December 2022
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Army Industrial Hygiene News and Regulatory Summary

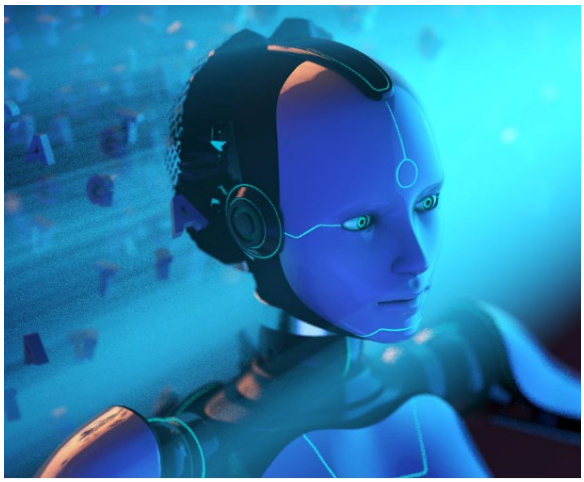
Hazardous Substances

Using Machine Learning to Improve the Toxicity Assessment of Chemicals

Special Interest Articles:

Researchers of the University of Amsterdam, together with colleagues at the University of Queensland and the Norwegian Institute for Water Research, have developed a strategy for assessing the toxicity of chemicals using machine learning. They present their approach in an article in Environmental Science & Technology for the special issue "Data Science for Advancing Environmental Science, Engineering, and Technology." The models developed in this study can lead to substantial improvements when compared to conventional in silico assessments based on Quantitative Structure-Activity Relationship (QSAR) modelling.

According to the researchers, the use of machine learning can vastly improve the hazard assessment of molecules, both in the safe-by-design development of new chemicals and in the evaluation of existing chemicals. The importance of the latter is illustrated by the fact that European and



US chemical agencies have listed approximately 800,000 chemicals that have been developed over the years but for which there is little to no knowledge about environmental fate or toxicity.

Read more:
https://www.labmanager.com/news/using-machine-learning-to-improve-the-toxicity-assessment-of-chemicals-29455

Contents:

Investigating Exposures and Respiratory Health in Coffee Workers

Coffee processing is common throughout the world. Workers engaged in this industry are exposed to a complex mixture of gases, dusts, and vapors including carbon monoxide, carbon dioxide, coffee dust, allergens, alpha-diketones, and other volatile organic compounds (VOCs). Adverse respiratory health outcomes such as symptoms, decreased pulmonary function, asthma, and obliterative bronchiolitis can occur among exposed workers. Obliterative bronchiolitis has been found among workers exposed to alpha-diketones (diacetyl and 2,3-pentanedione) present in flavorings in food processing, flavoring-manufacturing, and among coffee processing flavoring-room workers. Additionally, processing of non-flavored coffee can also generate exposures to diacetyl and 2,3-pentanedione. Exposures above the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits and short-term exposure limits have been reported for processing flavored and non-flavored coffee. The exposure limits are intended to keep the excess risk of workers' lung function falling below the lower limit of normal caused by diacetyl or 2,3-pentandione exposure to 1/1,000 after 45 years' exposure.

Read more:
https://www.frontiersin.org/research-topics/10949/investigating-exposures-and-respiratory-health-in-coffee-workers#overview

Estimating Evaporation Rates and Contaminant Air Concentrations Due to Small Spills of Non-Ideal Aqueous Organic Solvent Mixtures in a Controlled Environment

Although small spills of non-ideal organic solvent mixtures are ubiquitous undesirable events in occupational settings, the potential risk of exposure associated with such scenarios remains insufficiently investigated. This study aimed to examine the impact of non-ideality on evaporation rates and contaminant air concentrations resulting from small spills of organic solvent mixtures. Evaporation rate constants alphas (α) were experimentally measured for five pure solvents using a gravimetric approach during solvent evaporation tests designed to simulate small spills of solvents. Two equations were used for estimating contaminants' evaporation rates from aqueous mixtures assuming either ideal or non-ideal behavior based on the pure-chemical alpha values. A spill model also known as the well-mixed room model with exponentially decreasing emission rate was used to predict air concentrations during various spill scenarios based on the two sets of estimated evaporation rates. Model predictive performance was evaluated by comparing the estimates against real-time concentrations measured for the same scenarios. Evaluations for 12 binary non-ideal aqueous mixtures found that the estimated evaporation rates accounting for the correction by the activity coefficients of the solvents (median = 0.0318 min−1) were higher than the evaporation rates estimated without the correction factor

(median = 0.00632 min−1). Model estimates using the corrected evaporation rates reasonably agreed with the measured values, with a median predicted peak concentrations-to-measured peak concentrations ratio of 0.92 (0.81 to 1.32) and a median difference between the predicted and the measured peak times of −5 min. By contrast, when the non-corrected evaporation rates were used, the median predicted peak concentrations-to-measured peak concentrations ratio was 0.31 (0.08 to 0.75) and the median difference between the predicted and the measured peak times was +33 min. Results from this study demonstrate the importance of considering the non-ideality effect for accurately estimating evaporation rates and contaminant air concentrations generated by solvent mixtures. Moreover, this study is a step further in improving knowledge of modeling exposures related to small spills of organic solvent mixtures.

Read more: Journal of Occupational and Environmental Hygiene, Published online: 20 Dec 2022 (Available with an AIHA membership)

Researching Risk of Birth Defects Among Children of Male Firefighters

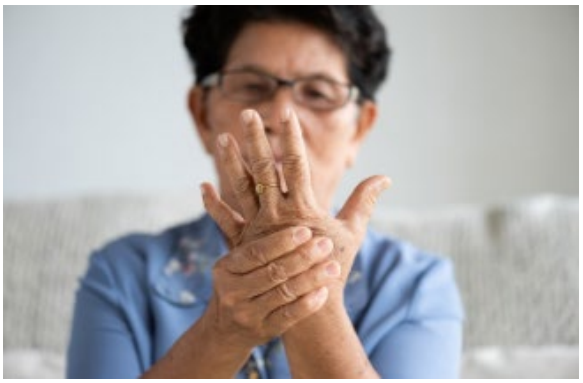
Over 1.1 million firefighters protect our communities and environment in the United States.1 Firefighters face hazardous conditions and chemicals while on the job, which may have safety and health implications. The National Fallen Firefighters Foundation named reproductive health as a priority research topic in 2021. But so far very few studies have evaluated birth defects among the children of firefighters. This may be in part because of the difficulty of studying these rare conditions.

Researchers from the National Institute for Occupational Safety and Health and collaborators from the Centers for Disease Control and Prevention, University of North Carolina at Chapel Hill, and the National Development and Research Institutes' Center for Fire, Rescue, and EMS Health Research used the National Birth Defects Prevention Study (NBDPS) to analyze birth defects among children of male firefighters. NBDPS is a large study of birth defects that included mothers and their infants born from 1997-2011. During a telephone interview, women provided information about their jobs and jobs held by their babies' fathers throughout pregnancy. We compared cases of birth defects among infants who have firefighter fathers to:

- Those who have fathers in non-firefighter jobs
- Those who have fathers in police officer jobs

Read more: https://blogs.cdc.gov/niosh-science-blog/2022/12/21/birth-defects-ff/

Exposure to Occupational Inhalable Agents Could Increase RA Risk



Exposure to occupational inhalable agents is associated with an increased risk for anticitrullinated protein antibodies (ACPA)-positive rheumatoid arthritis (RA), according to a study published online Dec. 6 in the Annals of the Rheumatic Diseases.

Bowen Tang, from the Karolinska Institutet in Stockholm, and colleagues used data from the Swedish Epidemiological Investigation of RA, including 4,033 incident RA cases and 6,485 matched controls to examine the effects of occupational inhalable exposures on RA development. Exposure to 32 inhalable agents was estimated based on retrieval of occupational histories, combined with a Swedish national job-exposure matrix.

The researchers found the risk for ACPA-positive RA was increased in association with exposure to any occupational inhalable agents (odds ratio, 1.25). As the number of exposed agents increased or duration of exposure elongated, the risk increased. When jointly considering exposure to any occupational inhalable agents, smoking, and high genetic risk score, those who were triple-exposed had a markedly elevated risk for ACPA-positive RA compared with those not exposed to any (odds ratio, 18.22). In ACPA-positive RA, significant interactions were identified between occupational inhalable agents and smoking/genetic factors.

Read more:
https://consumer.healthday.com/physician-s-briefing-occupational-2658831589.html

Several New Requirements Taking Effect for 2023 to Protect Consumers from Harmful Chemicals

Several new laws are taking effect in the new year to help protect public health and the environment by reducing exposure to harmful chemicals in everyday items, the New York State Department of Environmental Conservation (DEC)

announced today. At the start of 2023, laws will be implemented that will cover 1,4-dioxane, per- and polyfluoroalkyl substances (PFAS), and other chemicals used in household cleaning, personal care, cosmetics, food packaging, and children's products.

Read more:
https://www.dec.ny.gov/press/126880.htm
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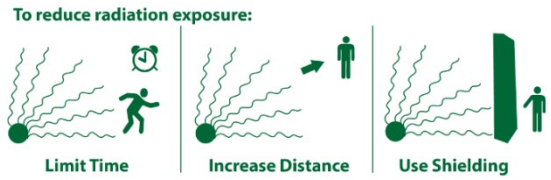
Radiation

Development of Ultra-Thin Radiation-Shielding Paper through Nanofiber Modeling of Morpho Butterfly Wing Structure



In medical institutions, radiation shielding is an effective strategy to protect medical personnel and patients from exposure. Reducing the weight of the shield worn by medical personnel in the radiation generating area plays a key role in improving their productivity and mobility. In this study, a new lightweight radiation shield was developed by electrospinning a polymer-tungsten composite material to produce nanofibers with a multi-layered thin-film structure similar to that of a morpho butterfly wing. The fabricated shield was in the form of 0.1 mm thick flexible shielding paper. The multi-layer structure of the thin shielding paper was obtained through nanofiber pattern formation via electrospinning a dispersion of tungsten particles. At 0.1 mm thickness, the paper's shielding rate was 64.88% at 60 keV. Furthermore, at 0.3 mm thick and arranged in a laminated structure, the shielding rate was 90.10% and the lead equivalent was 0.296 mmPb. When used as an apron material, the weight can be reduced by 45% compared to existing lead products. In addition, the material is highly processable and can be used to manufacture various flexible products, such as hats, gloves, underwear, and scarves used in medical institutions.

Read more:
https://www.nature.com/articles/s41598-022-27174-y

Ventilation

A Frontal Air Intake May Improve the Natural Ventilation in Urban Buses

In this report we analyze the air flow across the open windows (natural ventilation) of an urban bus model and the consequent dispersion of aerosols emitted in the passengers area. The methods include computational fluid dynamics simulations and three ways to characterize the dispersion of passive tracers: a continuous concentration-based model, a discrete random model and a parametric scalar based on the so-called mean age of air. We also conducted experiments using a 1:10 scale bus model and CO2 as a passive tracer to assess the ventilation characteristics. We found that dispersion and expulsion of aerosols is driven by a negative pressure in the standard bus design equipped with lateral windows. Also, the average age of air is 6 minutes while the air flow promotes aerosol accumulation to the front (driver's area). To speed up the expulsion of aerosols and reduce their in-cabin accumulation, we propose a bus bodywork prototype having a

frontal air intake. All the numerical models and experiments conducted in this work agreed that the expulsion of aerosols in this novel configuration is significantly increased while the average age of air is reduced to 50 seconds. The average air flow also changes with the presence of frontal air intakes and, as a consequence, the expulsion of aerosols is now driven by a frontal velocity field.

Read more:
https://www.nature.com/articles/s41598-022-25868-x

PPE

Designing Better Cloth Masks: The Effect of Fabric and Attachment-Style on Discomfort

Cloth masks are a tool for controlling community transmission during pandemics, as well as during other outbreak situations. However, cloth masks vary in their designs, and the consequences of this variability for their effectiveness as source control have received little attention, particularly in terms of user discomfort and problematic mask-wearing behaviors. In the present studies, common design parameters of cloth masks were systematically varied to ascertain their effect(s) on the subjective discomfort and frequency of problematic mask-wearing behaviors, which detract from the effectiveness of cloth masks as source control. The type of fabric comprising a mask (flannel or twill made of 100% cotton) and the attachment-style of a mask (i.e., ear loops or fabric ties) were varied in adults (18 to 65 years) and children (ages 6 to 11 years). For adults, ear loops were less comfortable than ties ($p = .035$) and were associated with greater face- ($p = .005$) and mask-touching ($p = .001$). Children, however, found flannel masks to be more breathable than twill masks ($p = .007$) but touched their masks more frequently when wearing a mask made of flannel than twill ($p = .033$). Common design parameters of cloth masks not only affect user discomfort and behavior but do so differently in adults and children. To improve the effectiveness of cloth masks as source control, the present studies highlight the importance of measuring the effect(s) of design decisions on user discomfort and behavior in different populations.

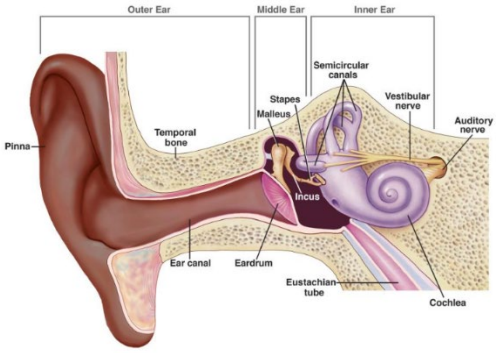
Read more: Journal of Occupational and Environmental Hygiene, Published online: 20 Dec 2022 (Available with an AIHA membership)

Noise

Johns Hopkins Discovers New Path to Treating Age-Related Hearing Loss – "There's More to Hearing Than the Ear"

Looking for answers about how the brain works amid age-related hearing loss, Johns Hopkins Medicine researchers discovered that old mice were less capable than young mice of "turning off" certain actively firing brain cells in the midst of ambient noise. The result, they say, creates a "fuzzy" sound stage that makes it difficult for the brain to focus on one type of sound — such as spoken words — and filter out surrounding "noise."

Scientists have long linked inevitable age-related hearing loss to hair cells in the inner ear that become damaged or destroyed over time.



Read more: https://scitechdaily.com/johns-hopkins-discovers-new-path-to-treating-age-related-hearing-loss-theres-more-to-hearing-than-the-ear/

Preventive Medicine

Fungi That Can Make Outdoor Workers Sick Are Now Nationwide, Researchers Say

Workers in construction, landscaping, agriculture and other outdoor industries may be at risk of infections caused by soil fungi that historically had been found only in certain regions of the country, researchers at Washington University in St. Louis say.

The researchers examined 2007-2016 Medicare records for diagnoses of three types of fungal infections: histoplasmosis, coccidioidomycosis and blastomycosis. These infections occur when people breathe in spores from the soil. Work activities or even simply walking through soil can send the spores airborne.

"Fungal lung infections easily can be mistaken for bacterial or viral lung infections such as COVID-19, bacterial pneumonia and tuberculosis," a WashU press release states. According to the researchers, the Centers for Disease Control and Prevention last revised its maps of disease-causing fungi in 1969. Since then, the fungi have spread to more areas.

Read more:
https://www.safetyandhealthmagazine.com/articles/23322-fungi-that-can-make-outdoor-workers-sick-are-now-nationwide-researchers-say

10 Percent of Deaths Among Ever-Employed Linked to COPD in 2020

About 10 percent of deaths among ever-employed persons aged 15 years and older were associated with chronic obstructive pulmonary disease (COPD) in 2020, according to research published in the Dec. 9 issue of the U.S. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report.

Girija Syamlal, M.B.B.S., from the CDC in Atlanta, and colleagues analyzed the most recent 2020 multiple cause-of-death data for 46 states and New York City to describe COPD mortality among U.S. residents aged 15 years and older categorized as ever-employed.

The researchers found that 10.3 percent of the 3,077,127 decedents had COPD listed on the death certificate. Women, White persons, and non-Hispanic or Latino persons had the highest age-adjusted COPD death rates per 100,000 ever-employed persons (101.3, 116.9, and 115.8, respectively). The three industries with the highest proportionate mortality ratios were mining, accommodation and food services, and construction (1.33, 1.28, and 1.23, respectively). Food preparation and serving-related, health care support, and construction and extraction were the three occupations with the highest proportionate mortality ratios (1.30, 1.29, and 1.29, respectively).

Read more:
https://consumer.healthday.com/physician-s-briefing-copd-2658899313.html

Green Lasers Reveal You Should Close the Toilet Lid Before You Flush

Engineers at the University of Colorado Boulder have confirmed what the germ-phobic among us have long suspected: The flush of a commercial toilet releases a Vesuvius-like cloud of tiny droplets and aerosol particles that reaches more than 5 feet above the seat.

Though invisible to the naked eye, when illuminated by green lasers, the plume appears like a burst of microscopic confetti thrown at the world's grossest party, one composed of tiny drops of water and whatever else might be in the bowl.

Read more:
https://medicalxpress.com/news/2022-12-green-lasers-reveal-toilet-lid.html

Increasingly Under Fire as Potential Health Hazards, Gas Stoves Could Be Banned In 2023

Citing studies that link gas stoves to health problems, including asthma in children, a U.S. Consumer Product Safety Commission official said his agency will begin a formal review process that could lead to new regulations.

"We need to be talking about regulating gas stoves, whether that's drastically improving emissions or banning gas stoves entirely," said Commissioner Richard Trumka. "And I think we ought to keep that possibility of a ban in mind, because it's a powerful tool in our tool belt and it's a real possibility here."

The commission will begin soliciting information from the public in March,

Trumka said, and regulation could happen in 2023.

Read more:
https://medicalxpress.com/news/2022-12-potential-health-hazards-gas-stoves.html

Study Finds That Working in Extreme Heat Puts Strain on Fetuses of Pregnant Women

A new study reveals that the fetuses of women working in the fields in extreme heat can show signs of strain before their mothers are affected, new research has shown.

The study, which involved 92 pregnant subsistence farmers in The Gambia, is the first to measure the impacts of heat stress on the fetuses of manual workers. The research is published in The Lancet Planetary Health.

Read more:
https://medicalxpress.com/news/2022-12-extreme-strain-fetuses-pregnant-women.html

Environmental Health

New 3D Model Shows How Cadmium Exposure May Affect Heart Development

Researchers at NIEHS have developed a three-dimensional (3D) model that shows how exposure to cadmium might lead to congenital heart disease. Congenital heart disease is the most common birth defect in the United States, affecting nearly 40,000 newborns a year.

Cadmium is a metal that can be released into the environment through mining and

various industrial processes, and it has been found in air, soil, water, and tobacco. The metal can enter the food chain when plants absorb it from soil. Previous studies suggested that maternal exposure to cadmium might be a significant risk factor for congenital heart disease.

Read more
https://factor.niehs.nih.gov/2022/12/papers/3d-heart-cadmium

Exposure to Toxic Blue-Green Algae, Exacerbated by Climate Change, Shown to Cause Liver Disease in Mouse Models

Exposure to a specific type of blue-green algae toxin known as cylindrospermopsin has shown to wreak havoc on gut bacteria and is linked to an increased probability of irritable bowel syndrome, inflammatory bowel disease, celiac disease, type 1 diabetes, obesity and inflammation of the liver—a precursor to liver cancer—according to a study led by the University of California, Irvine.

In a study published in the journal Toxins, Saurabh Chatterjee, Ph.D., corresponding author and professor of environmental and occupational health in UCI's Program in Public Health and professor of medicine at the UCI School of Medicine, was the first to report on a possible connection between oral exposure to cylindrospermopsin (a form of cyanobacteria) and liver damage via the gut-connection.

R*ead more*:
https://medicalxpress.com/news/2022-12-exposure-toxic-blue-green-algae-exacerbated.html

New Study Links Outdoor Artificial Light at Night to Increased Risk of Diabetes

A recent study published in Diabetologia has found a link between exposure to outdoor artificial light at night (LAN) and an increased risk of diabetes, as well as impaired blood glucose control. The research, conducted by Dr. Yu Xu and colleagues at the Shanghai Institute of Endocrine and Metabolic Diseases, estimates that over 9 million cases of

diabetes in Chinese adults can be attributed to LAN exposure.

The study highlights the widespread nature of LAN exposure as a risk factor, as the intensity of urban light pollution has increased to the point that it affects not only those living in large cities but also those in suburban and rural areas that may be far from the light source. The authors note: “Despite over 80% of the world’s population being exposed to light pollution at night, this problem has gained limited attention from scientists until recent years.”

Read more: https://scitechdaily.com/new-study-links-outdoor-artificial-light-at-night-to-increased-risk-of-diabetes/

Legionella Sampling: What's Your Sampling Strategy?

Sampling of water systems for Legionella, Pseudomonas aeruginosa or bacteriological can be somewhat daunting, with thoughts of "do I need to sample," "how to take a sample" and "where should I send the samples?" This blog is aimed to provide some background on the sampling process.

Introduction to Water Sampling

The accuracy of the results obtained from water sampling relies principally on "doing the basics well." Whilst it is imperative to understand the how, what, why, where and when we take water samples, these considerations are underpinned by two key requirements:

- The sampler must follow the approved technique when sampling from an outlet;
- As far as reasonable and practicable, think about all aspects of the sampling environment that may pose a cross-contamination risk.

Read more: https://ohsonline.com/articles/2022/12/28/legionella-sampling.aspx

Restaurant Dishwashers Leaving Soap Residue on Dishware that Could Seriously Harm Gut Health

When eating out at a restaurant, you assume you're getting a squeaky-clean plate with your meal. However, your gut may beg to differ. A new study from Swedish immunologists found that commercial dishwashers, common in many restaurants, leave behind a chemical residue that's toxic to the gastrointestinal tract.

Professional-grade dishwashers wash and dry loads of plates and cutlery from restaurant patrons in minutes. Typically, these dishwashers use a 60-second circulating hot water and detergent cycle at high pressure. It then goes through another 60-second wash and dry cycle where the machine adds a rinse agent. While the speed is a tremendous benefit to restaurants serving hundreds of customers in one sitting, researchers say not many washers have an additional wash cycle to get rid of the leftover rinse aid. These substances carry toxic ingredients that, when dried, can stick to plates and enter our bodies.

Read more:
https://studyfinds.org/dishwashers-harm-gut-health/

Daylong Wastewater Samples Yield Surprises

Testing the contents of a simple sample of wastewater can reveal a lot about what it carries, but fails to tell the whole story, according to Rice University engineers.

Their new study shows that composite samples taken over 24 hours at an urban wastewater plant give a much more accurate representation of the level of antibiotic-resistant genes (ARGs) in the water. According to the Centers for Disease Control and Prevention (CDC), antibiotic resistance is a global health threat

responsible for millions of deaths worldwide.

In the process, the researchers discovered that while secondary wastewater treatment significantly reduces the amount of target ARG, chlorine disinfectants often used in later stages of treatment can, in some situations, have a negative impact on water released back into the environment.

Read more:
https://www.labmanager.com/news/daylong-wastewater-samples-yield-surprises-29479

Ergonomics

Mitigating Hand Tool Fatigue and Injury through Ergonomics

Any repetitive motion can lead to fatigue and injuries. Examples such as tennis elbow, carpal tunnel syndrome, and "Tommy John" surgeries are proof that recurrent movement takes a toll on the body.

This is especially true for aviation maintenance technicians who work with fine tools for long periods of time. Persistent and precise movements can cause pain and fatigue, often leading to injury. These cumulative trauma injuries can result in missed work and work-related disability claims, as well as compromise worker safety.

According to an overview from the Occupational Safety and Health Administration (OSHA), work-related Musculoskeletal Disorders (MSDs), such as carpal tunnel syndrome, are among the

most frequently reported causes of lost or restricted work time.1

Read more:
https://www.aviationpros.com/tools-equipment/article/21282313/mitigating-hand-tool-fatigue-and-injury-through-ergonomics

Safety

Everything You Need to Know about Safety Data Sheets

Over each of the past seven years, hazard communication (1910.1200) has been one of the top five most penalized OSHA standards. But concentrating your efforts on maintaining safety data sheets (SDSs) can help. And that's because a major component of any worksite's hazard communications plan is its SDS.

But what is an SDS and why are these sheets integral to an employer's hazard communications plan? This article will answer the questions you have about SDSs, how you can maintain them and why doing so protects your entire workforce.

What are Safety Data Sheets?

An SDS is a 16-section source of information relating to a hazardous chemical in the workplace. OSHA standardized the number of sections in 2012 when it revised its Hazard Communication Standard to align with the UN's global chemical labeling system.

Read more:
https://ohsonline.com/articles/2022/12/01/everything-you-need-to-know.aspx?admgarea=ht.HazardCommunication

Drone Use in Construction Can Distract Workers and Increase Risk of Falls: CPWR

As the use of drone technology in the construction industry expands, so too do safety concerns related to worker distraction and potential collisions while operating at height.

That's the conclusion of researchers from CPWR – The Center for Construction

Research and Training, who in a recent study analyzed the behaviors of 153 participants "with varying construction experience" in a virtual construction site.

Findings show that working with or near drones, or unmanned aerial vehicles, "reduces the attention workers devote to the task at hand, which could result in falls when they are at height." Workers operating while drones were 12 and 25 feet away looked away from job tasks more frequently than when drones were 1.5 and 4 feet away.

Read more:
https://www.safetyandhealthmagazine.com/articles/23373-drone-use-in-construction-can-distract-workers-and-increase-risk-of-falls-cpwr

Firefighter Deaths Spur Advisory on Portable Radio Emergency Alert Buttons

A new NIOSH safety advisory highlights the importance of training firefighters and dispatchers on the use of portable radio emergency alert buttons during mayday events.

The advisory was prompted by several incidents investigated by NIOSH's Fire Fighter Fatality Investigation and Prevention Program "where a firefighter mayday was called, the EAB was not used and the incident led to a line-of-duty death," according to a press release from the U.S. Fire Administration, which partnered with NIOSH on the advisory.

The NIOSH program recommends fire departments and municipalities ensure their workers:

- Understand the EAB and its functions when activated.
- Know the specific EAB functions on their portable radio and communication system capabilities.
- Know that the EAB prioritizes transmissions for the portable radio when activated.

Are proficient in mayday standard operating procedures, guidelines and training that involve the EAB function.

Read more:
https://www.safetyandhealthmagazine.com/articles/23335-mayday-firefighter-deaths-spur-advisory-on-portable-radio-emergency-alert-buttons

Winter Brings Rise in Carbon Monoxide Danger: Stay Safe

Winter weather brings with it plenty of hazards, including risks from carbon monoxide poisoning, and fires. But the U.S. Consumer Product Safety Commission (CPSC) offers suggestions for staying safe on those cold winter nights.

When storms knock out power, a portable generator can be a go-to tool, but it does raise the risk of carbon monoxide (CO) poisoning and can kill in minutes if not used properly, the CPSC warned in a news release.

An odorless, colorless gas, CO can render someone unconscious before they even have a chance to have symptoms of nausea, dizziness or weakness. To stay safe, never operate a portable generator inside a home, garage, basement, crawlspace or shed.

Even open doors or windows will not provide enough ventilation to prevent the buildup of lethal levels of CO, the CPSC advised.

Read more:
https://consumer.healthday.com/winter-brings-rise-in-carbon-monoxide-danger-stay-safe-2658797702.html

The Right Winter Glove for Cold and Wet Applications

People who work in cold and wet conditions must endure extra hardships, especially when compared to indoor office workers. During the winter, outdoor workers are challenged by air temperature, wind speed, snow, sleet, rain and ice.

Just think about utility workers and linemen working through grueling ice storms and other inclement weather to restore the power grid. Or what about truckers, first responders and snow plough drivers who

battle harsh weather conditions to bring food and water to us, to protect us and to clear our roads?

Outdoor workers go out on a limb for us during the winter. Safety pros should provide quality PPE to keep workers warm and dry, especially when it comes to selecting high-performance winter work gloves.

Read more:
https://ohsonline.com/articles/2022/12/01/the-right-winter-glove.aspx?admgarea=ht.PPE

Emergency Preparedness

3 Emerging Opportunities in Aerial Imagery for Natural Disaster Preparedness and Response

By 2025, the occurrence of natural disasters experienced around the world is projected to increase by 37%, taking the annual average from 442 occurrences to 541. These natural disasters can range from wildfires caused by record-high temperatures to hurricanes caused by warm ocean water and the Earth's eastward rotation.

With increasingly hot temperatures impacting society on land and at sea, many scientists project that the frequency and severity of these occurrences will only worsen over time.

With the United States being one of the largest countries in the world, it is especially susceptible to environmental disasters. In 2021 alone, the U.S. experienced a total of 97 natural disasters. And while there's little that can be done to stave off an impending environmental threat, burgeoning technological advancements like aerial imagery can aid in a state's effort to mitigate the severity and duration of its

effects. As a disclosure, my company Nearmap is a provider of aerial imagery solutions.

Read more:
https://www.forbes.com/sites/forbesbusinessdevelopmentcouncil/2022/12/07/3-emerging-opportunities-in-aerial-imagery-for-natural-disaster-preparedness-and-response/?sh=5c59471273db

Deployment Health

AFRL Launches Wearable Biomolecular Sensors Program for DoD, Transfers Technology to Sensate Biosystems

The Air Force Research Laboratory, or AFRL, has partnered with the Nano Bio-Materials Consortium, or NBMC, and Case Western Reserve University to create wearable sensors that measure biomarkers in Airmen and Guardians. The term "biomarker" refers to any physiological or molecular information that can be tracked for human health.

The collaboration, called Biomolecular Structure and Integration for Sensors, or BioSIS, connects AFRL's Materials and Manufacturing Directorate, the 711th Human Performance Wing, the NBMC and Case Western Reserve University. In 2022, the body of research accumulated by BioSIS since 2018 led to the founding of private spinoff company Sensate Biosystems. The NBMC provided funding to Case Western Reserve University to license the existing AFRL patent, assemble its own team and kickstart the company to develop wearable molecular sensor research for dual use in the commercial market.

Read more:
https://www.airforcemedicine.af.mil/News/Display/Article/3251016/afrl-launches-wearable-biomolecular-sensors-program-for-dod-transfers-technolog/

Nanotechnology

Food Decontamination Spray Deploys 'Billions of Tiny Soldiers'

Researchers at McMaster University have created a powerful new weapon against bacterial contamination and infection.

They have developed a way to coax bacteriophages – harmless viruses that eat bacteria – into linking together and forming microscopic beads. Those beads can safely be applied to food and other materials to rid them of harmful pathogens such as E. coli 0157. Each bead is about 20 microns, (one 50th of a millimetre) in diameter and is loaded with millions of phages.

The McMaster engineering team behind the invention, led by professors Zeinab Hosseinidoust, who holds the Canada Research Chair in Bacteriophage

Bioengineering, and Tohid Didar, who holds the Canada Research Chair in Nano-Biomaterials, and graduate student Lei Tian, have created a spray using nothing but the microbeads.

Read more:
https://www.nanowerk.com/nanotechnology-news2/newsid=61962.php

Regulatory Research & Industrial Hygiene Professional News

Congress

Industrial Health Organization Offers Resources for Rail Industry

The American Industrial Hygiene Association, the organization for individuals in the field of occupational and environmental health and safety, is now offering resources to help rail companies support worker health and safety.

The organization has launched a rail-specific section of its Worker Health and Safety website including fact sheets, articles, and journal studies on ways occupational and environmental health and safety, or OEHS, professionals can help mitigate health risks such as heart and lung problems, cancer, emotional stress, and mental illness. These OEHS specialists can evaluate exposures to noise and air contaminants and determine if health risks exist; the site also offers information on how to find a consultant for such evaluations.

Read more:
https://www.trains.com/trn/news-reviews/news-wire/industrial-health-organization-offers-resources-for-rail-industry/

FDA

FDA Releases 2022 Food Code

The U.S. Food and Drug Administration (FDA) has issued the 2022 edition of the FDA Food Code, which provides guidance to state and local authorities and retailers to help mitigate foodborne illness risks at

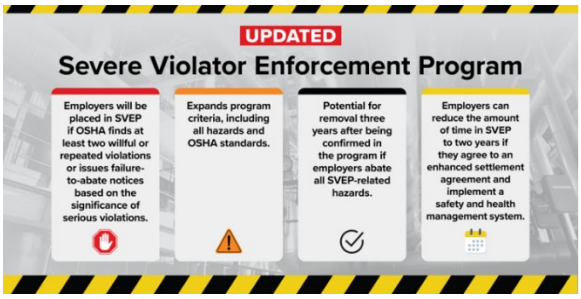
retail, as well as provides a uniform set of national standards for retail food safety.

The 2022 edition commemorates 30 years of the FDA Food Code in its current format. It represents FDA's best advice for a uniform system of provisions that address the safety and protection of food offered at retail and in food service, and while it is a model code that is not required, it has been widely adopted by state, local, tribal, and territorial (SLTT) agencies that regulate more than one million restaurants, retail food stores, vending operations, and food service operations in schools, hospitals, nursing homes, and childcare centers.

Read more: https://www.food-safety.com/articles/8242-fda-releases-2022-food-code

OSHA

U.S. Department of Labor Announces Changes to OSHA's Severe Violator Enforcement Program



To strengthen enforcement and improve compliance with workplace safety standards and reduce worker injuries and illnesses, the U.S. Department of Labor is expanding the criteria for placement in the Occupational Safety and Health Administration's Severe Violator Enforcement Program ("SVEP").

The Severe Violator Enforcement Program started back in 2010 to catch employers who willfully or repeatedly violate federal health and safety laws and places employers onto the publicly posted Nation's Severe Violators list. Employers on this list are subject to more frequent and rigorous inspections to ensure they are in compliance, which typically leads to a cycle of more citations and remaining on the SVEP for longer—or indefinitely.

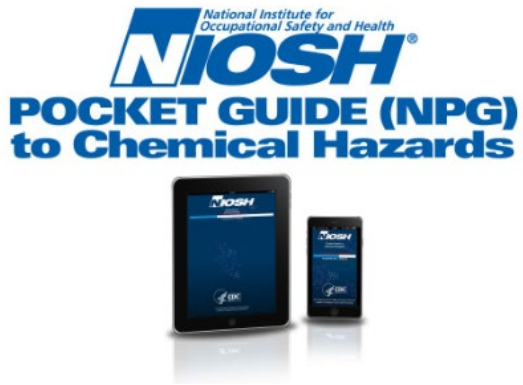
Read more: https://www.jdsupra.com/legalnews/u-s-department-of-labor-announces-9134784/

NIOSH

Mobile Apps from the National Institute for Occupational Health and Safety

As times have changed so has our ability to quickly access information. Decades ago, getting the information you need could have taken hours and sorting through multiple folders or drawers. Now, the information you need is almost always a click, or tap, away.

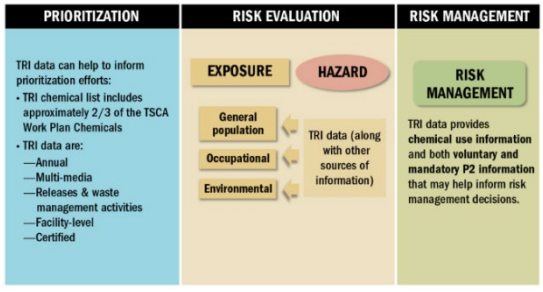
Mobile apps can be a great resource for workers. The National Institute for Occupational Health and Safety (NIOSH) offers multiple free apps to help employers and employees in a variety of industries.



Read more:
https://ohsonline.com/articles/2022/12/23/mobile-apps.aspx?m=1

EPA

EPA Issues Final Revised Risk Determinations for 1-BP and NMP



The Environmental Protection Agency has issued separate, final revised risk determinations that state 1-bromopropane and n-methylpyrrolidone – as whole chemical substances – pose "unreasonable risk" to workers under certain conditions.

According to EPA, which published the documents in the Dec. 19 Federal Register, "the next step in the process is to develop risk management rulemakings to identify and require the implementation of measures to manage these risks."
The agency found that 1-BP – frequently used as a solvent in consumer products – poses unreasonable risk to workers involved in operations including domestic

manufacturing, importing, processing as a reactant, repacking, recycling, and use as a solvent for cleaning or degreasing.

Read more: https://www.safetyandhealthmagazine.com/articles/23399-epa-issues-final-revised-risk-determinations-for-1-bp-and-nmp

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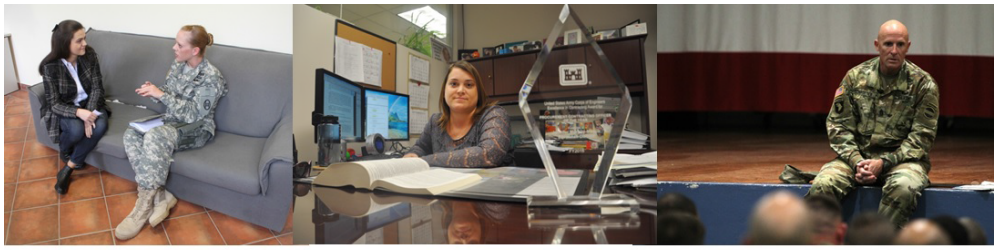
On the Web:
https://phc.amedd.army.mil/news/Pages/PublicationDetails.aspx?type=Army%20Industrial%20Hygiene%20News%20and%20Regulatory%20Summary



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.