May 2022
Issue 128

Army Industrial Hygiene News and Regulatory Summary

Hazardous Substances

Differences Between Men and Women in Their Risk of Work Injury and Disability: A Systematic Review

Special Interest Articles:

Background
Health responses associated with occupational exposures can vary between men and women.

Aims
This study reviewed the work injury and disability risks associated with similar types of occupational exposures for men and women within and across occupations.

Materials & Methods
A systematic review was undertaken of observational studies published between 2009 and 2019. Studies were required to empirically compare men and women for associations between occupational exposures and work injury or disability outcomes. Included studies were appraised for methodological quality and medium to high rated studies were compared for risk differences between

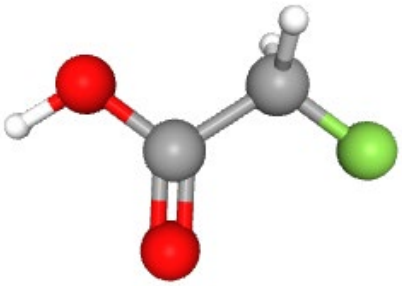
men and women.

Results
Of 14,006 records identified, 440 articles were assessed for methodological quality, and 33 medium to high rated studies were included and reviewed. Among all occupations, the association between physical exposures, job demands, noise, and repetitive tasks, and injury risk were stronger among men. The relationship between repetitive tasks and sickness absence was stronger among women.

Read more:
https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.23364

Contents:

In Vitro Assessment of the Dermal Penetration Potential of Sodium Fluoroacetate Using a Formulated Product



This paper presents experimental data on the skin absorption of sodium fluoroacetate from a formulated product using an in vitro approach and human skin. Sodium fluoroacetate is a pesticide, typically applied in formulation (1080) for the control of unwanted vertebrate invasive species. It that has been assigned a Skin Notation by the ACGIH®, and other international workplace health regulatory bodies, due to its predicted ability to permeate intact and abraded human skin. However, there is a distinct lack of experimental data on the skin absorption of sodium fluoroacetate to support this assignment. This study found that sodium fluoroacetate, as a formulated product, permeated human epidermis when in direct contact for greater than 10 hours. A steady state flux (Jss) of 1.31 ± 0.043 µg/cm2/hr and a lag time of 6.1 hours was calculated from cumulative skin permeation data. This study provides important empirical evidence in support of the assignment of a Skin Notation.

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

Scientists Make Toxic Gas Sensing Nine Times More Effective

A Russian-Belorussian research team has developed a new tungsten oxide–based gas sensing material that shows high sensitivity to carbon monoxide, nitrogen dioxide and acetone. The new material's gas sensing response was nine times higher than that of the existing sensors. The study was published in Nano-Structures & Nano-Objects.

The control of indoor air quality and the detection of toxic gases and volatile organic compounds are important for improving life and work conditions, and are needed in a variety of industrial, agricultural and environmental applications. This requires the development of special gas sensing materials with a high sensing response to a variety of gases of different chemical natures.

Read more: https://phys.org/news/2022-05-scientists-toxic-gas-effective.html

Simple Silicone Wristbands Can Detect Firefighters' Occupational Exposure

A team of researchers have used simple silicone wristbands to analyse firefighters' exposure to harmful chemicals while on duty, which will potentially decrease their vulnerability to cancerous diseases.

"Firefighters have a 9 percent higher risk of being diagnosed with cancer and a 14 percent higher risk of dying from cancer than the general US population," according to research by the US Centers for Disease Control and Prevention (CDC)/ National Institute for Occupational Health and Safety (NIOSH).

New research by scientists at Duke University offers doctors and public health

officials an inexpensive way to track firefighters' exposures to carcinogenic chemicals and to determine where and when the highest risks lie.."

Read more: https://www.trtworld.com/life/simple-

silicone-wristbands-can-detect-firefighters-occupational-exposure-57463

Risk of Breast Cancer in Danish Women Occupationally Exposed to Organic Solvents, Including Ethanol

Background: Organic solvents have been suggested to increase the risk of breast cancer although the epidemiologic evidence is limited. This study explored the association between organic solvents and breast cancer.

Methods: This nested population-based case-control study comprised 845 women with primary breast cancer initially identified in the Danish Cancer Registry between 2000 and 2003, and 1500 controls matched on year of birth who were randomly selected from the Danish Civil Registration System. Information on occupational exposure to organic solvents, and specifically ethanol, as well as risk factors for breast cancer was collected through structured interviews.

Results: For organic solvents, an increased risk was indicated for ever-exposure (odds ratio = 3.20, 95% confidence interval: 2.27-4.52), however, no noteworthy risk patterns were detected when exploring duration of exposure and cumulative exposure.

Read more:
https://pubmed.ncbi.nlm.nih.gov/35615993/

Surveillance of Acute Nonfatal Occupational Inhalation Injuries Treated in US Hospital Emergency Departments, 2014–2017

Background
Acute nonfatal occupational inhalation injuries are caused by exposures to airborne toxicants and contaminants in the workplace. A 1990s study found that US

emergency department (ED)-based inhalation injury rates were higher than those seen in the United Kingdom and Canada. This study examines 4 years of hospital ED data to estimate current rates of occupational inhalation injuries.

Methods
Data from the National Electronic Injury Surveillance System Occupational Supplement were used to identify nonfatal occupational inhalation injuries treated in US hospital EDs from 2014 to 2017. A workplace inhalation injury was defined as any worker treated in an ED as a result of inhaling a harmful substance at work.

Results
From 2014 to 2017, there were an estimated 2.2 occupational inhalation

injuries per 10,000 full-time equivalents (FTE) (95% confidence interval [CI]: 1.6–2.8) treated in EDs, a rate nearly four times that found in Bureau of Labor Statistics data.

Read more:
https://pubmed.ncbi.nlm.nih.gov/35633303/

Aerosol Emission from Playing Wind Instruments and Related COVID-19 Infection Risk during Music Performance

The pandemic of COVID-19 led to restrictions in all kinds of music activities. Airborne transmission of SARS-CoV-2 requires risk assessment of wind instrument playing in various situations. Previous studies focused on short-range transmission, whereas long-range transmission risk has not been assessed. The latter requires knowledge of aerosol emission rates from wind instrument playing. We measured aerosol concentrations in a hermetically closed chamber of 20 m3 in an operating theatre as resulting from 20 min standardized wind instrument playing (19 flute, 11 oboe, 1 clarinet, 1 trumpet players). We calculated aerosol emission rates showing uniform distribution for both instrument groups. Aerosol emission from wind instrument playing ranged from 11 ± 288 particles/second (P/s) up to 2535 ± 195 P/s,

expectation value ± uncertainty standard deviation. The analysis of aerosol particle size distributions shows that 70–80% of emitted particles had a size of 0.25–0.8 µm and thus are alveolar.

Read more:
https://www.nature.com/articles/s41598-022-12529-2

Radiation

Coconut-Derived Nanocomposite has Microwave Absorption Abilities

In a paper printed in the journal Carbon, the coconut shell, a typical biomass residue, is mixed with magnetic particles to make a good quality microwave-absorbing nanocomposite.

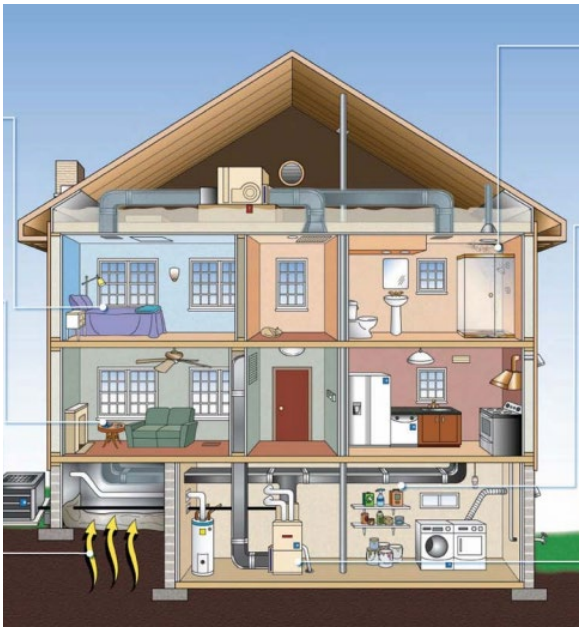
Importance of EM Shielding and Absorbing Materials

As wireless communication technology advances, numerous electronic gadgets offer useful applications in everyday life. Simultaneously, it leads to the existence of very concentrated and elevated electromagnetic radiation. Abundant radiation in the frequency spectrum of 2-18 GHz, in particular, may cause major difficulties like channel noise, telecommunication disruption, and a hazard to people's health.

Read more:
https://www.azonano.com/news.aspx?newsID=39115

Ventilation

Ventilation Reduces Indoor Pollution Levels Except For NO2, Study Finds



New research has found that mechanical ventilation systems significantly reduce the levels of particulate matter, carbon dioxide and monoxide, and formaldehyde from indoor air, reducing the risk of respiratory and cardiovascular illness.

The study from the National Center for Healthy Housing (NCHH) and Enterprise Community Partners concludes that mechanical ventilation could save thousands of lives and prevent major health impacts of indoor air pollution.

However, even in homes with ventilation systems, researchers did not observe significant changes in levels of nitrogen dioxide, which primarily comes from gas stoves, suggesting that increasing ventilation is not enough to address the health impacts of these appliances.

Based on these findings, the study recommends that builders and owners install continuous mechanical ventilation systems in all homes, while phasing out gas stoves altogether.

Read more:
https://airqualitynews.com/2022/05/03/ventilation-reduces-indoor-pollution-levels-except-for-no2-study-finds/

The Ins and Outs of Vehicle Exhaust Extraction Systems

When speaking about first responders, we often refer to the service that they provide and how they protect the public. It's equally important to understand how leadership and design professionals can protect these

people from the dangers of their profession.

Of course, the fire service is aware of the hazards, and not only on the fireground but inside of the fire station, too. Indoor air quality has been a primary focus for studies and advances in technology, and those significantly improved the cleanliness of the air that's within the station and, thus, provided safer working conditions.

Read more:
https://www.firehouse.com/stations/building-components/exhaust-removal/article/21262930/the-ins-and-outs-of-vehicle-exhaust-extraction-systems-for-fire-station-apparatus-bays

PPE

Research Suggests 3D Printed Masks Fail to Trump Conventional N95s

Researchers from the US are investigating the use of low-cost 3D printed masks in the fight against COVID-19.

N95 respirators have proven themselves to be one of the most effective ways of stopping the transmission of respiratory diseases. However, initial shortages in N95 supplies meant a search for viable alternatives.

The thinking was that a 3D printed respirator MIGHT have advantages over a conventionally manufactured N95, including a lower cost of production (at low volumes), faster production cycles, reusability, and of course, customizability. Although STL files for 3D printed masks grew in popularity

around the start of the pandemic, there's still little data to support them as a feasible alternative to the N95.

Read more: https://3dprintingindustry.com/news/research-suggests-3d-printed-masks-fail-to-trump-conventional-n95s-209683/

PPE-Related Headaches Common among Health Care Workers: Report

More than 4 out of 5 health care workers experience headaches associated with the use of personal protective equipment, according to a new report from the Association of Migraine Disorders.

"De novo" headaches have the characteristics of a primary headache disorder such as migraine or tension, the organization says. Cases appear to present similarly to an external compression headache, caused by an N95 mask or eye protection placing continuous pressure on the forehead or scalp.

Read more: https://www.safetyandhealthmagazine.com/articles/22647-ppe-related-headaches-common-among-health-care-workers-report

Noise

New Tool to Create Hearing Cells Lost in Aging

Hearing loss due to aging, noise and certain cancer therapy drugs and antibiotics has been irreversible because scientists have not been able to reprogram existing cells to develop into the outer and inner ear sensory cells -- essential for hearing -- once they die.

But Northwestern Medicine scientists have discovered a single master gene that

programs ear hair cells into either outer or inner ones, overcoming a major hurdle that had prevented the development of these cells to restore hearing.

Read more:
https://www.sciencedaily.com/releases/2022/05/220504110413.htm

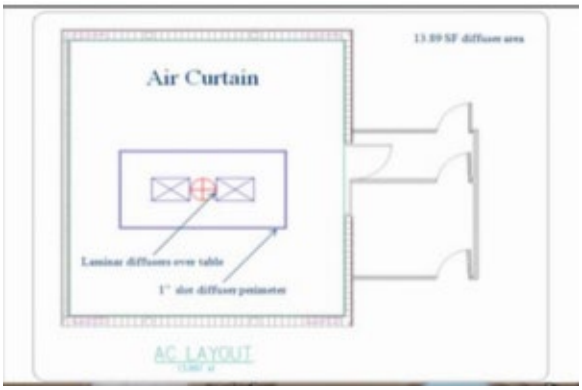
Preventive Medicine

Desktop Air Curtain System Prevents Spread of COVID-19 in Hospital Settings

In efforts to prevent the spread of COVID-19, miniaturizing air curtains for hospital wards, labs, and other health care settings is gaining traction as a viable solution to inadequate face masks or when social distancing is not a realistic option.

In AIP Advances, published by AIP Publishing, researchers in Japan developed a desktop air curtain system (DACS) that blocks all incoming aerosol particles.

"We envisage this system will be effective as an indirect barrier for use in blood-testing labs, hospital wards, and other situations where sufficient physical distance cannot be maintained, such as at a



reception counter," co-author Kotaro Takamure said.

Read more:
https://www.sciencedaily.com/releases/2022/05/220517112203.htm

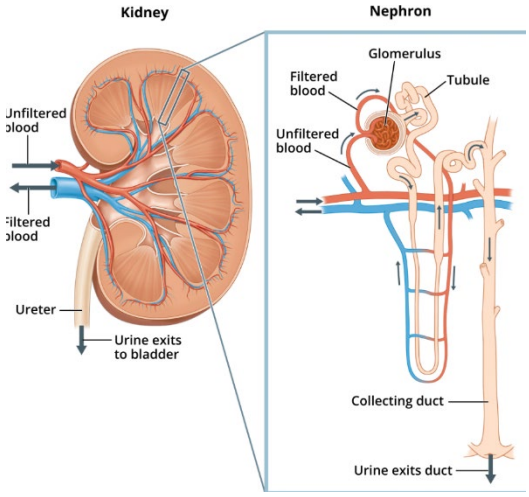
Metals Found in People's Urine Could Detect Acute Kidney Injury in Very Early Stages, Says New Study

Scientists have discovered that certain metals found in people's urine, could be potentially useful clinical biomarkers for the early detection of acute kidney injury (AKI).

The study, which is published in Kidney International Reports, was led by experts from the University of Nottingham's School

of Veterinary Medicine and Science, along with clinicians at Nottingham University Hospitals NHS Trust.

Acute Kidney Injury (AKI) is a rapid deterioration in kidney function over hours or days. It is common, occurring in 10–20% of patients admitted to hospital and about 50% of patients admitted to intensive care. It can be caused by serious illness, major operations, trauma and by some medicines such as chemotherapy. It has serious consequences for patients (increased risk of death and chronic disease) and for the NHS, costing over £1 billion per year.



Read more:
https://medicalxpress.com/news/2022-05-metals-people-urine-acute-kidney.html

Changes in Drug Poisoning Mortality before and after the COVID-19 Pandemic by Occupation in Massachusetts

Background
Incidence of drug poisoning deaths has increased during the coronavirus disease 2019 (COVID-19) pandemic. Previous research has established that risks differ for drug poisoning death according to occupation, and that workers also have a different risk for exposure to and death from COVID-19. This study sought to determine whether workers in certain occupations had drug poisoning mortality rates that increased in 2020 (the first year of the COVID-19 pandemic) compared to the average mortality rate for workers in those occupations during the previous 3 years.

Methods
Death certificates of Massachusetts residents who died from drug poisonings in 2017–2020 were obtained. Average mortality rates of drug poisoning according to occupation during the 2017–2019 period were compared to mortality rates in 2020.

Results
Between the 2017–2019 period and 2020, mortality rates of drug poisoning increased significantly for workers in three occupational groups: food preparation and

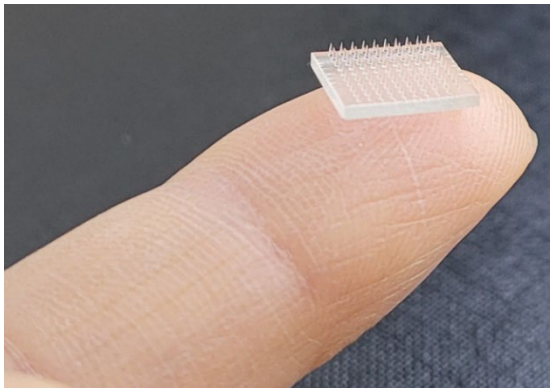
serving; healthcare support; and transportation and material moving. In these occupations, most of the increases in 2020 compared to 2017–2019 occurred in months after COVID-19 pandemic cases and deaths increased in Massachusetts.

Read more: https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.23369

A New Approach to Vaccinations: 3D Printed Patches

As the COVID-19 pandemic hit and vaccine development went into hyperdrive, Joseph DeSimone, an expert in precision drug delivery and 3D printing technology, had an idea for a new research project: a 3D-printed vaccine patch.

DeSimone, PhD, professor of radiology and of chemical engineering, knew that the dermal layer of the skin harbors many more immune cells than the muscle, and is therefore an ideal vaccine target. For some time, he had also been working on 3D-printed microneedle patches to deliver substances to the skin. Molded microneedle patches are already mainstream in the cosmetics industry, used as a vehicle for skin treatment, DeSimone said, but 3D



printed patches offer the possibility of better, more precise designs.

Read more: https://scopeblog.stanford.edu/2022/05/12/a-new-approach-to-vaccinations-3d-printed-patches/

WHO Report Highlights Global Toll of Healthcare-Associated Infections

The World Health Organization (WHO) today issued a report highlighting the threat of healthcare-associated infections (HAIs) and the role that infection prevention and control (IPC) programs can play in reducing that threat.

According to the report, out of every 100 patients in acute care hospitals, 7 patients in high-income countries and 15 in low- and middle-income countries (LMICs) will

acquire on average at least one HAI during their stay, and up to 30% of patients in intensive care units will acquire one. Nearly one quarter (23.6%) of hospital-treated sepsis cases are healthcare-associated.

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/05/asp-scan-weekly-may-06-2022

Study Suggests Double-Masking for COVID-19 Hurts More than Helps

A study yesterday in Physics of Fluid shows that wearing two face coverings to protect against COVID-19 does not offer more respiratory protection, and may offer a false sense of protection for the wearer.

Researchers from Florida State University and Johns Hopkins University used fluid dynamics simulation models to show how improperly fitted masks—even when layered—force flow from a simulated cough out of the perimeter gaps (sides, top, and bottom) of masks.

They ran the simulation of a cough jet with a peak velocity of 10 meters per second on 100 adult male and 100 female head shapes to account for the natural differences in face shape and symmetry.

With different noses, chins, and cheekbones, perimeters changed for facial coverings.

Read more:
https://www.cidrap.umn.edu/news-perspective/2022/05/news-scan-may-04-2022

Environmental Health

Operating Rooms Are the Climate Change Contributor No One's Talking About

In April 2021, during the Leaders Summit on Climate, President Biden announced his goal to drastically reduce the United States' greenhouse gas emissions by 2030.

Victor Agbafe was watching the address on TV. The University of Michigan Medical School student, who is also studying law at Yale, immediately texted a few mentors, including Michigan Medicine integrated plastic surgery resident Nicholas Berlin, M.D., M.P.H., M.S.

The question that emerged from their messages was a crucial one: What role can the medical community, which accounts for about 8.5% of America's greenhouse gas emissions, play in these climate change reduction efforts?

Read more:
https://www.sciencedaily.com/releases/2022/05/220506151436.htm

Hydroponic Native Plants to Detox PFAS-Contaminated Water

They're the non-stick on Teflon cookware, the stain resistance in Scotchgard, and the suppression factor in firefighting foam, but while the staying power of PFAS chemicals was once revered, it's now infamous as PFAS substances continue to infiltrate the environment and affect human health.

Now, new research from the University of South Australia is helping to remediate the 'indestructible' PFASs as scientists show that Australian native plants can significantly remediate PFAS pollutants

through floating wetlands to create healthier environments for all.

Read more:
https://www.eurekalert.org/news-releases/951407

Study: Reducing Human-Caused Air Pollution in North America and Europe Brings More Hurricanes

A new NOAA study published today in the journal Science Advances about four decades of tropical cyclones reveals the surprising result that reducing particulate air pollution in Europe and North America has contributed to an increase in the number of tropical cyclones in the North Atlantic basin and a decrease in the number of these storms in the Southern Hemisphere. The study also found that the growth of particulate pollution in Asia has contributed to fewer tropical cyclones in the western North Pacific basin.

"Air pollution is a big environmental risk to human health and we have made great strides in reducing health risks by reducing particulate air pollution," said Hiroyuki Murakami, a physical scientist at NOAA's Geophysical Fluid Dynamics Laboratory and study author. "But reducing air pollution does not always decrease the risk of hazards from tropical cyclones."

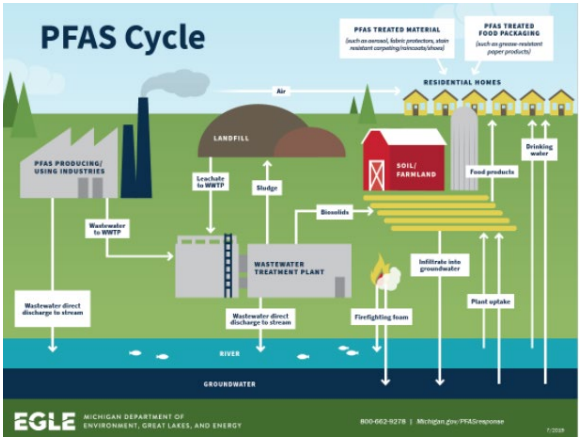
Read more:
https://www.hstoday.us/subject-matter-areas/climate-security/study-reducing-human-caused-air-pollution-in-north-america-and-europe-brings-more-hurricanes/

PFAS Chemicals Do Not Last Forever

Once dubbed "forever chemicals," per-and polyfluoroalkyl substances, or PFAS, might be in the market for a new nickname. That's because adding iodide to a water treatment reactor that uses ultraviolet (UV) light and sulfite destroys up to 90% of carbon-fluorine atoms in PFAS forever chemicals in just a few hours, reports a new study led by environmental engineering researchers at UC Riverside. The addition of iodide accelerates the speed of the reaction

up to four times, saving energy and chemicals.

"Iodide is really doing some substantial work," said corresponding author Jinyong Liu, an assistant professor of chemical and environmental engineering. "Not only does it speed up the reaction but it also allows the treatment of a ten times higher concentrations of PFAS, even some very recalcitrant structures."



Read more:
https://www.sciencedaily.com/releases/2022/05/220520144703.htm

Climate Change Likely to Reduce the Amount of Sleep that People Get per Year

Most research looking at the impact of climate change on human life has focused on how extreme weather events affect economic and societal health outcomes on a broad scale. Yet climate change may also have a strong influence on fundamental daily human activities -- including a host of behavioral, psychological, and physiological outcomes that are essential to wellbeing. In a study published May 20th in the journal One Earth, investigators report that increasing ambient temperatures negatively impact human sleep around the globe.

The team says their findings suggest that by the year 2099, suboptimal temperatures may erode 50 to 58 hours of sleep per person per year. In addition, they found that the temperature effect on sleep loss is substantially larger for residents from lower income countries as well as in older adults and females.

Read more:
https://www.sciencedaily.com/releases/2022/05/220520132837.htm

Environmental Pollutants Play a Role in the Development of Type 1 Diabetes

The environmental pollutants we consume are probably the reason why some people develop type 1 diabetes. Even low concentrations of such pollutants can result in cells producing less insulin, reveals a new study from the University of Oslo (UiO).

Around 400 children and adolescents are diagnosed with type 1 diabetes every year in Norway and the number of new cases among children and adolescents has doubled since the 1970s. Adults are also diagnosed with the disease.

Read more: https://medicalxpress.com/news/2022-05-environmental-pollutants-role-diabetes.html

Ergonomics

Heat Exposure Limits for Young Unacclimatized Males and Females at Low and High Humidity

Little is known about the separate and combined influences of humidity conditions, sex, and aerobic fitness on heat tolerance in unacclimatized males and females. The purpose of the current study was to describe heat tolerance, in terms of critical WBGT (WBGTcrit), in unacclimatized young males and females in hot-dry (HD) and warm-humid (WH) environments. Eighteen subjects (9M/9F; 21 ± 2 yr) were tested during exercise at 30% V̇O2max in a controlled environmental chamber. Progressive heat stress exposures were performed with either (1) constant dry-bulb temperature (Tdb) of 34 and 36 °C and increasing ambient water vapor pressure (Pa) (Pcrit trials; WH), or (2) constant Pa of

12 and 16 mmHg and increasing Tdb (Tcrit trials; HD). Chamber Tdb and Pa, and subject esophageal temperature (Tes), were continuously monitored throughout each trial. After a 30-min equilibration period, progressive heat stress continued until subject heat balance could no longer be maintained and a clear rise in Tes was observed. Absolute WBGTcrit, WBGTcrit adjusted to a metabolic rate of 300W (WBGT300), and the difference between WBGTcrit and occupational exposure limits (OEL; ΔOEL) were assessed. WBGTcrit, WBGT300, and ΔOEL were higher in WH compared to HD ($p < 0.0001$) for females but were the same between environments for males ($p \geq 0.21$). WBGTcrit was higher in females compared to males in WH ($p < 0.0001$) but was similar between sexes in HD ($p = 0.44$). When controlling for metabolic rate, WBGT300 and ΔOEL were higher in males compared to females in WH and HD (both $p < 0.0001$). When controlling for sex, $\dot{V}O_2max$ was not associated with WBGT300 or ΔOEL for either sex ($r \leq 0.12$, $p \geq 0.49$). These findings suggest that WBGTcrit is higher in females compared to males in WH, but not HD, conditions. Additionally, the WBGTcrit is lower in females, but not males, in HD compared to WH conditions.

Read more: Journal of Occupational and Environmental Hygiene, Accepted author version posted online: 10 May 2022 (Available with AIHA membership)

Safety

Pharmacist Suicides Outpace General Public

Suicide rates among pharmacists are higher than those in the general population, according to a longitudinal analysis.

Using data from the CDC's National Violent Death Reporting System (NVDRS) for the years 2003 to 2018, 316 pharmacist suicides were identified compared with 213,146 nonpharmacist suicides, reported Kelly Lee, PharmD, of the Skaggs School of Pharmacy and Pharmaceutical Sciences at the University of California San Diego, and colleagues.

Read more: https://www.medpagetoday.com/publichealthpolicy/generalprofessionalissues/98707

Hazardous Drug Containment: How Much Is Enough?

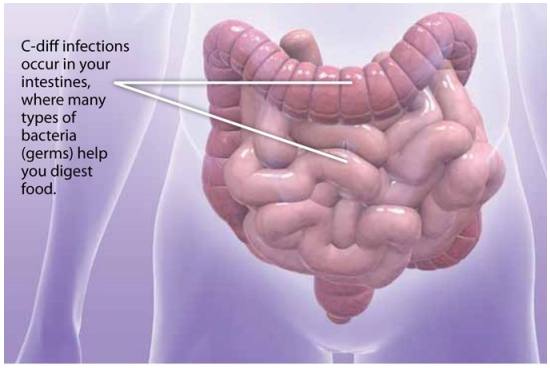
It is impossible to eliminate all hazardous drug (HD) residue contamination in sterile compounding suites. In fact, exposure to very small amounts of HDs may not always present a health risk. That's why adhering to the principle of "as low as reasonably achievable" (ALARA) with respect to hazardous residue removal, rather than complete elimination, is a more attainable standard, a safe handling expert noted during a workshop at the National Home Infusion Association 2022 Annual Conference.

The outside of chemotherapy vials sometimes contains trace residues of HDs, with the residue adhering to technicians' gloves as they transport the drugs within a facility. When this happens, the residues can wind up on surfaces without anyone knowing they are there. Whereas obvious dangers such as spills have clear mitigation plans, the more subtle risks of trace contamination are harder to manage.

Read more:
https://www.pharmacypracticenews.com/Policy/Article/05-22/Hazardous-Drug-Containment-How-Much-Is-Enough/66902

Interprofessional Collaboration Leads to Significant and Sustained Reduction in Hospital-Onset C. Difficile Infections

A new study published today in the American Journal of Infection Control (AJIC), suggests that health care facilities can significantly reduce the incidence of hospital-onset Clostridioides difficile infection (HO-CDI) by establishing interprofessional teams to implement selected, evidence-based infection-prevention interventions.
"Our project showed that interprofessional collaboration and continuous improvement



can profoundly impact HO-CDI incidence, and sustain reductions over years," said Cherith Walter, MSN, RN, Emory St. Joseph's Hospital, and first author on the published study. "We hope our findings will help other healthcare teams struggling with this incredibly challenging healthcare-associated infection to improve patient safety and reduce associated costs."

Read more:
https://www.eurekalert.org/news-releases/952143

Scientists Are Developing Patch that Warns of Oncoming Drug Overdose

With the United States facing an epidemic of drug overdoses, researchers are developing a wearable patch that can detect an oncoming opioid OD and deliver doses of a drug that could save lives.

The Indiana University Bloomington research team has received a three-year, $3.8 million grant from the U.S. National Institute on Drug Abuse to develop the patch, which combines two separate cutting-edge technologies, said co-developer Dr. Ken Mackie, chair of the university's Center for Biomolecular Science.

The patch — roughly the size of a nicotine patch — would contain sensors that track the wearer's pulse, blood pressure and blood oxygen levels, Mackie said. Opioid overdoses occur when narcotics cause breathing to slow or stop.

Read more:
https://consumer.healthday.com/5-17-scientists-are-developing-patch-that-warns-of-oncoming-drug-overdose-2657294399.htm
|

Copper, But Not Silver, Is Effective Against SARS-CoV-2 on Surfaces

As a result of corrosion, copper and silver release positively charged ions into their environment, which are harmful to bacteria in several ways and prevent their growth or kill them completely. This effect has long been exploited, for example by coating implants with these metals to prevent

bacterial infections. There are some tricks that can be employed to release even more ions and intensify this effect. For example, the team headed by materials researcher Professor Alfred Ludwig uses a so-called sputtering system with which the thinnest layers or tiny nanopatches of the metals can be applied to a carrier material. Depending on the sequence or quantity in which the individual metals are applied, different surface textures are created. If a precious metal such as platinum is also applied, silver corrodes even faster and releases more antibacterial ions.

Read more:
https://phys.org/news/2022-05-copper-silver-effective-sars-cov-surfaces.html

Emergency Preparedness

Identifying Essential Critical Infrastructure Workers during the COVID-19 Pandemic Using Standardized Industry Codes

Background
The Cybersecurity and Infrastructure Security Agency (CISA) produced an advisory list identifying essential critical infrastructure workers (ECIW) during the coronavirus disease 2019 (COVID-19) response. The CISA advisory list is the most common national definition of ECIW but has not been mapped to United States (U.S.) Census industry codes (CICs) to readily identify these worker populations in public health data sources.

Methods
We identified essential critical infrastructure industry designations corresponding to v4.0 of the CISA advisory list for all six-digit North American Industry Classification System (NAICS) codes and cross-walked NAICS codes to CICs. CICs were grouped as essential, non-essential, or mixed essential/non-essential according to component NAICS industries. We also obtained national estimated population sizes for NAICS and Census industries and cross-tabulated Census industry and occupation codes to identify industry-occupation pairs.

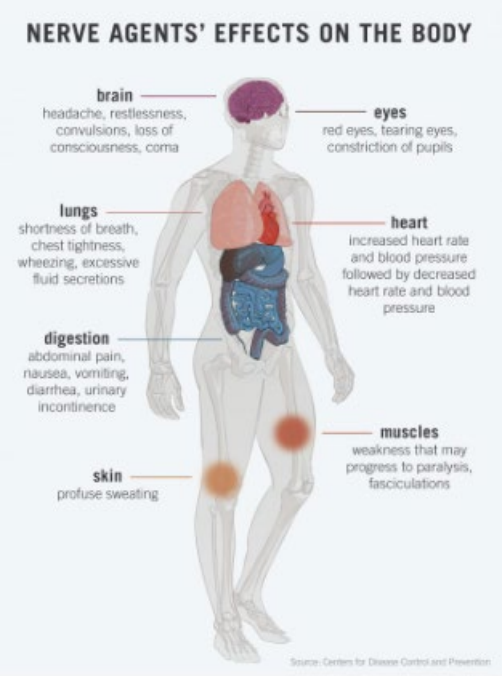
Results
We produced and made publicly available spreadsheets containing essential industry designations corresponding to v4.0 of the CISA advisory list for NAICS and Census industry titles and codes and population estimates by six-digit NAICS industry, Census industry, and Census industry-occupation pair.

Read more:
https://onlinelibrary.wiley.com/doi/full/10.1002/ajim.23361

Deployment Health

UTSW Genetic Study Confirms Sarin Nerve Gas as Cause of Gulf War Illness

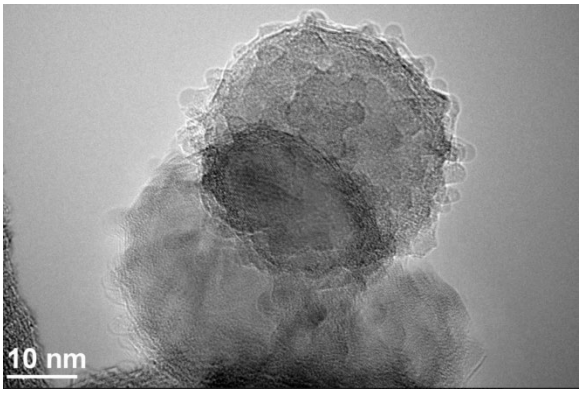
For three decades, scientists have debated the underlying cause of Gulf War illness (GWI), a collection of unexplained and chronic symptoms affecting veterans of the Persian Gulf War. Now researchers led by Robert Haley, M.D., Professor of Internal Medicine and Director of the Division of Epidemiology at UT Southwestern, have solved the mystery, showing through a detailed genetic study that the nerve gas sarin was largely responsible for the syndrome. The findings were published in Environmental Health Perspectives, a peer-reviewed journal supported by the National Institute of Environmental Health Sciences, with an accompanying editorial on the paper by leading environmental epidemiologists.



Read more:
https://www.eurekalert.org/news-releases/952484

Nanotechnology

Analyzing the Nanotoxicology of Aluminum Nanoparticles



Aluminum-based matrix compounds with excellent formability, immense strength, good corrosion protection, low density, and good wear resistance are used extensively in various industrial equipment.

In an article recently available in press as a corrected proof in the journal Materials Today: Proceedings, the authors discussed the properties and applications of aluminum matrix compounds. They highlighted the potential applications of aluminum nanoparticles in therapeutics and drew attention to the harmful effects caused by the increased use of aluminum nanoparticles in domestic and commercial applications.

Applications of Aluminum and Nanoparticles

Aluminum is the most abundant element found in the Earth's crust and is found in trace concentrations in biological systems. It has long-term applications in construction, polishing, and electrical appliances. Although aluminum has widespread applications, they have harmful effects on humans.

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

Regulatory Research & Industrial Hygiene Professional News

Legislation

House Advances Measure Seeking to Improve TSA Working Conditions

The House of Representatives has advanced the Rights for the TSA Workforce Act of 2022 (H.R. 903), indicating the measure would improve Transportation Security Administration (TSA) personnel working conditions.

House Committee on Homeland Security Chairman Bennie G. Thompson (D-MS) sponsored the legislation to provide the 60,000 TSA employees, including frontline Transportation Security Officers (TSOs), the

same worker rights and protections afforded to other Federal workers under title 5 of the U.S. Code.

Read more:
https://homelandprepnews.com/stories/77028-house-advances-measure-seeking-to-improve-tsa-working-conditions/

FDA

Legislation Introduced to Improve Food Safety and Hold FDA Accountable

A bill introduced in the U.S. Senate is calling for stricter regulation of "Generally Recognized as Safe" substances and the creation of a new FDA office to assess the safety of chemicals in America's food supply.

Senator Edward J. Markey, D-MA, introduced the Ensuring Safe and Toxic-Free Foods Act, comprehensive legislation that

would ensure the Department of Health and Human Services (HHS) fulfills its responsibility to promote the health and well-being of American families by directing the Food and Drug Administration to strengthen the Substances Generally Recognized as Safe (GRAS) Rule, which exempts companies from seeking pre-market approval for some food additives.

Read more:
https://www.foodsafetynews.com/2022/05/legislation-introduced-to-improve-food-safety-and-hold-fda-accountable/

FDA Releases Guidance on Cybersecurity in Medical Devices

The digital revolution that resulted in the Internet of Things (IoT), Internet of Medical Things (IoMT), Software as a Medical Device (SaMD), and connected devices permeating the healthcare environment, both in the hospital and at home, comes with the possibility of cyberattacks and intrusions against a compromised connected medical device and the network to which such a device is connected.

Read more:
https://www.meddeviceonline.com/doc/fda-releases-guidance-on-cybersecurity-in-medical-devices-0001

NIOSH

How to Choose the Right Fatigue Detection Technology for Your Workplace

Fatigue can reduce focus, slow reaction time, and impair decision-making skills. Because fatigue has many sources, it can be hard to detect on job sites. NIOSH published an infographic and graphics to highlight different factors for employers to consider when selecting a fatigue detection technology as part of a comprehensive safety management approach.

Read more:
https://www.cdc.gov/niosh/enews/enewsv20n1.html#8

OSHA

OSHA's Heat Illness National Emphasis Program and Its Impact on Employers

As summer weather is upon us, Federal OSHA is in the midst of an effort to promulgate a heat illness regulation while simultaneously starting a national emphasis program around heat illness.

This article provides an overview of the new efforts and how they will affect employers.

What's in the new program?
Federal OSHA already had a pre-existing heat illness prevention campaign in place. The new regulation effort started in October, 2021 with an advanced notice of proposed rulemaking. The directive creating the national emphasis program was published on April 8, 2022.

Read more:
https://www.jdsupra.com/legalnews/osha-s-heat-illness-national-emphasis-2879884/

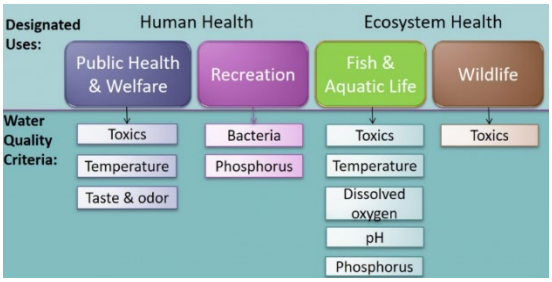
Cal/OSHA Proposes Revisions to Workplace Violence Prevention Requirements

On May 17, the California Division of Occupational Safety and Health (Cal/OSHA) released a revised discussion draft of a proposed regulation for workplace violence prevention in the general industry standards. If adopted, the regulation would become Section 3343 under General Industry Safety Order (GISO) Chapter 4, Subchapter 7 of Title 8 California Code of Regulations. The division is seeking input on the proposed revisions and is inviting interested parties to submit written comments by July 18.

Read more:
https://www.shrm.org/resourcesandtools/legal-and-compliance/state-and-local-updates/pages/california-proposed-revisions-workplace-violence-prevention.aspx

EPA

EPA Proposes Aquatic Life Criteria for PFOA and PFOS

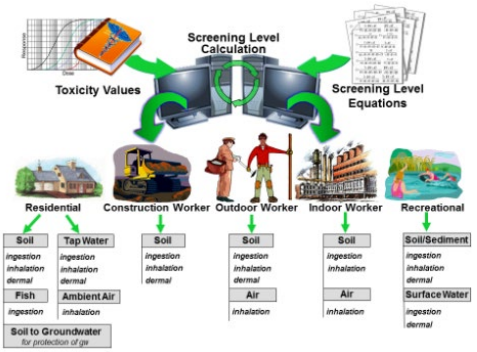


On May 3, 2022, under the Clean Water Act (CWA), the United States Environmental Protection Agency (EPA) proposed the first aquatic life criteria for both short-term and long-term toxic effects from Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic Acid (PFOS) (87 FR 26199). As part of the EPA's PFAS Strategic Road Map, the draft criteria represent the latest state-of-the-science regarding the toxic effects of PFOA and PFOS on freshwater organisms.

Read more:
https://www.trccompanies.com/insights/epa-proposes-aquatic-life-criteria-for-pfoa-and-pfos/

EPA Adds Five PFAS Chemicals to List of Regional Screening and Removal Management Levels to Protect Human Health and the Environment

Today, EPA is taking an important step forward to protect people from per- and polyfluoroalkyl substances (PFAS) by adding five PFAS chemicals for a total of six PFAS chemicals to a list of risk-based values that help EPA determine if response or remediation activities are needed. EPA's action provides the Agency with critical tools needed for Superfund and other Agency programs to investigate contamination and protect people from these PFAS chemicals using the latest peer-reviewed science.



Read more:
https://www.epa.gov/newsreleases/epa-adds-five-pfas-chemicals-list-regional-screening-and-removal-management-levels

APHC

Four civilian Industrial Hygienists assigned to Public Health Command Europe recently achieved milestones in their career field after completing advanced training and certification.

Completing the IH certifications were Mersades Daffer and Delphine Meeh, who are now American Board Certified Industrial Hygienists, while Christine Hawkins and Samantha Vannoorbeeck completed their 80-hour Industrial Hygiene Fundamental course with honors.

With just slightly more than 200 people, Industrial Hygiene is a relatively small career field for civilians in the U.S. Army. While it may be small in numbers, Industrial Hygiene plays a major role in preventing work hazards and improving quality of life across the Army.

Read more:
https://www.army.mil/article/256590?fbclid=IwAR1r8hvfROBfV8yi9lexZSOwxQ-_vcI0o6AXawNOJjcY2YtMd6JEHkURwAw

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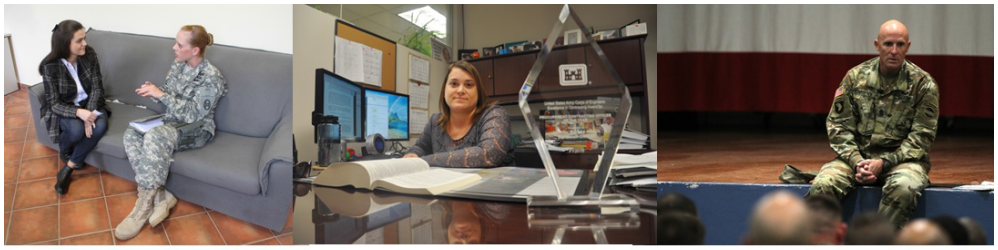
On the Web:
http://phc.amedd.army.mil/topics/workplacehealth/ih/Pages/default.aspx



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.