicating that some disinfectants are more likely to be compatible against the wide range of materials and parts in a commercial PAPR and other disinfectants may show varying compatibility, with more risk to certain materials or parts.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 16 Jun 2022 (Available with AIHA membership)

Noise

Researchers Create 3D Printed Ear Model for Testing Hearing Protection Devices

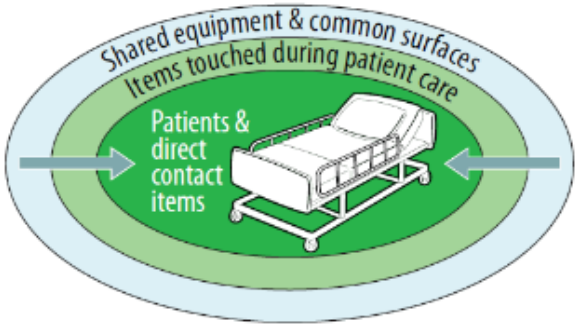
A team of researchers from the University of Oklahoma have developed a 3D printed human ear model for standardizing blast exposure testing of hearing protection devices (HPDs).

According to the researchers, leveraging 3D printing technology could substantially improve the evaluation of HPDs through increased personalization, improved cost-effectiveness, and time efficiency.

Read more:
https://3dprintingindustry.com/news/researchers-create-3d-printed-ear-model-for-testing-hearing-protection-devices-210416/

Preventive Medicine

Study: Sporicidal Disinfectant, Thorough Cleaning Cuts Hospital-Onset C Diff



In the quasi-experimental study, researchers compared the eight hospitals that implemented the hospital-wide sporicidal cleaning intervention with nine control hospitals from the same healthcare system that didn't implement the cleaning program. The intervention began with environmental services technicians and managers from the hospitals participating in education and training sessions, then adding daily hospital-wide, patient-zone, surface-disinfection cleaning with a sporicidal disinfectant cleaner to their traditional disinfection regimen for rooms occupied by CDI patients.

A structured performance monitoring and feedback program using the fluorescent marker system was added to measure thoroughness of disinfection cleaning (TDC)—a measurement of the percentage of patient zone surfaces that have been disinfected—and optimize cleaning practice. The researchers then compared pre- and post-intervention monthly HO-CDI rates at the intervention and control hospitals.

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/06/stewardship-resistance-scan-jun-20-2022

Report Profiles Aerosol Spread In Hospital COVID-19 Outbreak

SARS-CoV-2 RNA in air samples collected at a nurses station at a Boston hospital were identified in all particle sizes and were genetically identical to human samples from a healthcare-associated outbreak, according to a new study in JAMA Network Open.

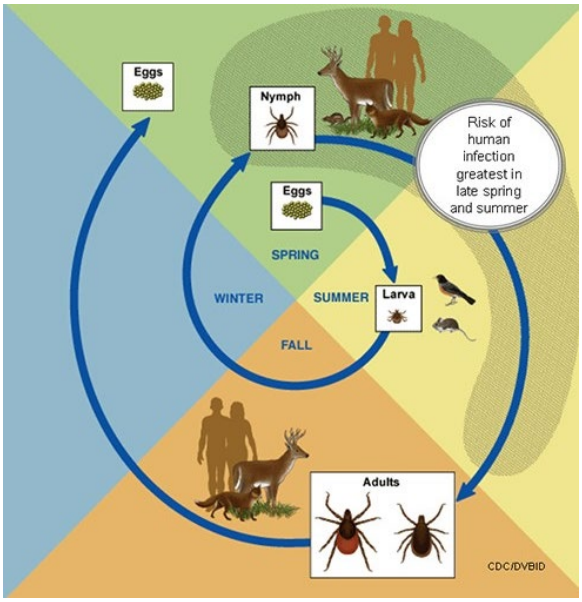
Air sampling during hospital outbreak

For the study, researchers at Harvard, the Veterans Affairs Boston Healthcare System (VABHS), Boston University, and Brigham and Women's Hospital in Boston collected air samples to detect SARS-CoV-2 RNA at a VABHS hospital and long-term care center from Nov 16, 2020, to Mar 11, 2021.

They used a microenvironmental cascade impactor that collects airborne particles in three size ranges: larger than 10.0 micrometer (µm,) 2.5 to 10.0 µm, and smaller than 2.5 µm. They collected samples about every week, with a break from Dec 10, 2020, to Jan 4, 2021

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/06/report-profiles-aerosol-spread-hospital-covid-19-outbreak

More Than 14% of World's Population Likely Has (Had) Tick-Borne Lyme Disease



More than 14% of the world's population probably has, or has had, tick-borne Lyme disease, as indicated by the presence of antibodies in the blood, reveals a pooled data analysis of the available evidence, published in the open access journal BMJ Global Health.

Central and Western Europe and Eastern Asia are the regions of the world where the reported prevalence of the infection is highest, while men aged 50+ who live in rural areas are most at risk, the analysis shows.

Borrelia burgdorferi sensu lato (Bb) infection, more usually known as Lyme disease, is the most common type of tick-borne infection, with ticks second only to mosquitoes in terms of their carriage of harmful microbes.

Read more:
https://medicalxpress.com/news/2022-06-world-population-tick-borne-lyme-disease.html

Noninvasive Technique Collects Sufficient Tear Fluid to Look for Biomarkers of Health and Disease

The protective outer layer of our eyes, called the tear film, contains thousands of proteins, which provide clues about wellness and disease, and scientists have fine-tuned what they say is a non-invasive and efficient way to look at those clues.

They anticipate that one day a tear fluid workup could be as routine as bloodwork during a physical exam as well as in diagnosing a myriad of conditions from dry eye disease to Alzheimer's.
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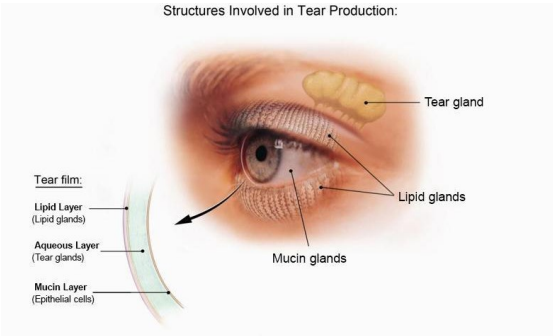


Read more:
https://medicalxpress.com/news/2022-06-noninvasive-technique-sufficient-fluid-biomarkers.html

Genetic Discovery Could Spell Mosquitoes' Death Knell

A UC Riverside genetic discovery could turn disease-carrying mosquitoes into insect Peter Pans, preventing them from ever maturing or multiplying.

In 2018, UCR entomologist Naoki Yamanaka found, contrary to accepted scientific wisdom, that an important steroid hormone requires transporter proteins to enter or exit fruit fly cells. The hormone, ecdysone, is called the "molting hormone." Without it, flies will never mature, or reproduce.

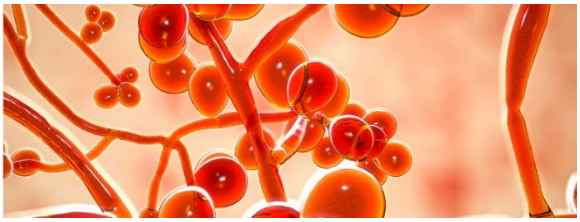
Read more:
https://www.sciencedaily.com/releases/2022/06/220615102855.htm

Deadly Fungus Can Multiply By Having Sex, Which Could Produce More Drug-Resistant, Virulent Strains

Researchers at McMaster University have unlocked an evolutionary mystery of a deadly pathogen responsible for fueling the superbug crisis: it can reproduce by having sex.

And while such fraternizing is infrequent, scientists report it could be producing more drug-resistant and more virulent strains of Candida auris, capable of spreading faster.

C. auris is a fungus that can cause severe infections and sometimes death, often striking immunocompromised hospital patients.



Unlike animals and plants, microorganisms of this nature usually divide and reproduce asexually, so one produces two, two produce four and so on, all genetically identical to each other, through a process of very simple division and without the exchange of genetic material.

Read more:
https://www.sciencedaily.com/releases/2022/06/220627125005.htm

Environmental Health

Google Maps Now Has an Air Quality Index Layer

Air Quality Index (AQI) values	Levels of Health Concern	Colors
When the AQI is in this range:	...air quality conditions are:	...as symbolized by this color:
0 to 50	Good	Green
51 to 100	Moderate	Yellow
101 to 150	Unhealthy for Sensitive Groups	Orange
151 to 200	Unhealthy	Red
201 to 300	Very Unhealthy	Purple
301 to 500	Hazardous	Maroon

The world's most-used mobile navigation app has broadened its layers to offer localised readings for pollutants including nitrogen oxides (NOx) and fine particulate matter PM2.5

Google Maps has expanded on its benchmark-setting offering, allowing users to search for air quality measurements in their area, with support for both Android and iOS platforms.

PM2.5, NOx, CO2 and pollen counts are included in the readings, which are now available for any location across the United States. Other countries are expected to be added in the coming months, mirroring the recent rollout of another climate related

Google Maps feature, which gives up-to-date information on the location of wildfires.

Read more:
https://airqualitynews.com/2022/06/15/google-maps-now-has-an-air-quality-index-layer/

Pesticides Linked to Adult and Childhood Cancer in Western U.S., with Incidence Varying by County

There is a strong connection between pesticide use and cancer rates in the Western United States, finds research recently published by scientists at University of Idaho and Northern Arizona University. Two studies (here and here) published in the peer-reviewed journal GeoHealth used geospatial data and publicly available pesticide databases to uncover the relationship between chemical heavy agricultural practices and cancer in both adults and children. As the rate of chronic diseases like cancer continue to increase in the United States, and more and more studies find these diseases to be pesticide-induced, it is imperative for the public to put increased pressure on regulators and lawmakers to enact meaningful measures that eliminate

pesticide use and the hazards these chemicals pose.

Read more:
https://beyondpesticides.org/dailynewsblog/2022/06/pesticides-linked-to-adult-and-childhood-cancer-in-western-u-s-with-incidence-varying-by-county/

Scientists Verify In-Road Air Pollution Solution

A new in-road solution for capturing air pollutants from vehicles has been found to reduce roadside exposure to humans by 91%. Environmental technology firm Pollution Solution has unveiled their new product, 'Roadvent' – the first solution of its kind to be independently verified by scientists.

Through a series of controlled experiments at the first Roadvent installation site in Bedford, scientists from Cambustion UK were able to quantify and verify the solution's efficacy to capture and clean polluted air directly from the road.

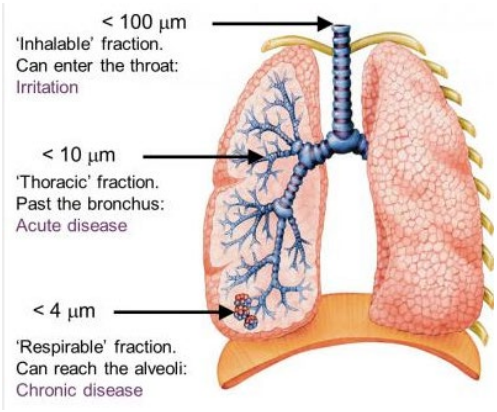
Read more: https://airqualitynews.com/2022/06/21/scientists-verify-in-road-air-pollution-solution/

Study Shows Inhaled Toxic Particles Take Direct Route From Lungs to Brain

Breathing in polluted air could lead to toxic particles being transported from lungs to brain, via the bloodstream—potentially contributing to brain disorders and neurological damage, a new study reveals.

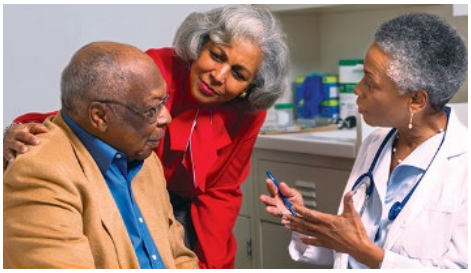
Scientists have discovered a possible direct pathway used by various inhaled fine particles through blood circulation with indications that, once there, the particles stay longer in the brain than in other main metabolic organs.

An international team of experts from the University of Birmingham and research institutions in China today published their findings in PNAS.



Read more: https://medicalxpress.com/news/2022-06-inhaled-toxic-particles-route-lungs.html

REPORT: For Senior Populations, Black Americans Are Three Times More Likely to Die from Exposure to Particle Pollution than White Americans



Black Americans 65 and older are three times more likely to die from exposure to fine particle air pollution than white Americans over 65, according to a new report released today by Environmental Defense Fund. The analysis finds that stronger air pollution limits would save

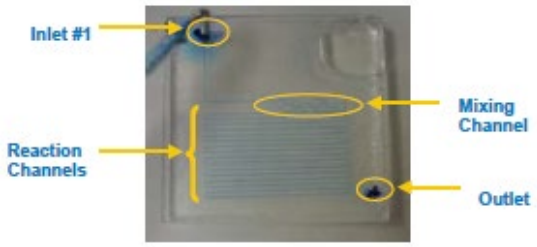
thousands of lives each year and deliver significant health benefits, especially for Black, Hispanic and low-income communities.

"Fine particle air pollution is responsible for more than 110,000 deaths in the U.S. each year from heart attacks, strokes, diabetes and respiratory diseases, and those harms are not distributed equally," said Ananya Roy, Senior Health Scientist for EDF. "This report underscores the importance of the U.S. Environmental Protection Agency strengthening our national protections against fine particle pollution. Stronger standards would have significant benefits for all of us, and especially for vulnerable populations who are being most harmed exposures to particle pollution."

Read more:
https://www.edf.org/media/report-senior-populations-black-americans-are-three-times-more-likely-die-exposure-particle

Novel Microfluidic Chip Can Detect Contaminants in 100-Picoliter Samples

Scientists from the Institute of Laser Engineering at Osaka University created a prototype terahertz optical spectroscopy system with a sensing area equivalent to the cross-sectional area of just five human hairs. By measuring the shift in peak transmittance wavelength of a terahertz radiation source, the concentration of even trace dissolved contaminants in a tiny drop of water can be measured.This work (Journal of Physics: Photonics, "I-design terahertz microfluidic chip for attomole-level sensing") may lead to portable sensors for applications such as the early detection



of diseases, drug development, and water pollution monitoring.

Read more:
https://www.nanowerk.com/nanotechnology-news2/newsid=60952.php

Ergonomics

Repetitive Motion Can Lead to Workplace Injuries

Sometimes referred to as ergonomic injuries, musculoskeletal disorders, or MSDs, develop when a person uses muscles, tendons and ligaments to perform tasks in awkward positions or in frequent activities that, over time, create pain and injury.

The U.S. Bureau of Labor Statistics refers to MSDs as the combination of certain injuries or illnesses and events or exposures. MSDs do not include disorders caused by slips, trips, falls or similar incidents.

Here are examples of possible MSD-related injuries or illnesses:

- pinched nerve
- herniated disc
- meniscus tear
- sprains, strains, tears
- hernia (traumatic and nontraumatic)
- pain, swelling and numbness
- carpal or tarsal tunnel syndrome
- Raynaud's syndrome or phenomenon
- other musculoskeletal systems and connective tissue diseases and disorders

Read more:
https://ndworks.nd.edu/news/repetitive-motion-can-lead-to-workplace-injuries/

Safety

Natural Gas Used in Homes Contains Hazardous Air Pollutants, Shows Boston-Area Study

Every day, millions of Americans rely on natural gas to power appliances such as kitchen stoves, furnaces, and water heaters, but until now very little data existed on the chemical makeup of the gas once it reaches consumers.

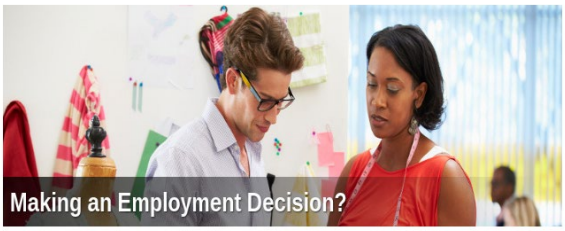
A new study finds that natural gas used in homes throughout the Greater Boston area contains varying levels of volatile organic chemicals that when leaked are known to be toxic, linked to cancer, and can form secondary health-damaging pollutants such as particulate matter and ozone. The

research by the Center for Climate, Health, and the Global Environment at Harvard T.H. Chan School of Public Health, PSE Healthy Energy, Atmospheric and Environmental Research (AER), Gas Safety Inc., Boston University, and Home Energy Efficiency Team (HEET) was published in Environmental Science & Technology.

Read more: https://phys.org/news/2022-06-natural-gas-homes-hazardous-air.html

ILO Designates Occupational Safety and Health as a Fundamental Right at Work

Employee Rights



You've heard University leadership say it: The daily goal is that you return home from work the same way you arrived on campus — safe and healthy.

According to the National Safety Council (NSC), every seven seconds a worker is injured on the job. At that rate, 12,600 people in the U.S. are injured at work each day. The good news is on-the-job injuries are often preventable.

Top three injuries in the workplace resulting in lost workdays:

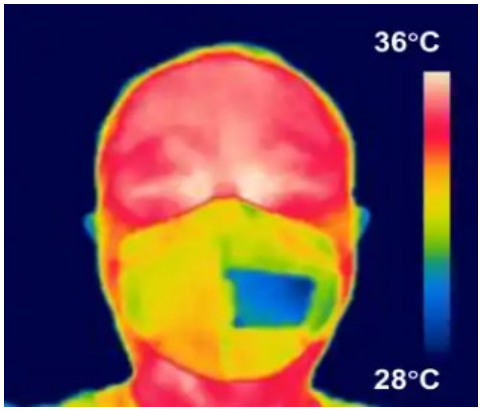
- Overexertion
- Lifting or lowering
- Repetitive motion
- Contact with objects and equipment
- Struck by or against object or equipment
- Caught in equipment
- Struck by collapsing equipment or material
- Slips, trips and falls
- Falls to lower level
- Falls on same level

Interestingly, in 2020 when the pandemic broke out, the no. 1 work-related injury or illness was exposure to harmful substances/environment, including COVID-19. Rounding out the top three that year were overexertion and slips, trips and falls.

Read more: https://www.safetyandhealthmagazine.com/articles/22730-ilo-designates-occupational-safety-and-health-as-a-fundamental-right-at-work

Personal Health Trackers May Include Smart Face Mask, Other Wearables

For years, automotive companies have developed intelligent sensors to provide real-time monitoring of a vehicle's health, including engine oil pressure, tire pressure and air-fuel mixture. Together, these sensors can provide an early warning system for a driver to identify a potential problem before it may need to be repaired.



Now, in a similar vein biologically, Zheng Yan, an assistant professor in the MU College of Engineering at the University of Missouri, has recently published two studies demonstrating different ways to improve wearable bioelectronic devices and materials to provide better real-time monitoring of a person's health, including vital signs.

Developing a 'smart' face mask

The onset of the COVID-19 pandemic has brought the idea of mask-wearing to the forefront of many people's minds. In response, one focus of Yan's lab has been to develop breathable soft bioelectronics. He said it was natural for him and his team to come up with the idea for integrating bioelectronics in a breathable face mask, which can monitor someone's physiological status based on the nature of the person's cough. Their findings were recently published in ACS Nano, a journal of the American Chemical Society.

Read more:
https://www.sciencedaily.com/releases/2022/06/220623122627.htm

Engineers Aim for Early Detection of Concerning Chemical Changes at Worksites

Engineers from Purdue University say they have developed new technologies that enhance methods of detecting, identifying and quantifying chemicals in various work environments that might traditionally require lab analysis, and could protect workers from potential incidents.

Using Raman spectroscopy – a chemical analysis technique that uses light to assess the chemical composition of materials – researchers from Purdue's Lyles School of Civil Engineering have created innovations that can examine liquids such as water,

motor oil and petroleum products to identify slight changes in their makeup.

Read more:
https://www.safetyandhealthmagazine.com/articles/22671-engineers-aim-for-early-detection-of-concerning-chemical-changes-at-worksites

Skin, Musculoskeletal Health Essential for Truck Drivers

When truck driver health care comes to mind, most think of cardiovascular or weight issues. However, skin care and musculoskeletal well-being is also a growing concern.

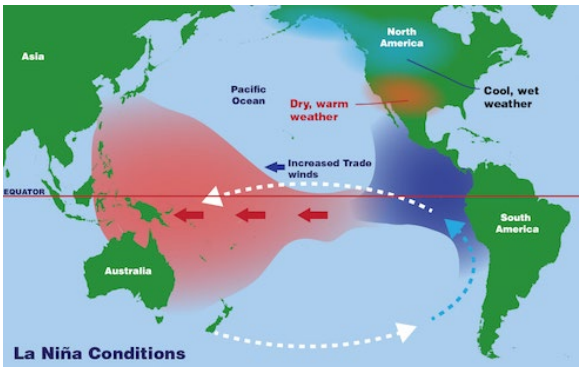
As for skin care, the amount of exposure to sunlight and ultraviolet (UV) rays is a prominent factor in proper health maintenance. Although a casual amount of sun exposure provides healthy doses of Vitamin D, too much exposure causes skin damage and could lead to skin cancer. To protect over-the-road drivers, the front windshield is built to shield against the most dangerous UV rays; however, there is no equivalent protection on the driver-side window.

At his practice, Dr. Scott Fosko, a Jacksonville, Fla.-based dermatologist, noticed that many of his patients with skin cancer have asymmetric damage to the left side of their heads and necks.

Read more:
https://www.ttnews.com/articles/skin-musculoskeletal-health-essential-truck-drivers

Emergency Preparedness

Ongoing La Niña, Above-Average Atlantic Temperatures Set the Stage for Busy Season Ahead



Forecasters at NOAA's Climate Prediction Center, a division of the National Weather Service, are predicting above-average hurricane activity this year — which would make it the seventh consecutive above-average hurricane season. NOAA's outlook for the 2022 Atlantic hurricane season, which extends from June 1 to November 30, predicts a 65% chance of an above-normal season, a 25% chance of a near-normal season and a 10% chance of a below-normal season.

For the 2022 hurricane season, NOAA is forecasting a likely range of 14 to 21 named storms (winds of 39 mph or higher), of which 6 to 10 could become hurricanes (winds of 74 mph or higher), including 3 to 6 major hurricanes (category 3, 4 or 5; with winds of 111 mph or higher). NOAA provides these ranges with a 70% confidence.

Read more: https://www.noaa.gov/news-release/noaa-predicts-above-normal-2022-atlantic-hurricane-season

Deployment Health

Veterans at Higher Risk of Deadly Skin Cancers

U.S. veterans are at higher risk for melanoma, the deadliest form of skin cancer, than most Americans, and new research finds they are also more likely to have advanced-stage disease when it's detected.

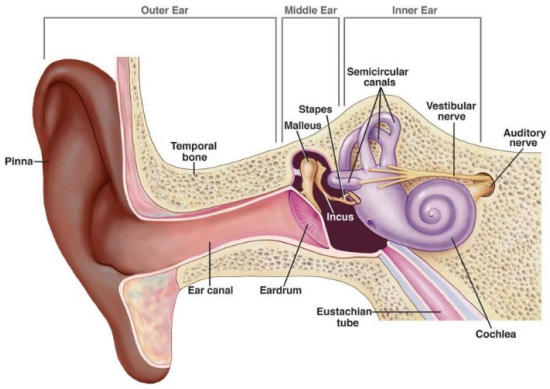
At the time of diagnosis, "we found veterans with melanoma were more likely to present with 'regional' or 'distant' disease," explained study author Dr. Rebecca Hartman, an associate chief of dermatology with the VA Boston Healthcare System.

"Primary care providers and dermatologists who care for veterans, as well as veterans themselves, should be aware of the elevated advanced melanoma risk in this population," Hartman added.

Read more:
https://medicalxpress.com/news/2022-06-veterans-higher-deadly-skin-cancers.html

Nanotechnology

Study Finds Silver Nanoparticles and Noise Exposure Induces Rat Hearing Loss



In an article recently published in the journal Life Sciences, researchers investigated the effect of nanosilver (Ag), noise, and nano-Ag plus noise treatments on rat's cochlea. The research outcomes confirmed that these treatments induced oxidative stress in rats and changed the expression of interleukin-6 (IL-6), tumor necrosis factor alpha (TNF-α), and NADPH oxidase 3 (NOX3).
A decrease in the expression percentage of TUJ-1 and MHC-7 proteins in rat cochlea was observed because of the exposure to nano-Ag, noise, and nano-Ag plus noise, ultimately causing a hearing deficit in them.

Read more:
https://www.azonano.com/news.aspx?newsID=39302

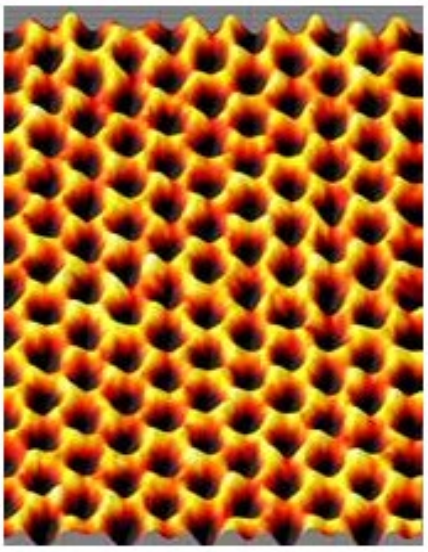
Researchers Discover the Health Hazards Posed by Graphene to Be Benign

The health consequences of graphene-based particles produced from polymer composites following abrasion are insignificant. An international research group of the Graphene Flagship project did a study on the health hazards of graphene-containing nanoparticles under the supervision of Empa.

The results were recently published in the Journal of Hazardous Materials.

Reinforcement of polymers using graphene-related materials (GRMs) is common. GRMs can substantially improve the strength, electrical conductivity, and thermal transport of composites in modest concentrations of up to five weight percent for a range of applications.

However, since graphene and GRMs are a relatively new class of materials, they must



be thoroughly evaluated before commercialization to discover any potential negative consequences.

Read more:
https://www.azonano.com/news.aspx?newsID=39284

Regulatory Research & Industrial Hygiene Professional News

Legislation

House Passes Bill Expanding Federal Employees' Access to Treatment under Workers' Comp Program

The House has passed legislation that would expand the types of medical professionals who can treat injured employees under the Federal Workers' Compensation Program.

The Improving Access to Workers' Compensation for Injured Federal Workers Act (H.R. 6087), was introduced by Rep. Joe Courtney (D-CT) on Nov. 30. If it becomes law, the bill would allow nurse practitioners and physician assistants "acting within the scope of their practice" to:

Prescribe or recommend treatment for injured workers.

Read more:
https://www.safetyandhealthmagazine.com/articles/22718-house-passes-bill-expanding-federal-employees-access-to-treatment-under-workers-comp-program

HazCom Standard Update Coming before Year's End? Spring 2022 Regulatory Agenda Released

An update to OSHA's Hazard Communication standard could happen as soon as December, according to the Department of Labor's Spring 2022 regulatory agenda.

Published June 21, the agenda – issued by the Office of Information and Regulatory Affairs twice a year – provides the status of and projected dates for all potential regulations listed in three stages: pre-rule, proposed rule and final rule.

In this latest regulatory agenda, the HazCom standard update was moved from the proposed rule stage to the final rule stage.

Read more: https://www.safetyandhealthmagazine.com/articles/22734-haz-com-update-coming-before-years-end-spring-2022-regulatory-agenda-released

FDA

FDA Announces Plans for Proposed Rule to Reduce Addictiveness of Cigarettes and Other Combusted Tobacco Products

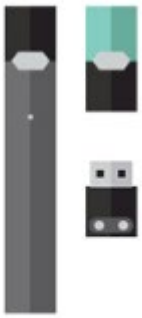
Today, the Biden-Harris Administration published plans for future potential regulatory actions that include the U.S. Food and Drug Administration's plans to develop a proposed product standard that would establish a maximum nicotine level to reduce the addictiveness of cigarettes and certain other combusted tobacco products. The goal of the potential rule would be to reduce youth use, addiction and death.

Each year, 480,000 people die prematurely from a smoking-attributed disease, making tobacco use the leading cause of preventable disease and death in the United States. Additionally, tobacco use

costs nearly $300 billion a year in direct health care and lost productivity.

Read more: https://www.fda.gov/news-events/press-announcements/fda-announces-plans-proposed-rule-reduce-addictiveness-cigarettes-and-other-combusted-tobacco

FDA Denies Authorization to Market JUUL Products



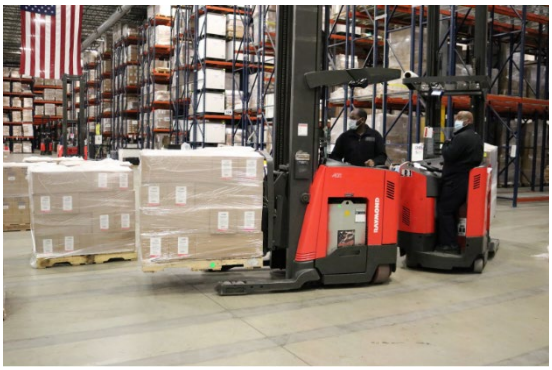
Today, the U.S. Food and Drug Administration issued marketing denial orders (MDOs) to JUUL Labs Inc. for all of their products currently marketed in the United States. As a result, the company must stop selling and distributing these products. In addition, those currently on the U.S. market must be removed, or risk enforcement action. The products include the JUUL device and four types of JUULpods: Virginia tobacco flavored pods at nicotine concentrations of 5.0% and 3.0% and menthol flavored pods at nicotine concentrations of 5.0% and 3.0%. Retailers should contact JUUL with any questions about products in their inventory.

Read more: https://www.fda.gov/news-events/press-announcements/fda-denies-authorization-market-juul-products

NIOSH

New Tool Estimates Future N95 Respirator Need

One of many lessons learned during the COVID-19 pandemic is that we need to have an adequate supply of N95 respirators, which were in short supply early in the pandemic. Efforts have been made to address this issue for healthcare workers. Now, NIOSH researchers have developed a tool they used to estimate the number of N95 respirators needed to protect nonhealthcare essential workers, according to research recently published in the journal Health Securityexternal icon. The tool is available in the article's supplemental materialexternal icon.



Read more: https://www.cdc.gov/niosh/enews/enewsv20n2.html#research1

OSHA

US Department of Labor Begins Rulemaking Process to Revise Standards for Occupational Exposure to Lead

The U.S. Department of Labor announced that its Occupational Safety and Health Administration has published an Advance Notice of Proposed Rulemaking to revise its standards for occupational exposure to lead.

Recent medical research on workplace lead exposure shows adverse health effects can occur in adults at lower blood lead levels than recognized previously in the medical removal levels specified in OSHA's lead standards.

The ANPRM seeks public input on modifying current OSHA lead standards for general industry and construction to reduce the triggers for medical removal protection and medical surveillance and prevent harmful health effects in workers exposed to lead more effectively.

Read more:
https://www.osha.gov/news/newsreleases/national/06282022

New Oregon Smoke Rule Next Week, Heat Rule in Effect

New state rules effective next week intend to minimize worker exposure to wildfire smoke in Oregon.

Oregon Occupational Safety & Health Division (OSHA) adopted the rules last month to take effect July 1, 2022.

OSHA says the rules involve "worker exposure to unhealthy and hazardous levels

of the primary air contaminant of concern in wildfire smoke, fine particulate matter."

It says though wildfire smoke exposure can be unhealthy for anyone, workers with pre-existing health conditions such as asthma, chronic obstructive pulmonary disease or heart disease are at increased risk of serious or fatal health effects when exposed to high levels of fine particulate matter in wildfire smoke.

Read more:
https://www.kdrv.com/news/top-stories/new-oregon-smoke-rule-next-week-heat-rule-in-effect/article_61f4b8e4-f186-11ec-a9b6-ebe42100fe93.html

EPA

EPA Announces New Drinking Water Health Advisories for PFAS Chemicals, $1 Billion in Bipartisan Infrastructure Law Funding to Strengthen Health Protections

Today, the U.S. Environmental Protection Agency (EPA) released four drinking water health advisories for per- and polyfluoroalkyl substances (PFAS) in the latest action under President Biden's action plan to deliver clean water and Administrator Regan's PFAS Strategic Roadmap. EPA also announced that it is inviting states and territories to apply for $1 billion – the first of $5 billion in Bipartisan Infrastructure Law grant funding – to address PFAS and other emerging contaminants in drinking water, specifically in small or disadvantaged communities. These actions build on EPA's progress to safeguard communities from PFAS pollution and scientifically inform upcoming efforts, including EPA's forthcoming proposed National Primary Drinking Water Regulation for PFOA and PFOS, which EPA will release in the fall of 2022.

Read more:
https://www.epa.gov/newsreleases/epa-announces-new-drinking-water-health-advisories-pfas-chemicals-1-billion-bipartisan

Air Force Agrees to Pay $206,811 EPA Penalty for Hazardous Waste Violations at Eareckson Air Station In Alaska

The U.S. Environmental Protection Agency announced today that the U.S. Air Force has agreed to pay a $206,811 penalty for hazardous waste storage and handling violations at the Eareckson Air Station on Shemya Island in Alaska.
In an agreement signed last week, EPA alleges the Air Force stored hazardous wastes at the air station without a permit and failed to properly label and inspect waste containers and an above-ground storage tank in which the hazardous wastes were stored.

Read more:
https://www.epa.gov/newsreleases/air-

force-agrees-pay-206811-epa-penalty-hazardous-waste-violations-eareckson-air

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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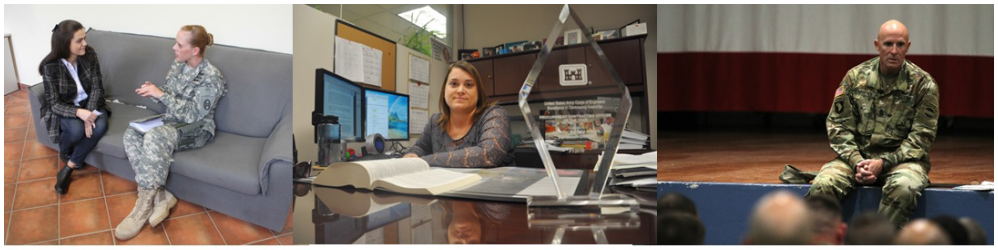
On the Web:
https://phc.amedd.army.mil/news/Pages/PublicationDetails.aspx?type=Army%20Industrial%20Hygiene%20News%20and%20Regulatory%20Summary



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.